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# NEW YORK MEDICAL JOURNAL

INCORPORATING THE  
PHILADELPHIA MEDICAL JOURNAL  
AND THE  
MEDICAL NEWS

## A WEEKLY REVIEW OF MEDICINE

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## LIST OF CONTRIBUTORS TO VOLUME CII.

Those whose names are marked with an asterisk have contributed editorial articles.

- ABBE, ROBERT, M. D.  
 ALBEE, FRED H., M. D., F. A. C. S.  
 AIKMAN, JOHN, M. D., Rochester, N. Y.  
 AMSTER, J. LEWIS, M. D.  
 ANDERSON, JOHN F., M. D., New Brunswick, N. J.  
 \*APPEGATE, JOHN C., M. D., Philadelphia.  
 \*ARMSTRONG, DONALD B., M. D.  
 ARNOLD, J. O., M. D., Philadelphia.  
 \*ATWOOD, CHARLES E., M. D.  
 AVELLANUS, ARCADIS, Williamstown, Mass.  
 AXFORD, W. HOMER, M. D.  
 AXILBUND, SAMUEL, M. D., Philadelphia.  
 BAETJER, F. H., M. D., Baltimore.  
 \*BAILEY, WILLIAM S., Jamestown, N. Y.  
 BAINBRIDGE, WILLIAM SEAMAN, A. M., M. D., C. M. S. D.  
 BALL, CHARLES R., M. D., St. Paul, Minn.  
 BALLENGER, EDGAR G., M. D., Atlanta, Ga.  
 BANDLER, SAMUEL WYLLIS, M. D.  
 BARACH, JOSEPH H., M. D., Pittsburgh.  
 BARLOW, NATHAN, M. D., Cuyamel, Spanish Honduras.  
 BARNES, NOBLE PRICE, M. D., Washington, D. C.  
 \*BARTHOLOW, PAUL, A. B., M. D.  
 BASS, MURRAY H., M. D.  
 BASSLER, ANTHONY, M. D.  
 BEALS, M. B., M. D.  
 BEBEE, EDWIN L., M. D., Buffalo.  
 BEBEE, S. P., Ph. D., M. D.  
 BENEDICT, A. L., A. M., M. D., Buffalo.  
 BERKELEY, WILLIAM N., A. B., Ph. B., M. D.  
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 BERNART, WILLIAM F., M. D., Chicago.  
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 BLOUGETT, STEPHEN H., M. D., Boston.  
 BOEHME, GUSTAV F., Jr., B. S., M. D.  
 BOGGS, RUSSELL H., M. D., Pittsburgh.  
 \*BOLDUAN, CHARLES F., M. D.  
 BOLLES, CHARLES P., M. D., Wilmington, N. C.  
 BOOKMAN, ARTHUR, M. D.  
 BOSTON, L. NAPOLEON, A. M., M. D., Philadelphia.  
 BOWLES, F. J., M. D.  
 BRADY, WILLIAM, M. D., Elmira, N. Y.  
 BRAM, ISRAEL, M. D., Philadelphia.  
 BRAY, AARON, M. D., Philadelphia.  
 BRAV, HERMAN A., M. D., Philadelphia.  
 BREMERMAN, LEWIS WINE, A. M., M. D., Chicago.  
 BRINKLEY, ARTHUR S., M. D., Richmond, Va.  
 BROADMAN, JOSEPH, M. D.  
 BRODER, CHARLES B., A. B., M. D.  
 BROWN, PERCY M., M. D., Boston, Mass.  
 BRUNELLE, GEORGE C., M. D.  
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 BURR, CHARLES W., M. D., Philadelphia.  
 CASALE, JOHN B., M. D., Newark, N. J.  
 CHACE, ARCHIBALD E., A. B., M. D., Tarrytown, N. Y.  
 CHENEY, H. W., M. D., Chicago.  
 CLAGETT, A. N., M. D., Chicago.  
 CLARK, JOHN G., M. D., Philadelphia.  
 \*CLOUTING, CHARLES A., M. D.  
 COATES, GEORGE MORRISON, A. B., M. D., Philadelphia.  
 COGHLAN, JOHN, M. D.  
 COHEN, MYER SOLIS, A. B., M. D., Philadelphia.  
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 COOK, ELIZA, M. D., Sheridan, Nevada.  
 COOLIDGE, W. D., Schenectady, N. Y.  
 CORNWALL, EDWARD E., M. D., Brooklyn.  
 CORWIN, R. W., M. D., Pueblo, Colo.  
 COUGHLIN, ROBERT E., M. D., Brooklyn.  
 CUMMINGS, FRANK ANTHONY, M. D., Providence, R. I.  
 \*CUMSTON, CHARLES GREENE, M. D., Geneva, Switzerland.  
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 DAGG, T. L., M. D., Chicago.  
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 DAVIDSON, ARTHUR J., M. D., Philadelphia.  
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 DEVER, JOHN B., M. D., Philadelphia.  
 \*DELANEY, WILLIAM J., M. D., Naugatuck, Conn.  
 DENACLAIR, CHARLES, M. D., Palau, France.  
 DE SANCTIS, ADOLPH G., M. D.  
 DETWILER, A. K., M. D., Omaha, Neb.  
 DEVER, FRANCIS J., M. D., Philadelphia.  
 DE VILBISS, LYDIA ALLEN, M. D.  
 \*DONNELLY, W. H., M. D., Brooklyn.  
 DRUSKIN, SAMUEL J., M. D.  
 DUFFY, RICHARD N., A. B., M. D., Newbern, N. C.  
 DUNN, ARTHUR D., A. B., M. D., Omaha, Neb.  
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 FOSSIER, A. E., A. M., M. D., New Orleans, La.  
 \*FOSTER, MATTHIAS LANCKTON, M. D., New Rochelle, N. Y.  
 FRANKEL, JULIUS, M. D.  
 FRANKEL, LEE K., Ph. D.  
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 FRICK, WILLIAM, M. D., Kansas City, Mo.  
 \*FRIDENBERG, PERCY, M. D.  
 FRIEDENWALD, JULIUS, M. D., Baltimore.  
 \*FRIEDMAN, HENRY M., M. D., LL. D., United States Public Health Service.  
 FRIEDMAN, L. J., M. D.  
 FUNK, ELMER H., M. D., Philadelphia.  
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 GLOSTER, HAROLD S., M. D., Wheeling, W. Va.  
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 GOLDBACH, L. J., M. D., Baltimore.  
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 GORDON, ALFRED, M. D., Philadelphia.  
 GORDON, MURRAY BURNES, M. D., Brooklyn.  
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 HENIN, C. C., M. D., Springfield, Mass.  
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 JENKINS, THOMAS W., M. D., Albany, N. Y.  
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 JONES, JOHN F. X., M. D., Philadelphia.  
 KAHN, MAX, M. D., Ph. D., Pittsburgh.  
 KAISER, ALBERT, M. D., Rochester, N. Y.  
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 KAST, LUDWIG, M. D.  
 KAUFMAN, A. SPENCER, M. D., Philadelphia.  
 KAVINOKY, NAHUM, M. D., Buffalo.



- KELLOGG, KENNETH E., M.D., New Britain, Conn.  
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 KILBANE, EDWARD F., M.D.  
 \*KING, HOWARD D., M.D., New Orleans, La.  
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 \*KNOFF, S. ADOLPHUS, M.D.  
 KNOX, HOWARD A., M.D., Ellis Island, N. Y.  
 KONKLE, W. B., Montoursville, Pa.  
 KOSMAK, GEORGE W., M.D.
- LANE, JOHN E., M.D., New Haven, Conn.  
 LANKFORD, J. S., M.D., San Antonio, Texas.  
 LAPHAM, MARY E., M.D., Highlands, N. C.  
 LATHROP, WALTER, M.D., Hazelton, Pa.  
 LAVERRIERE, MAURICE, M.D., Lyons, France.  
 \*LAVINDER, CHARLES H., M.D., United States Public Health Service.  
 LERCH, OTTO, A. M., M.D., Ph.D., New Orleans.  
 LESZYNSKY, WILLIAM M., M.D.  
 LEUF, A. H. P., M.D., Philadelphia.  
 LEVISON, LOUIS A., M.D., Toledo, Ohio.  
 LEVY, LOUIS HENRY, M. S., M.D., New Haven, Conn.  
 \*LEWINSKI-CORWIN, E., M.D.  
 LICHTENSTEIN, PERRY M., M.D.  
 \*LIND, JOHN E., M.D., Washington, D. C.  
 LLOYD, JAMES HENDRIE, M.D., Philadelphia.  
 LONG, JOHN WESLEY, M.D., F. A. C. S., Greensboro, N. C.
- \*MCCONNELL, GUTHRIE, M.D., Waterloo, Iowa.  
 MCCULLAGH, SAMUEL, A. B., M.D., F. A. C. S.  
 MACKINNEY, WILLIAM H., M.D., Philadelphia.  
 MACNAIR, ROBERT H., M.D., Springfield, Mass.  
 MAKEPEACE, FRANK C., M.D.  
 MAKUEN, G. HUDSON, M.D., Philadelphia.  
 MARTIN, WILLIAM, M.D., Atlantic City, N. J.  
 \*MAYO, CASWELL A., Phar. M.  
 MAYS, THOMAS J., M.D., Philadelphia.  
 MELLON, RALPH R., M.D., Ann Arbor, Mich.  
 MELTZER, SAMUEL J., M.D.  
 MERRITT, ARTHUR H., D. D. S.  
 MEYER, KARL A., M.D., Chicago.  
 MILLER, DANIEL TUCKER, A. B., M.D., Terre Haute, Ind.  
 MILLER, ELMER A., M.D.  
 MOFFETT, RUDOLPH DUYEEA, M.D.  
 MOSCHCOWITZ, ELI, M.D.  
 MOSKOWITZ, S., M.D.  
 MULLINS, SAMUEL F., M.D., Danbury, Conn.  
 MUNDIN, R. ORLANDO, M.D., Richmond, Va.
- NASCHER, I. L., M.D.  
 NEUSTAEDTER, M., M.D.  
 NEUWELT, LOUIS, M.D.  
 NEWCOMET, WILLIAM S., M.D., Philadelphia.
- NEWMAN, F. RICHARD, M.D., Wheeling, W. Va.  
 NICHOLSON, HUGH G., M.D., Charleston, W. Va.  
 NOBLE, CHARLES P., M.D., Sc.D., Philadelphia.  
 \*NODINE, ALONZO MILTON, D. D. S.  
 \*OPPENHEIMER, SEYMOUR, M.D.  
 OSNATO, MICHAEL, M.D.
- PALEFSKI, I. O., M.D.  
 PALIER, E., M.D.  
 PARK, WILLIAM H., M.D.  
 PEACOCK, A. H., M.D., Seattle, Wash.  
 PEDERSEN, VICTOR COX, A. M., M.D., F. A. C. S.  
 FLOUZE, P. STARR, M.D., Philadelphia.  
 PENNINGTON, J. RAWSON, M.D., Chicago.  
 PETER, LUTHER C., M.D., F. A. C. S., Philadelphia.  
 PRIEFER, DAMON B., M.D., Philadelphia.  
 \*PISKE, GODFREY R., M.D.  
 POLLITZER, SIGMUND, M.D.  
 POPE, CURRAN, M. D., Louisville, Ky.  
 \*PRATT, F. L., M.D.
- RABINOWITSCH, H., M.D.  
 RANDALL, ALEXANDER, A. M., M.D., Philadelphia.  
 READ, CHARLES F., M.D., Dunning, Ill.  
 \*REED, ALFRED C., M.D., Changsha, China.  
 RIDDELL, WILLIAM RENWICK, LL. D., F. R. H. S., etc., Toronto.  
 ROBERTS, PERCY WILLARD, M.D.  
 ROBERTSON, JAMES F., M.D., Philadelphia.  
 ROBERTSON, R. S., M.D.  
 \*ROBIN, ALBERT, M.D.  
 ROBINSON, BEVERLEY, M.D.  
 ROBINSON, WILLIAM J., M.D.  
 ROBY, JOSEPH, M. D., Rochester, N. Y.  
 \*ROGERS, JAMES FREDERICK, M.D., New Haven, Conn.  
 ROSE, ACHILLES, M.D.  
 ROSE, ROBERT HUGH, M.D.  
 ROSENBERGER, RANDLE C., M.D., Philadelphia.  
 ROSENBLUM, JACOB, M.D., Ph. D., Pittsburgh.  
 ROSEWATER, NATHAN, M.D., Cleveland.  
 ROST, WILLIAM L., M.D.  
 RUBENSTONE, A. I., M.D., Philadelphia.  
 \*RUDIS-JICINSKY, J., M.D., Chicago.
- \*SAJOUS, CHARLES E. DE M., M.D., LL. D., Sc.D., Philadelphia.  
 \*SAJOUS, LOUIS T. DE M., B. S., M.D., Philadelphia.  
 SAPHIR, J. F., M.D.  
 \*SCARLETT, RUFUS B., M.D., Trenton, N. J.  
 SCHACHNER, AUGUST, M.D., Louisville, Ky.  
 \*SCHAMBERG, JAY F., A. B., M.D., Philadelphia.  
 SCHMITZ, HENRY, A. M., M.D., Chicago.  
 SCHOENRICH, HERBERT, M. D., Baltimore.  
 SCHROEDER, M. C., M.D.  
 SCHULMAN, MAXIMILIAN, M.D.  
 SCHWARTZ, NATHAN, M.D.  
 SCOTT, GEORGE DOW, A. B., B. S., M.D.  
 \*SCOTT, R. J. E., M. A., B. C. L., M.D.  
 SEILKOVITCH, S., M.D., Philadelphia.  
 SHEAFF, PHILIP ATLEE, M.D., Philadelphia.
- SHEARER, J. S., Ph. D., Ithaca, N. Y.  
 SHOEMAKER, GEORGE ERETY, M. D., Philadelphia.  
 SIMPSON, JOHN C., M.D., Philadelphia.  
 SMITH, CLARENCE H., M.D.  
 \*SMITH, E. FRANKLIN, M.D.  
 SNOW, WILLIAM BENHAM, M.D.  
 \*SOLOMON, MEYER, M.D., Chicago.  
 SONNENSCHNEIN, H. D., M.D.  
 SOULE, ROBERT E., A. B., M.D.  
 \*SPOULDING, HARRY V., M.D.  
 SQUIRES, J. W., M.D., Charlotte, N. C.  
 \*STEINBUGLER, WILLIAM F. C., M.D.  
 STERN, ADOLPH, A. B., M.D.  
 \*STEVENS, A. R., M.D.  
 STEVENS, W. W., M.D., Philadelphia.  
 STEWART, DOUGLAS H., M.D., F. A. C. S.  
 STEWART, F. E., Ph. G., M. D., Ph.D., Philadelphia.  
 STILLARS, ARTHUR W., M.D., Chicago.  
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 \*WILLIAMS, TOM A., M.B., C.M. (Edin.), Washington, D. C.  
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### Original Communications.

#### CANCER OF THE MOUTH.

##### *The Case against Tobacco.*

BY ROBERT ABBE, M.D.,  
New York.

SENIOR SURGEON, ST. LOUIS HOSPITAL.

With the cause of cancer still unknown, every contribution to its study helps to solve the problem. One cause is universally accepted; that is, *continual irritation of any part of the sensitive body tissue*, thus localizing the outbreak of the disease, if, indeed, it be not the actual cause.

More than a generation ago, a great surgeon said, "Surgery is useless if the patient is saturated with rum and tobacco." Tobacco is still very popular! For more than a century "smokers' tongue" has been pictured and taught by medical men. It has been doubly impressed on me, of late years, that most cancers, not only of the tongue, but anywhere in the mouth, are seen in men who smoke heavily.

To satisfy myself how far this is true, I have studied the histories of the last one hundred cases of mouth cancer seen in my private office, and previous hundreds would have averaged the same. This group chosen from hundreds of cancer cases in all parts of the body, has been observed during the past eighteen months. Without prejudice I have tried to find a common cause.

The tongue showed cancer, or a precancerous condition, in thirty-six; inside of cheek, fifteen; gum, twenty-one; lip, fourteen; throat, fourteen; total, 100. Of women there were ten, men ninety. Of the ninety men, *all* were heavy smokers, except one who had a cancer of the lip, in a scar from an old baseball injury. Almost every man had been an inveterate smoker of from three to twenty cigars daily. One denied cigars, but acknowledged one or two packages of cigarettes daily; he had cancer of the tongue.

The tongue cases showed strikingly that irritation was the cause. Thirty-three of the thirty-six cases were in inveterate smokers, some of as many as twenty cigars daily. Many used a pipe, which often caused cancer to begin where the pipe end allowed the hot smoke to come upon the tongue.

It seemed to me, in former years I had never seen tongue cancer in cigarette smokers, and some of my friends were much consoled by my reassurance; but in reviewing my carefully taken notes of patients' statements, I find six among thirty-six tongue can-

cers were in smokers of cigarettes only. One was a woman who smoked a package daily; one was a man who smoked what were called "all tobacco cigarettes, fifty in a pack." He smoked a pack a day.

One of the worst cancers of the tongue I have recently seen was in a woman. All the left half of her tongue and half of the right was cancerous. I asked her how it began. She said she had a bad back tooth on the left side which her dentist had removed. Had I not been searching for causes, I might have been satisfied with that answer, but I laughingly asked her, "You do not, by any chance, smoke, do you?" "Oh, no," she said. "Or have ever used tobacco?" I asked. "Why, yes! Snuff." "You mean as a Scotchman does?" "Oh, no. I have, all my life, taken a small toothbrush in my right hand, dipped it in snuff, and rubbed it hard on my tongue, mostly on the left side, of course." "What did you do that for?" I asked. "Oh, I like the stinging feeling!"

Three women with cancer of the tongue attributed it to a long irritation of a rough tooth which was opposite the starting point of the cancer. In each case the dentist had first filed it smooth, and later removed it. One woman had a typical raspberry sized mass on one side of the tip, exactly where an old rough tooth had come out. She incidentally said she often burned her tongue there with hot coffee, which she never liked unless it was "very hot."

The case of irritation as a cause of tongue cancer stood proved by the foregoing facts. About one case in ten came from a rough tooth, plus, possibly, hot burning drinks. The other nine tenths are chargeable to tobacco.

Smokers will here cite their own consoling experiences, saying, "Here am I, a heavy smoker for twenty years, and no trouble." In answering this, let me deal again with facts.

First, the smoker consults his doctor after he has had his cancer about six months. It is fair to say he has used tobacco about twenty years before that, for the average age at which my hundred cancer of the mouth patients consulted me, was fifty-five years. The youngest was a heavy smoker at thirty-one, the oldest, an inveterate one, at eighty years.

It is a singular human weakness that, almost to a man, the victim seemed proud of his achievement in smoking so much, and ceased to gloat over his past pleasure, and bemoaned his fate only when assured the cause was indisputable. They all meekly drop their tobacco indulgence as one would become a saint in view of imminent death.

The second point, in answer to the smoker's claim

Inasmuch as there is a large amount of nicotine in a cigarette, it is not surprising that there is a marked difference in tolerance to nicotine in individuals. In some tobacco is a poison and it is a very likely cause of cancer. Indeed, the Indians of the West and South America, who smoke twenty heavy black cigars daily for life; but it is an established fact that most of the victims of mouth cancer are those who have a habit of tobacco. If the span of life were twice as long, would the persistence of irritation bring down a longer period of life? This can only judge from the damage to tissues, which is a proved fact.

It has been interesting to note the cause of cancer inside the cheek. It is not amiss to say that, among the old school gentlemen in active business, it was quite a common habit to keep a little quid of tobacco in the cheek, unbeknown to friends. Of the 100 cases cited, thirteen had chewed tobacco as well as smoked occasionally. These thirteen all had cancer, starting inside the cheek where the quid was held, or on the edge of the palate or tongue near by.

Every surgeon knows that lip cancers are rarely seen in women—and almost universally in men who have smoked. The clay pipe, by reason of its more chafing surface, has universally been credited with its host of victims and, not infrequently, one sees a notch worn in the teeth by holding the pipe where the cancer starts.

One other possible irritating cause from the teeth I have seen in disease starting opposite two teeth, one filled with amalgam, the other with gold. It is possible that continued electric irritation from a mild voltaic pile caused by two different metals bathed in an acid fluid, might cause disturbance and originate this trouble.

Substantial corroboration of irritation as a cause of cancer, is found in the tropical cancer of the cheek, in natives who practise *buyo*, or chewing the betel leaf. Most all the cases are seen in the situation where the mass is held in the cheek, and, as with tobacco, they never get well. A recent article by Professor G. H. Davis (*Journal A. M. A.*, February 27, 1915) describes his experience with the Philippine natives who practise it. Since the American occupation tobacco chewing has been widely introduced, but I doubt if it is preferred to the betel.

The same irritation cause of cancer is the oft quoted kangri disease—a cancer formed on the abdomen of natives of Kashmir from constant wearing of a warming box containing hot embers, strapped on the belly, in winter.

In conclusion, my emphasis must be laid on the prolific cause of all forms of cancer of the mouth from incessant irritation, notably from tobacco; a terrible and unnecessary toll on human life! If one must use tobacco at all, a moderate and not abusive amount may not be injurious; but it stands proved that in any form it may be disastrous.

The occasional medical protests against the injurious use of the weed are always met by an outbreak in the public press—inspired, perhaps, by commercial interests—quoting octogenarians who owe their long lives to having always smoked. Thus the public is beguiled, while no note is sounded about the thousands who are perishing from its overuse.

As a casual observer of social life, I am led to be-

lieve that overindulgence in both stimulants and tobacco, is becoming a thing of the past. Business men and rulers of nations have recognized the danger of one, and it is the duty of medical men to notice the peril lurking in the other.

13 WEST FIFTH ST. STREET.

## THE CANCER PATIENT'S DILEMMA.

*A Plea for the Standardization of What the Public Should Be Taught in the Campaign of Education Concerning Cancer.*

By WILLIAM STEWMAN BAINBRIDGE, A. M., Sc. D.,  
M. D., C. M.,  
New York.

Fear is an element in fostering, perhaps in causing disease; hope is a factor in palliating, perhaps in curing disease. Honest ignorance may be as disastrous in either regard as dishonest knowledge. The victim may be tossed from one horn to the other of this dilemma. There are so many difficulties involved in the dissemination of true and useful knowledge that the cancer problem becomes to the patient not so much a two horned dilemma as a hydra headed monster. The world still awaits the coming of the Hercules of medicine who, with the weapon of definite knowledge, will slay this serpent of the many heads. Until such fortunate day it is a very grave question how best to shield humanity from this insidious and powerful enemy. How may the campaign of education concerning cancer be conducted in order to eliminate harmful fear and engender hope, to safeguard both the public and the profession from honest ignorance on the one hand and dishonest knowledge on the other.

It is thought by many that we are no nearer to the answer to this question than we were when the inauguration of the campaign of education followed close upon the initiation of the era of scientific cancer research. That the campaign has eventuated already in a very wide dissemination of information—correct and incorrect—concerning cancer, no one can doubt. The output of secular literature on the subject is constant, varying in volume, but never entirely absent. The present is a newspaper age, and it is safe to say that few homes, however humble, are left untouched by the campaign inaugurated within the medical profession, fostered by organizations of professional and lay membership, and sent broadcast over the land by an ever active secular press. It is impossible at present to estimate on which side of the deadly parallel of good and evil the larger total of accomplishment may be placed.

The campaign of education, speaking in the gross, is directed along three main channels of enlightenment—cause, treatment, and prevention. Each is hemmed round about with difficulties so numerous that the intelligent layman is soon in a maze of doubt and uncertainty. This state of mind is apt to engender a lack of confidence in the medical profession, and hence to lead to an unwholesome pessimism, the result of which is sure to be indifference and neglect. The less intelligent part of the public, unable to comprehend enough of the subject



to be much the wiser for the campaign, settles back into the world old attitude of the acceptance of the view that is most nearly in accord with its own experience, observation, or prejudice. Members of either class of participants in the campaign are quite apt, if at all averse to the "cutting" idea of treatment, to veer away from the scientific body of the medical profession. The consequence is that they will fall, voluntarily, into the hands of those who are neither honestly ignorant nor dishonestly wise.

The quacks—making perhaps a wayside stop at the door of the ethical enthusiast who is for the moment sincerely advocating some new theory of the cause—which involves a "cure" of a new "cure"—which is regardless of the cause.

It requires no prophetic vision to trace the wanderings of the sufferer thus befuddled and handicapped in the search for knowledge concerning relief from this disease which has baffled the ages. He will eventually consult the surgeon. And when I say *eventually* consult the surgeon, I give a flashlight picture of the condition and the fate of such an individual.

What, then, is to be done? Is the crusade against cancer to be checked? Are the crusaders to be silenced? Far be it from me to answer these queries unqualifiedly in the affirmative. Yet observation after observation might be cited to show that we should make haste slowly and cautiously.

The desire on the part of the public for knowledge concerning this direful malady is not surprising, and it is quite commendable. But the tendency on the part of certain members of the profession to the premature exploitation as true of that which is purely speculative and problematical, is deplorable. It is also unwise, it seems to me, to becloud the already obscure issues of the cancer problem by discussing in open court matters which are still *sub judice*. The educators of the masses with reference to cancer, to be safe and helpful, to win and retain the confidence of the public, must unite upon the *essentials* of what they teach. The only working basis for a rational campaign must consist in the dissemination, not of individual opinion, but of the consensus of those whose ability and experience are recognized.

I have recently received a personal communication from Dr. A. Hopkins Thwaites, of the University of Melbourne, Australia, who is now touring this continent on behalf of the Research Department of the Melbourne University, the Melbourne General Hospital, and his Government, investigating the cancer problem. In this communication, from which, at my request, Doctor Thwaites has permitted me to quote, the following remarks and suggestions occur:

The contemplation of the problem of the teacher in this campaign of education concerning cancer, and of the subject matter of his teaching, fills me with depression, if not with dismay, when I recall my own very recent experiences in the investigation of the cancer problem in America. If asked to name men of high professional standing, of nationwide, even worldwide repute in the study of cancer, one has no difficulty in doing so. Recently I have had the pleasure of meeting, learning the views, and studying the methods of several such men. I found that their views are not only widely divergent upon many fundamental points, but even directly opposite, not to say antagonistic. Yet each of these men might readily, and more or less justly, expect to be regarded as one suitable to undertake the education alike of the general prac-

titioner and of the laity. But in each case, I found, and saw the seeds of this confusion, that the teacher himself was not clear.

A third consideration of the situation in America brings to light the following facts: Well informed, able, and able to conduct research, many teachers, in the various fields, have important points in the cancer problem particularly well versed to the point of view, or perhaps the most important aspect of the whole question from the point of view of the public. The business of educating the public has already been taken in hand by the lay press with deplorable results. The stir thus created, and the fixing of public attention upon the subject, has provided golden opportunities for those few mercenary men who are to be found even within the sacred circle of the medical profession and has at the same time brought rare and radiant joy to those others who love to bask in the limelight. One cure following another, with the delighted assistance of the lay press, has been exploded upon the suffering public until the combined smell "reaches to heaven." Opposition has arisen between the several exponents of the several treatments, the several exploiters of the several "cures," and between the honest workers on the cancer problem and those who are known to be or suspected of being dishonest in their methods, until a zone of hostility has been drawn into which a self respecting man with a new method or a new idea will hardly dare venture.

The resultant of all these forces, so apparent even to the stranger within your gates, is chaos. Nevertheless, it is a fact, and one which must be recognized, that the educational cancer campaign is upon you. The time is past when you might have considered the advisability of initiating such a campaign in the light of our present knowledge. All that remains for you now is to see that the campaign already begun shall achieve as much of good and as little of harm as possible. Recognizing the present chaotic condition, it seems to me that the indications are strongly in favor of a standardization of teachers and of things to be taught.

Constructively it appears to me that such an educational campaign as proposed should produce good results, provided, 1, the teachers are, in all respects, suitable and competent men and women; 2, the right things are taught in the right way; 3, the medical practitioner is taught as well as the present, prospective and potential patient; 4, a good deal of what the layman has learned for himself and what he has been taught by the deplorable self ordained educational force of the lay press, influential but misguided medical men, charlatans outside the medical profession, and charlatans inside the medical profession, be untought.

The first two of these requirements, taken together, involve almost the total of them; they also involve practically all the difficulties of the situation. For upon whom shall rest the high responsibility of inculcating in the public mind those ideas and principles which will yield the highest economic and human values, both now and in the future? What can be taught safely and expediently, with regard to the inadequacy of our present knowledge concerning cancer, and to the possibilities of future changes and developments in those views which we now hold?

Let us look for a moment, then, at some of the questions involved, and see what may with wisdom be selected from the maze of uncertainty to be employed as ammunition in this campaign of education. We may for purposes of convenience consider this under three heads: 1. Cause; 2, treatment; 3, prevention.

#### CAUSE.

The answer to the question asked on all sides by the public, What is the cause of cancer? is one which, in the words of Shakespeare paraphrased, should give us pause. For it is ever to be remembered that in the fabric of theory, the woof of cause is always interwoven with the warp of cure. The tendency of man to institute treatment in line with his conception of cause is as old as the race and accounts for the fact that imagination has been given



will play in the evolution of theories concerning the etiology of cancer, and that the therapeutic history of the disease is one of the most fantastic in the annals of medicine and surgery.

The records of the past furnish a bewildering array of theories and a discouraging diversity of opinion regarding the origin of the disease—each theory and each opinion upheld as enthusiastically by its advocates of hundreds of years ago as by those of this year of our Lord, 1915. The factors, as we know, which have been accorded a causative role in the production of cancer range from the three "humors" of Hippocrates, Celsus, and Galen, through virtually all the individual tissues of the body, and to a bewildering number and variety of extraneous agencies, from tomatoes to earthworms, and from "invisible animals" to porterhouse steak and English mutton chops, with tea, coffee, alcohol, and worry thrown in for good measure.

Walshe,<sup>1</sup> in 1846, referring to the various theories of the origin of what he called the "cancerous substance," said:

"The theories of cancer are either so amazing in their absurdity, or so trifling in their importance, that the results of sound reasoning have been rarely applied to them, during the last half century. The reason may well be spared an inquiry into speculations ascribing cancer to some sort of animal, or to some sort of fungus, converted into an acrid and destructive fluid—to the presence of a gas possessing properties analogous to those of hydro-sulphuric acid—to fluids spontaneously effused and rendered corrosive by putrefaction—to the deprivation of the nervous fluid—or to the presence and action of a virus composed of an ammoniacal fluid containing oxide of nitrogen in excess. . . . With these vain hypotheses may assuredly be classed that which, under different forms, seeks to connect the appearance of cancer with the presence and agency of parasitic animals. I should indeed scarcely have conceived it necessary to advert more particularly to this theory than to the others, just mentioned, had it not been very recently revived with considerable pretension.

This statement by Walshe, who was a distinguished member of the medical profession of his day, a careful observer, and a fluent writer, antedated by more than half a century the campaign of education concerning cancer, but it holds today practically and perhaps more potently than it did in the middle of the nineteenth century, and serves to show how, so far as the etiology of the disease is concerned, the past is linked with the present. For the last influence of the old humoral conception of Hippocrates, Celsus, and Galen concerning the origin of cancer did not disappear until about the time when Walsh gave forth this opinion on the subject. The influence of the theories of the parasitic origin of the disease may be said to continue to be felt down to the present moment, as certain "schools" of cancer research workers still maintain this view in one form or another. Those who have followed the history of the modern study of cancer have been carried through a succession of hypotheses as to the causative influence of protozoa, entozoa, and various vegetable and animal parasites, some of which, like the poor, we have always with us. And since we have taken the public into our confidence in matters of cancer, and since we have been ourselves in *camera*, every new theorist, like every new evangelist, has a line of "trail hitters" in his wake.

While the essential cause of cancer still remains unknown there are contributory factors, more or less potent, and these are outlined at the close of this paper.

#### TREATMENT.

The existence of the state of affairs thus outlined would be of little consequence, perhaps, were it not for the fact that in the vast majority of instances the exploitation of a theory concerning the cause of cancer goes hand in hand with the exploitation of a method of treatment based upon the given theory. And while the theory and its correlated method of treatment are being weighed in the balance by scientific investigation (provided it rises to that dignity), the advocates thereof are wasting valuable time in the life of one or more victims of cancer.

Furthermore, through the so called "popular" meetings, under the "joint auspices" of one kind or another, these views are—or at any time may be—promulgated, the secular press takes them up and scatters them broadcast, and if the particular theory is sufficiently strong in its "appeal" it is only a question of time until the surgeon is confronted with the request or demand, made by patients or their families, that such theory be tested in practice. My own experience in this regard is now a matter of record with respect to one far famed and now defunct method, popularly known as the "trypsin treatment,"<sup>2</sup> based on Beard's "irresponsible trophoblast" theory of the origin of cancer. Just now we have before us the "improper eating and drinking" theory of the cause of cancer, crystallized into a system of treatment in which the consumption of rice, to the exclusion of many other articles of diet, plays an important part. The latest exponent of this theory and method of treatment holds that by the persistent eating of rice, to the exclusion of the numerous other articles of diet which he considers conducive to the production of cancer, the disease may be prevented from developing, and, once initiated, the process may be effectually checked. In the preface to his recent volume on the subject of cancer, the well known and distinguished dermatologist expresses the hope that the pioneer work reported therein "may lead to the building of a strong and permanent structure regarding the true basic cause of cancer," and reassures his readers with the exclamation, "Truth never fears proof!" From such a statement the reader might naturally infer that the entire subject of the "true basic cause" of cancer has been settled, and that those who have spoken and written along a contrary line have either feared the truth or have evaded the truth. A careful reading of the volume, however, convinces the open minded that its author proffers an expression of hope rather than a verification of fact. Since the advent of Williams's book some years ago, the *Natural History of Cancer*, from which he largely quotes, much has been learned, and cancer has been found in all rice eating countries. And once again the seeker after truth is confounded by such a glaring conflict of opinion. For the "campaigners" have been seeking to promulgate the view that, in

<sup>1</sup>Walshe, J. H. *The History of Treatment of Cancer, Scientific Report with Introduction to the Treatment of Cancer*, No. 1, New York, 1846.

the light of the extensive experiments that have been performed since the beginning of the present century, none of the theories advanced—constitutional, parasitic, or strictly cellular—may be accepted as sufficient. The majority of students of the cancer problem are convinced that the true, or even a satisfactory working explanation of the nature of cancer, has not yet been discovered, and that the whole trend of investigation points not to a single cause, but to a number of causes.

While, therefore, the mystery which today obscures the essential cause or causes of cancer, may be cleared away tomorrow, and while the views held at present may of necessity be abandoned in the near future, the treatment of the disease must be carried on irrespective of the essential or "basic" cause. The generally accepted method of treatment must be the outcome of experience and not of theory if the health of the individual is to be safeguarded and life prolonged, once cancer has developed. It is unfortunate, therefore, that the practice is maintained by some experimentalists, therapeutists and surgeons alike, of demanding definite and sweeping conclusions from a single case—or even from many cases—of cancer "cured."

For here, again, we find the public, in larger or smaller integral part, renouncing what they conceive to be the evils of surgery and flying to others they know not of.

Even more unfortunate is it that the public, despite the campaign of education, is not able to discriminate between that which, in accordance with the law of the survival of the fittest, has stood and will continue to stand the test of time and experience, and that which, in accordance with the same inexorable, but sometimes slow moving law, will sooner or later find its way to the *nihil fit* column of the deadly parallel of worthy and unworthy methods of treatment. It is for this very reason that the list of remedial agents suggested and employed in the treatment of cancer contains many and curious things, ranging in diversity from green frogs and witchcraft to Christian science and faith cure.

I have called attention elsewhere<sup>3</sup> to the fact that we may not persuade ourselves, in smug twentieth century scientific satisfaction, that the dead past has buried its dead in this matter. On the contrary, the past has brought to the present many detachments of its army of therapeutic shades, and sometimes, in most unexpected guise, we encounter the reincarnation of some once familiar spectre.

For example, *Viola tricolor*, the modest pansy, whose prototype, "whether dog pansy, or sweet March"—so the monkish medical writers tell us—was used in the days of the Plantagenets in the treatment of most diseases, is found, just now, in the midst of the motley crew of reagents which are assembled in the latest "cancer cure." For is not the professor of experimental therapeutics of one of our leading medical colleges now employing a liquid extract, plaster, or pill, of a round dozen herbs, including *Viola tricolor*?

Far be it from me to say that the modest pansy, thus reinforced, may not do all in chorus that it failed to do alone. Its present reentry into the domain of cancer therapy is cited as a very pertinent

illustration of the extremely doubtful policy of publicity in matters pertaining to the treatment of cancer by new or new-old methods.

In connection herewith it may be recalled that, in 1901, a paragraph went the rounds of the press describing a "cure" of a tumor of the tonsil—the diagnosis of cancer having been "made certain" by microscopic examination of a small portion removed—by the application of fomentations made from an infusion of the leaves of *Viola tricolor*. The patient, in gratitude for her recovery, had some leaflets printed describing the mode of application of the remedy. Perhaps, in this instance, as in others, no member of the medical profession was in any wise responsible for the publicity. However that may be, the treatment of inoperable cancer by means of extract of pansy leaves was again heralded in the secular press, in 1903, in connection with a case of "cancer of the mouth," the diagnosis of which was not confirmed by microscopic examination, but was verified by "competent physicians." Following the announcement in the daily press of the "cure," the Middlesex Hospital, the London clearing house for such matters, tried the remedy in a number of cases on two occasions, with negative results.<sup>4</sup>

The laity who, it has been said, are "close on our heels," and who are certainly persistent in their effort to obtain knowledge concerning disease in general and cancer in particular, are aided and abetted in their search by the secular press, so that it is undoubtedly very difficult to keep anything strictly within the profession while it is being investigated, if it contains either wheat or chaff upon which the public mind can seize. This desire on the part of the laity for enlightenment concerning cancer has been met latterly by those who advocate the education of the public in such matters. Despite this fact, however, there is still more or less prevalent the idea that surgeons are unwilling to test nonsurgical methods of treatment of cancer, and the public therefore hails with a certain degree of exultation the press notices of the "new cures" which from time to time engage attention.

If the various so called cancer cures were employed only in hopeless cases, being used merely as adjuvants or as last resorts in the desperate effort to alleviate suffering, and if they were in no way harmful, the matter would be by no means so serious. Unfortunately, however, they are often brought into requisition where more rapid and better established methods should be used. They form, therefore, as I have repeatedly found, the settings of the deplorable pictures of "tampering," which are so often presented to the surgeon, the cancer hospital, and the home for incurables.

It is true, however, that those who come in contact with large numbers of patients suffering from cancer will find a certain proportion who are unwilling to undergo operation, or who, because of some complicating condition, cannot be operated on while the cancer is yet curable if surgical intervention were feasible, upon whom new measures may be tested with that degree of thoroughness which

<sup>3</sup>The Cancer Problem, New York, 1904, p. 207 et seq.

<sup>4</sup>I can personally remember at least one dozen or so patients treated with "cure" and "cure" of cancer, some by a "cure" of cancer, and some by a "cure" of cancer, and some by a "cure" of cancer.





that radium is useless in any except the most superficial and easily removed growth; another will say, given enough radium, he will cure any cancer. One will say the x ray not only does not cure, but aggravates cancer; another will say it should supplant the surgical instrument in the treatment of cancer. One—and this one represents the majority, fortunately—will advocate the radical removal of every vestige of cancer; another—fortunately the minority—will recommend this or that means to the exclusion of surgery. The patient, in the meantime, is in a state of bewilderment and uncertainty. Is it any wonder that he seeks the quack, whose positive assurances of absolute cure, with no return of the growth, inspire confidence and instill hope?

Never can we hope for universal unity, but we can and must secure agreement of authoritative opinion to guide the public in matters of health.

#### PREVENTION.

The employment of the diverse measures and methods, some of which are absurd and many harmful, to which allusion has been made, is the natural outcome of the mystery which has always surrounded the nature and cause of cancer. It has also been fostered by the difficulty which is so often experienced in differentiating the various forms of this disease from the dermatological manifestations of certain other maladies, and by the mistakes in diagnosis which have arisen from these factors. And here the patient faces the real dilemma, from which he may turn to health and happiness or to illness and death. For if the wrong diagnosis is made, the wrong treatment is practically inevitable. With the essential cause, which might suggest the treatment, unknown; with no uniformly trustworthy signs and symptoms to guide one to the diagnosis of cancer in its early stage; and with no reliable serodiagnostic test for the disease; the prevention of this malady naturally resolves itself into the elimination of the predisposing factors.

This brings us to the phase of the cancer problem, it seems to me, with which the campaign of education should chiefly concern itself, so far as the laity is concerned. Yet here we find the same need of standardization of what is to be taught that is encountered in every other phase of the question. Those who are especially impressed with the importance of heredity as a predisposing factor in the production of cancer, hold that eugenics will prevent the occurrence of the disease, and that by this means it may be entirely eradicated in time. Reference has already been made to one manifestation of the nutrition theory of prevention, viz., the rice eating plan. The elimination of all sources of chronic irritation, especially in regions which experience has shown to be especially susceptible to cancer, is the most generally accepted manner of preventing the disease. This includes all benign neoplasms which are so situated as to be subject to chronic irritation or repeated acute trauma, and the local manifestations of other diseases upon which cancer may be superimposed.

When the layman becomes thoroughly imbued with the probable dangers of all these, and many other predisposing causes of cancer, and when he

hears the varying opinions concerning the removal or the leaving alone of the lumps and bumps and other tissue manifestations whose harmlessness has been impugned, his confusion is still further confounded.

The campaign of education, therefore, revolves primarily not around the layman, but around the medical man. A very large proportion of cases of cancer, as encountered in private practice, in the hospitals which receive patients suffering from malignant disease, and in the pages of medical and surgical publications, if carefully studied, would serve as telling arguments in favor of instituting the campaign of education concerning cancer within the ranks of the profession first, and of standardizing, if such an expression may be employed, the accepted facts concerning the nature, course, diagnosis, and treatment of malignant disease, together with the consensus regarding the predisposing factors. When these matters have been agreed upon with a fair amount of uniformity; when general practitioners and specialists in other lines are thoroughly imbued with the importance of the most careful diagnosis and the utilization of all diagnostic methods at our command; or when they are frankly willing to send doubtful cases to those who will do this; we shall then be in a position intelligently and helpfully to educate the public.

I may be pardoned, in connection herewith, the reiteration of what I have repeatedly expressed, in substance, on other occasions: The campaign of education concerning cancer, to be rational and safe, must be made to apply first to the general body of the medical profession, and, through the profession, to the public at large. It must have for one of its objects the maintenance, upon the part of the physician, of a standard of ethics which insures the best interest of the patient, regardless of operative and mortality statistics; and the development, upon the part of the patient, of a spirit of confidence in, and cooperation with the physician. It should be aimed at health rather than disease; at physiology rather than at pathology. It must be directed toward the prevention of cancer by the maintenance of the general health as well as toward the eradication of the various factors, within and without the body, which are thought to exercise a predisposing influence in the initiation of the disease.

The following "articles of faith" are proposed as a working formula to be employed in the campaign of education pending the time when, by the slow process of evolution, the entire question of educating the public shall have been answered by the supreme court of expert knowledge fortified by experience:

#### ARTICLES OF FAITH.

Concisely, these articles constitute the platform upon which we unite to teach the public the lesson of cancer. These, I believe, we may teach, but very little else. The following articles are put forward as a guide to those professional men who will in turn guide the public.

1. The hereditary and congenital acquirement of cancer is a subject which requires much more study before any definite conclusions can be formed concerning it, and,



as the best current practice knowledge is followed, a total amount of 40 cases.

The concentration of information at court is less than feared. The newspaper, among the many, is not a monopoly and the government has no reason to be concerned regarding it.

so rare, if it really occurs at all, that it may be practically

4. Those members of the public in charge of, or in contact with sufferers from cancer with external manifestations should be advised to take the same precautionary measures as would be adopted in the

5. In the care of patients with cancer, there is much less danger to the attendant from any possible acquirement of cancer than there is of septic infection or blood poisoning from pus organisms.

6. In cancer, as in all other disease, attention to diet, exercise, and proper hygienic surroundings is of distinct value.

7. Notwithstanding the possibility of underlying general factors, cancer may, for all practical purposes, be at

8. When accessible, it may, in its incipiency, be removed so perfectly by radical operation that the chances are overwhelmingly in favor of its nonrecurrence.

cure, suffering in many cases may be palliated and life prolonged by surgical and other means.

10. While other methods of treatment may, in some cases, offer hope for the cancer victim, the evidence is conclusive that surgery, for operable cases, affords the surest present means of cure.

11. Among the many advances in and additions to cancer treatment, the improvements in and extensions of surgical procedure surpass those in any other line, and fully maintain the preeminent position of surgical palliation and cure.

12. There is strong reason to believe that the individual risk of cancer can be diminished by the eradication, where such exist, of certain conditions which have come to be regarded as predisposing factors in its production.

13. Some occupations, notably working in pitch, tar, paraffin, anilin or soot, and with x rays, if not safeguarded, are conducive to the production of cancer, presumably on account of the chronic irritation or inflammation caused.

14. Prominent among these predisposing factors, for which one should be on guard, are: General lowered nutrition, chronic irritation and inflammation, repeated acute trauma, cicatricial tissue, such as lupus and other scars, and burns, benign tumors—warts, moles, nevi (birthmarks), etc.—also changes occurring in the character of such tumors and tissues, as well as the occurrence of any abnormal discharge from any part of the body, specially if blood-stained, are to be regarded as suspicious.

15. While there is some evidence that cancer is increasing, such evidence does not justify any present alarm.

16. Suggestions which are put forward from time to time regarding eugenic, dietetic, and other means of limiting cancer, should not be accepted by the public until definitely endorsed by expert consensus. Such consensus does not exist today.

17. So far as we know, there is nothing in the origin of cancer that calls for a feeling of shame or the necessity of concealment.

18. It will be promotive of good results if members of the public who are anxious about their health and those who wish to preserve it will, on the one hand, avoid assuming themselves to be sufferers from one or another dreadful disease, but, on the other hand, will submit themselves periodically to the family physician for a general overhauling.

19. At all times and under all conditions there is much to be learned by and from the life of a tested man living a normal and moderate life.

20. The finding of any abnormal condition about the body should be taken as an indication for competent pro-

21. Watchwords for the public until "the day dawns" and the cancer problem is solved are: Alertness without apprehension, hope without neglect, early and efficient ex-

amination where there is doubt, early and efficient treatment when the doubt has been determined.

The adoption of the measures thus outlined for the education of the profession and the public, it seems to me, will have both direct and indirect value for present, prospective, and potential sufferers from cancer by extending the knowledge of the importance of early diagnosis, and by improving the body of statistical and general knowledge concerning cancer.

Such a campaign should be very potent in emancipating the patient from his dilemma, in destroying the hydra headed monster of doubt, fear, and disease.

34 CRYSTALLOGRAPHY

## WHAT DOES SURGERY OFFER THE PATIENT WITH CARCINOMA OF THE STOMACH?\*

BY JOHN B. DEEVER, M. D.,  
Philadelphia.

What surgery can offer depends upon an early diagnosis and immediate and radical operation with removal of the lesion, be it already carcinoma or gastric ulcer, which is a forerunner of carcinoma. The possibility of surgical cure from operation depends on the time it is done, the site of the lesion, the type of malignancy, and the extent of operative procedure; by this I mean the thoroughness and dispatch with which it is accomplished.

We must diagnose these cases early, as there are no pathognomonic signs of cancer of the stomach in the operative stage, and to know one's limitations in this respect and insist on surgical exploration is essential.

By exploration I do not necessarily mean opening the abdomen alone, but the stomach as well, if a diagnosis cannot be made by inspecting and palpating the stomach wall. This is my routine practice and I have no reason to regret having adopted it. The surgeon has not yet been born, who by sight or touch can always make the differentiation between carcinomatous infiltration and the inflammatory infiltrate of a chronic ulcer; between the glandular enlargement due to metastases and that due to hyperplasia. For this reason we should not ask the physician for a diagnosis of cancer. What we should ask is that suspicion of malignant disease of the stomach demand a surgical consultation and surgical treatment.

As Friedenwald has stated, inasmuch as the early diagnosis of gastric cancer is still so uncertain, exploratory incision should be urged on all persons over forty years of age, having gastric symptoms which are not relieved by a few weeks' treatment, especially if there is loss of flesh, absence of free hydrochloric acid, or if occult blood is present in the stools. I take exception to the stress laid upon the absence of free hydrochloric acid and the presence of occult blood in the stool, as in my experience, except in late cases, these two findings are not of much moment.

\*Read before the 1906 Philadelphia County Medical Society, June 20.

A few weeks' treatment does not mean a few months or a few years, because treating a suspicious case of cancer of the stomach with medicine, dieting, or duodenal buckets is taking away from the patient his only chance of cure. Medical treatment has never cured a case of this disease, and while the operative mortality is eighteen to twenty per cent., the mortality without operation is 100 per cent.

Cancer of the stomach causes about one per cent. of the total death rate. Less than one per cent. of these cases come to the surgeon and less than one quarter are suitable for operation.

The onset may be very insidious and quite unnoticed by the patient and physician, it being sometimes an accidental discovery. Patients may enjoy apparent health for months, with undisturbed appetite and digestion, maintenance of strength and nutrition, even when extensive metastases are present. It is cases occurring other than at the orifices that are especially apt to be latent.

Ossler reports such a case. A woman developed first subjective signs of indisposition five weeks before her death; the earliest symptom being a sudden pain in the right side of the abdomen coming on while she was at work and apparently in perfect health. Rapid weakness, jaundice, and vomiting followed. At autopsy the primary growth was found in the pylorus, where it formed a valvelike opening permitting food to pass through. The liver was almost entirely replaced by metastatic growth; all this with symptoms of less than five weeks' duration.

In the treatment of benign ulcers of the stomach as well as of the duodenum, it is my practice to excise them when it is surgically possible, and I can say that this is practically always the case. In the event of ulcer only, be it one that might undergo malignant change, has not the patient been given the best chance of cure by excision?

That a percentage of gastric ulcers do undergo malignant change has been proved. Wilson and McDowell have testified that out of a series of 399 pathological specimens examined by them the following was found:

|                                  |                |
|----------------------------------|----------------|
| Ulcer with doubtful cancer ..... | 4.8 per cent.  |
| Ulcer with positive cancer ..... | 15.8 per cent. |
| Ulcer with advanced cancer ..... | 36.8 per cent. |
| Cancer with doubtful ulcer ..... | 42.6 per cent. |

The majority of cases of cancer (sixty per cent.), like ulcer, are situated in the pyloric region or on the lesser curvature, and are easily accessible. They produce early symptoms of obstruction, and even if a small movable tumor is palpable in this region, it holds out hope of cure if removed. The minority are found in the fundal portion about the cardiac orifice and are usually extensions; in these cases operation holds out no hope, as they are to all practical purposes inoperable. A jejunal fistula is all that can be promised, and is a glaring sign that some one has blundered in diagnosis.

A word about laboratory findings. Absence of free hydrochloric acid, heralded as a constant sign, has not been such in my experience. It is more likely, as we all know, to occur late in the disease and is often found in carcinomatous disease in other

organs of the body, and is, therefore, of no great diagnostic value.

I have had no experience with the glycoltryptophan and the Wolf-Junghaus tests, in which the quantitative estimation of soluble albumins in gastric contents forms the basis of the differentiation of benign and malignant processes in the stomach.

The x ray in the hands of an expert with a large experience in these cases, is of great value in making early diagnosis, but in the presence of negative x ray findings the surgeon should not be deterred from opening the abdomen, dispelling mystery, and revealing the truth. I beg to submit a communication from my friend, Dr. George E. Pfahler:

Answering your inquiry concerning the early diagnosis of carcinoma by means of the Rontgen rays, I believe that carcinoma of the stomach can be diagnosed by means of the Rontgen rays in nearly all cases, as early as it will give rise to symptoms, providing the work is done carefully by means of fluoroscopic and plate study. Doctor Stewart, of New York, has recently shown to us the plates of three cases which showed the characteristics of carcinoma, which at operation could not be decided as carcinomatous by the surgeon, and which were later proved to be carcinomatous by microscopical study.

Furthermore, the diagnosis of ulcer of the stomach can be made in the majority of cases, and here the fluoroscopic study is of the most importance. This enables one to make the diagnosis in the precancerous stage, and if such a study is made in cases having a previous ulcer history, at a stage when their symptoms are very indefinite, many more cases of carcinoma will be recognized in the operable stage.

Cancer of the stomach, like cancer in other portions of the body, varies greatly in its manifestations of malignancy. In a generic sense all cancer of the stomach is adenocarcinoma, being derived from the glandular epithelium. In growth, most cancers reproduce this glandular structure and are therefore termed adenocarcinoma in the more narrow pathological sense. The energy and direction of the epithelial proliferation have a great bearing upon the outcome of the case, but are factors which cannot be determined clinically. Some cancers grow slowly, others rapidly. Some form but small local tumors and metastasize with great freedom and rapidity to the liver, the regional lymph nodes, and less frequently to other structures. Still other growths reach a large size locally and are slow to metastasize. I recall one case of a woman referred to me by Dr. William Pepper, who had an enormous mass of carcinoma in the pyloric region of the stomach. I excised the pyloric portion of the stomach at the time, four years ago, and she is still living, though she has an evident local recurrence which, like the primary growth, shows but little disposition to generalize.

Certain types of cancer infiltrate diffusely and with remarkable uniformity, the wall of the stomach itself producing thickening and occasionally that peculiar state known as linitis plastica or leather bottle stomach.

There is a marked difference in the resistance of the gastric tissues to cancerous invasion, and the fibrous tissue deposited as a result of the presence of a growth varies greatly. When it is excessive it retards the spread of the cancer and forms an exceedingly hard type of growth known as scirrhus. About half of the pyloric growths present this scir-

round character, while in the other portions of the stomach the latter type are more prevalent.

Cancer of the stomach is a very uncommon variety of gastric cancer, but is more favorable than the usual variety. It grows slowly, metastasizes slowly, and is therefore most amenable to operation. If left alone it is, however, like the other types of cancer, uniformly fatal. The uncertainty which always hovers about any clinical idea of the pathological variety of cancer, which may be found even in the evident case, will practically always justify exploration in the hope that something may be done. It does not, of course, justify delay, but dictates the greater necessity of early diagnosis in the rapidly metastasizing types.

The operation of choice is subtotal gastrectomy with wide excision of involved glands and a posterior gastroenterostomy.

Polya's new operation, of bringing a loop of jejunum through the transverse mesocolon and anastomosing it to the proximal end of the cut stomach in its entirety, holds out the possibility of a greater area of extirpation.

The mortality of gastrectomy is high at present, but with increased diagnostic skill and earlier operations we may hope to approach the mortality of other major surgical work. A gastroenterostomy done for pyloric cancer is a poor makeshift, and unless performed for relief of obstruction only in an inoperable lesion, is worse than useless and reflects little credit on the surgeon.

The end results of operation upon carcinoma of the stomach at present suffer from the fact that most cases are operated in at the late incurable stages. The combined statistics of the large clinics indicate that from twenty to thirty per cent. of all patients having undergone gastrectomy for carcinoma of the stomach, will live more than three years after operation, and that from ten to twenty per cent. will be alive at the expiration of the five year period. That these figures can be much improved by earlier surgery there can be no doubt.

Finally, operate in all cases of cancer of the stomach, operate early, and, if unable to make a diagnosis, operate to make it.

WALTER WATSON, M.D.

## THE INCISION OF TUMORS FOR DIAGNOSIS.

By ROBERT E. EWING, M.D.,  
Surgeon.

The essential basis of the competent treatment of malignant tumors is a full knowledge of their point of origin, their pathological nature, and their natural history. As this knowledge becomes more and more comprehensive, each malignant tumor assumes the character of a specific disease. The modern conception of tumors requires one to distinguish between rodent ulcer of the skin and epidermoid carcinoma of the tongue just as sharply as between carcinomas of the surface epithelium, but they arise under wholly different conditions, pursue divergent courses, and present quite different therapeutic

problems. They are specific clinical and pathological entities, quite as much as are eczema and psoriasis. It can no longer be regarded as a sufficient diagnosis to pronounce a tumor to be simply carcinoma or sarcoma. In fact, such a partial diagnosis may be without any practical meaning whatever, since some processes to which these terms are attached are benign and self limiting, while others are malignant and invariably fatal.

When the tissue of origin is added to the general morphological diagnosis of a tumor, the information conveyed is vastly increased. A carcinoma of the tongue at once suggests a very different problem from that of carcinoma of the skin, and in the minds of surgeons and pathologists the category of periosteal sarcoma is far more formidable than that of benign epulis.

Yet the determination of the exact tissue of origin is quite incompetent to reveal the practical significance of the tumor process. In each organ there are many variations in the natural history of carcinomas and sarcomas which the surgeon must recognize before he can grasp the significance of the condition and design appropriate treatment.

Thus the giant cell sarcoma of the tendon sheaths is a benign process, whereas giant cell periosteal sarcoma arising in the same region is a highly malignant and dangerous disease. A papilloma or papillary carcinoma of the tongue pursues a very different course from that of infiltrating carcinoma of this organ. It is quite possible that a very experienced clinician may accurately estimate the nature and origin of a tumor and its natural history in an ordinary clinical examination, and it is highly desirable that this type of clinical judgment should be developed to the highest degree, but at present it is a matter of universal experience that clinical diagnosis receives invaluable aid by supporting its conclusions with the microscopical study of tumor tissue. Indeed so definite and decisive is the evidence furnished in many instances by microscopical study, that the practice of resting the diagnosis on microscopical criteria has become practically universal, and under many circumstances no diagnosis of a malignant tumor is regarded as satisfactory unless supported by microscopical study. Many would even go further and maintain that it is in the interest of both patient and surgeon to determine before treatment, not only the general malignant character of a tumor, but its exact nature and probable grade of malignancy so far as this may be judged by the microscope. While strongly urging that the general clinical data are always of importance, sometimes more important than microscopical structure, often unwisely neglected or imperfectly weighed, the writer finds himself an exponent of the extended microscopical study of tumors before operation for the purpose of determining as far as possible the exact origin, nature, and probable course of the process in hand. This belief is of course nothing more than the generally accepted tenet of the medical profession, so that the practice of removing a portion of a tumor for diagnosis before operation has grown to extensive proportions.

It has appeared to many, however, that it is possible to abuse the privilege of cutting into malignant tumors before extirpating them. It is said that the



trauma of the incision tends to spread the disease. In many cases it is not easy to obtain a portion of the tumor itself, while false conclusions are reached by examining neighboring tissues instead of the real tumor. It is found that there are wide differences of opinion among different microscopists, that the nomenclature is confusing and inexact, that there is no uniform relation between structure and clinical malignancy. Finally it must be admitted that it is not always possible to obtain a competent opinion, since the field of microscopical structure of tumors is practically limitless, and familiar to few.

In view of these considerations, the writer purposes to present some of the conclusions which he has reached regarding the indications for the microscopical study of tumors before operation. Some of these conclusions are of a general character and others relate to several particular conditions where the decision rests upon the peculiar circumstances of the case.

1. The careful excision of a small piece of a malignant tumor by a sharp scalpel need not as a rule tend to disseminate or aggravate the disease. Dissemination of tumor cells requires sufficient force to propel the cells along lymph vessels or the opening of bloodvessels into which tumor cells may be carried. Tyzzer has shown that manipulation of mouse tumors by rather forcible compression may increase the incidence of pulmonary metastases in the animals, but the amount of compression caused by incision with a sharp knife can hardly be sufficient to force cells into neighboring lymphatics. It is doubtless wise to avoid crushing or undue compression of the tumor, but with due care it would seem that a simple excision of tissue can seldom encounter the risk of immediate dissemination of tumor cells. As for the opening of bloodvessels, the current is always against the chance of any cells passing into small veins or capillaries, while all large vessels should of course be avoided. The use of a small cautery has been recommended instead of the knife, but the objections seem to me to outweigh its advantages. It entails a much larger sacrifice of tissue which may be distorted by the heat and it produces more severe reaction, against which stands the sealing of small vessels, which is of doubtful importance. The inflammatory reaction following a clean excision is not a desirable sequel, but if no infection is introduced it is quite as likely to inhibit as to accelerate the local growth.

It has been stated that excision of small portions of certain tumors, especially cancer of the tongue, has aggravated the disease and reduced the chances of successful operation. This question is a matter to be decided by clinical observation, but I have not observed such unfortunate results in superficial tumors, and venture to doubt whether clinical observations will substantiate this claim.

2. Incision through the unbroken skin is seldom admissible for the sake of diagnosis. The skin is the chief protective against infection which, when once established in a tumor, greatly aggravates the disease. It is especially to be avoided with sarcomas of bones, muscle, and fasciæ, tumors of the breast, and in all growths in which incision of the skin involves also incision through a tumor capsule. In all such cases, wherever possible, it is better to

remove the entire tumor by an incision which permits of enlargement for a more extensive operation. Particularly unfortunate results may occur when an incision of the skin is followed by a deep dissection in the effort to reach an ill defined and inaccessible tumor. In such cases one may fail to secure a portion of the tumor and may submit for examination a portion of the inflamed surrounding tissue; the tumor tissue is often crushed beyond recognition, the tumor capsule may be widely opened, and infection may be carried in, while the considerable trauma frequently aggravates the tumor.

An exception to the rule of the inviolability of the skin is found in tumors of lymph nodes. I know of no way of establishing the diagnosis of tumors of lymph nodes, Hodgkin's granuloma, lymphosarcoma, or endothelioma, except by examination of an excised lymph node, and I have not learned of any unpleasant results from such procedure. Incision into an infiltrating lymphosarcoma, however, is to be avoided under practically all circumstances.

3. The clinical history is an essential basis for the correct interpretation of microscopical structure. This history should include the age of the patient, the clinical diagnosis, the exact location, size, rate of growth, duration, and probable origin of the tumor. Failure to submit these data is responsible for much of the confusion which arises in the dealings between surgeons and pathologists. The surgeon too often assumes that the morphology of tumors is absolutely specific, whereas it is just as much more complex than the clinical signs as the microscope magnifies the tissues. The pathologist too often undertakes to construct a clinical diagnosis from a small scrap of tissue, whereas he is able to pass merely on the material submitted. All the foregoing clinical data have a bearing, often quite decisive, on the interpretation of microscopical structure, and in many cases it is only in the light of full clinical information that the structure of the pieces of tissue becomes of clinical value. There are exceptions to this rule, for the structure of epidermoid carcinoma, melanoma pigmented and pigment-free, renal adenoma, chorioma, and many other tumors, is specific. A positive diagnosis of Hodgkin's disease may be made from a tumor removed from the spinal canal, and correct diagnosis of gastric adenoma has been based on an intrascapular metastasis, but in most cases accurate clinical data are necessary and often essential for any significant interpretation of microscopical findings.

4. The prognosis of a tumor may to a considerable extent be based on the microscopical structure. This assertion may be successfully maintained just to the extent that the pathologist is able to interpret the clinical diagnosis from the microscopic section. There are numerous instances in which such a diagnosis is possible and among them may be mentioned Hodgkin's granuloma, malignant lymphosarcoma, choriocarcinoma, embryonal carcinoma of the testis, carcinoma of thyroid, osteogenic sarcoma of humerus, femur, or trunk, and many other tumors of which the prognosis is practically fatal.

In another group of cases the potential malignancy of the tumor may be judged with much accuracy from the histological structure, but its actual clinical course may be subject to wide variations,

...on the age of the patient, the location of the tumor, and its size and duration. The success of this type of diagnosis will depend chiefly on the experience of the pathologist and the clinical data at disposal. While errors in judgment resulting from inexperience must doubtless occur in this field, I am heartily in favor of attempting this type of diagnosis wherever possible. In mammary cancer, for example, it is highly important to distinguish between comparatively benign papillary adenocarcinoma, which carries a good prognosis, and true alveolar carcinoma, which in young subjects is nearly always fatal. Each organ presents its own scale of potential malignancy for the various morphological types of carcinoma. In my own experience I have to acknowledge errors in judging the potential malignancy of some giant cell sarcomas of bone, but these errors were due to inexperience, and not, as has been somewhat widely proclaimed, to lack of relation between the histological signs of malignancy and the clinical course of the tumor. In rare instances highly atypical tumors with pronounced histological signs of malignancy fail to display malignant clinical features, but these cases are rare and I see no reason why they should not be catalogued and called to the attention of microscopists and surgeons.

5. The use of frozen sections, while occasionally of decisive value, encourages hasty conclusions and readily leads to error. It is probably most often employed in operations on the breast where it is very prone to mislead. It should be replaced as far as possible by the gross examination of the whole tumor, which in the great majority of cases yields signs of malignancy or of benign qualities which are quite as conclusive as are microscopical pictures. The knowledge of the gross diagnosis of tumors is a much neglected field the development of which is retarded by reliance on frozen sections. Most pathologists who are frequently called upon for frozen sections, make their diagnosis on the gross appearance of the tissue and use the frozen section for confirmation. Where the gross appearance leaves doubt, the frozen section usually strengthens the doubt and I have known it distinctly to mislead when suggesting a conclusion contrary to the gross diagnosis. The gross examination proceeds under the great advantage of including the whole mass of tissue submitted, whereas the frozen section can apply only to one portion or successive portions, the choice of which depends wholly on the examiner's capacity to recognize carcinoma in the gross. In the absence of wholly characteristic clinical and gross anatomical signs of malignancy it is unwise to risk the sacrifice of important structures, such as half of the tongue or a limb, without resorting to microscopical section. With the modern improvements in technique the frozen section often furnishes a prompt and trustworthy decision, but when the structure of the tumor is atypical, more time should be given for a deliberate study.

6. No rigid rules can be safely followed in deciding when to remove a portion of a tumor for diagnosis. The conditions surrounding the growth of tumors are so variable that each tissue and organ must be considered by itself. It may therefore be

common situations where the question of microscopical diagnosis arises.

*Skin.* Superficial elevated, warty, or ulcerating tumors of the skin, or inflammatory processes suggesting tumors, may I believe be safely subjected to the trauma of incision. In most cases the establishment of the exact nature of the process is far more important to the patient than the inconvenience of a slight operation. The tissue should include the edge of the lesion, with a border of normal skin, and the derma. Pigmented moles and all plain or suspected cases of melanoma form a peremptory exception to this rule, and should not be touched except by liberal excision. Small rodent ulcers are also extremely dangerous when narrowly excised.

*Lip.* There appears to be little excuse for cutting into small early epidermoid cancers of the lip, which should be recognized in the gross and completely excised or otherwise treated. When the lesion is larger and ulcerating, a minute portion of tissue may safely be sacrificed for diagnosis.

*Buccal and lingual mucosa.* The necessity for microscopical diagnosis of ulcerating lesions of the mouth, pharynx, and tongue often arises, and the careful removal, without crushing, of a small portion of the edge of the ulcer seems permissible. In deference to contrary opinions extreme care in the operation must be urged.

*Esophagus.* Janeway has devised an instrument by which a small fragment of tumor may be removed through the esophagoscope, and in a series of cases he has been able to establish the diagnosis of some very early as well as of advanced lesions.

*Larynx.* The early diagnosis of carcinoma and other lesions of the larynx is often accomplished by examination of a small fragment snipped by a suitable cutting forceps. This procedure does not appear to aggravate the disease, but several sections are sometimes required to locate the tumor.

*Stomach.* By gastroscopic examination, carcinoma or ulcer of the stomach may be located and a small portion of the affected tissue may be safely removed by an instrument devised for this purpose. Although the procedure is not without hazard, the injury to the stomach by the removal of tissue does not appear to be any contraindication.

*Rectum.* The character of polypoid or ulcerating tumors of the rectum may be safely determined from portions of tissue removed through a speculum, but incisions into hard cancerous strictures should be avoided.

*Bladder.* Villous papilloma of the bladder is often identified from fragments of the tumor found in the urine or in washings, or removed with the aid of the cystoscope. Carcinomatous fragments may also be thus obtained, but it seems undesirable to risk extensive incisions for the purpose.

*Prostate.* This organ is not accessible to probatory incisions, and since the existence of carcinoma can be excluded only by examination of the whole gland, a negative report on a portion of tissue is of little value.

*Breast.* Mammary diseases in which a probatory incision through sound skin is indicated, are rare. When the question arises between chronic mastitis and carcinoma, if any incision is made, it is usually the safest procedure to remove the whole breast by



Warren's plastic resection and submit the entire organ for gross examination. If no malignant process is found, one has merely removed a menace to the patient, since any chronic mastitis which has progressed so far as to suggest carcinoma frequently develops into carcinoma later. In women under thirty-five years with localized chronic induration of the breast, it is perhaps permissible to excise a portion of tissue for frozen section. I have known such a procedure to save the breast without subsequent recurrence of disease. In all such cases, however, it is safer to excise the entire suspected area. If the excised tissue proves to be carcinoma, it can hardly be doubted that the best surgical principles have been violated, but it is perhaps too much to assert that the patient's chances have been jeopardized if the probatory incision is immediately followed by radical operation. It is much more injudicious to remove a small portion of a diffusely indurated breast and base the subsequent procedure on the results of examination of a single piece of tissue. In chronic mastitis, carcinomatous areas are often multiple and difficult to detect. The practice of aspirating cysts for diagnosis is also hazardous. In women under thirty years a single cyst is usually unaccompanied by a malignant process, while after thirty or thirty-five years, carcinoma is often found in the cyst wall, or in the neighborhood, or it develops later. Hence in a woman of thirty-five years it is unsafe to base conclusions regarding the condition of the whole breast even on the study of an excised cyst wall. The conclusion therefore follows that at no age is the excision of a simple cyst a satisfactory procedure. The very variable circumstances under which tumors and chronic indurative diseases of the breast arise, render it impossible to apply rigid rules governing the probatory incision. Each case must be considered by itself.

*Uterus.* The uterus is perhaps the organ most frequently subjected to probatory incision and curettage, and the material consists of polyps, eroded cervixes, and curettings. The removal of accessible polyps is accomplished without danger and often with curative results. The excision of a portion of a carcinomatous cervix, however, can hardly be treated as an inconsequential matter. Considerable crushing of tissues is usually inflicted in cutting deeply into the indurated cervix uteri, and unless the desired tissue can be obtained without undue manipulation it might better be dispensed with. There is much ground for attributing the high percentage of recurrence of cervical and corpus carcinoma to the mechanical dissemination of tumor cells during examination and operation. I have found tumor cells from a very small early superficial corpus carcinoma squeezed entirely through the lymphatics of the fundus by the trauma of hysterectomy. The disease recurred in the pelvic nodes. Although adenocarcinomatous polyps may be eradicated by curettage, and although diffuse adenocarcinoma may be strictly limited to the mucosa, energetic curettage would seem more likely to disseminate tumor cells into the lymphatics than to cure the disease. The practice of curettage for the treatment or diagnosis of corpus carcinoma must, on anatomical grounds, be regarded as distinctly dangerous. The very careful removal of a limited por-

tion of the suspected endometrium is all that can be approved, and it may well be that the cervical dilatation required to reach the fundus is itself a distinct hazard.

*Lymph nodes.* In systemic diseases of the lymphatic system, the excision of a lymph node is usually the only safe method of diagnosis and cannot be regarded as disseminating the disease. It may sometimes be avoided by previous examination of the blood. On the other hand, the practice of removing enlarged lymph nodes for the diagnosis or prognosis of carcinomas of adjoining mucous membranes must be deprecated or employed as a last resort. If the node is involved, no good has been accomplished and the site of the disease must still be determined. If the node is not involved, a barrier to dissemination has been removed and trauma inflicted, while the diagnosis still remains undetermined.

*Sarcoma of bones.* Incision through the intact skin to remove portions of suspected tumors of bone, or fascia frequently carries infection, often fails to reach the tumor tissue, may aggravate the tumor process through trauma, and sometimes leads to erroneous conclusions. Chiselling off portions of periosteum and hard bone in suspected sarcoma is especially to be deprecated. Only a very competent operator, fully acquainted with the gross anatomy of bone sarcoma, should undertake such incisions. With fungating sarcomas the excision of a portion of tumor tissue is usually accomplished with precision.

In general, the attitude regarding probatory incision of tumors should be conservative. The resort to this method of diagnosis is a confession of ignorance. The extent to which it must be employed depends on the experience and diagnostic capacity of the observer. It is possible by long training to recognize the nature of most accessible tumors by various clinical signs, and the hasty resort to microscopic diagnosis tends to hamper the development of other diagnostic methods and of general clinical judgment. In not a few instances the clinical signs are more specific than the microscopical structure of a tissue section. The microscope should be employed, therefore, only after other means have failed.

Having failed by other methods to establish a diagnosis, the wisdom of resorting to probatory incision must be determined for each particular case. There will always remain a large number of conditions in which the fullest possible clinical analysis leaves doubt of the nature of the disease, and when important variations in treatment may depend on positive diagnosis, the microscopic evidence must be invoked. The wisdom of removing tissues for diagnosis may often depend on the possibility of securing a competent pathological report. The assumption that any laboratory tyro who cuts sections in a chemical, bacterial, or commercial laboratory, or a drug store, is a competent judge of histopathology, appears to be widely held. Yet any surgeon who fails to investigate the technical standards of the laboratory where he sends material and the competency of the examiner who passes upon it, fails in his duty to his patient. I believe that all general pathologists will support the assertion that

the study of the relation of tumors to the various nutritive conditions of the body, requiring a mature knowledge of general pathology and a long practical experience with the operation.

Finally, the restrictions here suggested in the use of post-mortem examinations do not in any way apply to the thorough study of the tumor after operation. With the whole material in hand it is difficult to place any limit to the scope of the examination desirable or to the importance of the conclusions thus reached in determining the diagnosis, prognosis and further treatment of the case. It cannot be too strongly emphasized that the scope of this study must include, not only the microscopical structure, but also the gross anatomical features and the complete clinical record.

#### CONSTITUTIONAL OR BODY ELIMINATION

W. L. PEARSON, BURLINGTON, N. M., M. D.,  
New York.

From the New York State Cancer Hospital, etc.

With the large number of laboratory studies which have been reported concerning blood and urinary changes in cancer, it is surprising that so little attention has been paid to the clinical importance of these findings, and to the relation which body elimination bears to the production and continuance of the disease. The laity as well as the profession have, of late years, become so obsessed with the idea of its purely local character, and so carried away with the craze for surgery, that practically every one thinks only of local operative treatment, by the knife, x ray, radium, etc. And thus it happens that when cancer is suspected or diagnosed, the physician feels helpless and the patient only waits for an operation or death, which latter is now acknowledged to follow from the disease in about ninety per cent. of those cases.

And yet for many years eminent surgeons have time and again acknowledged their inability to cope with cancer, as such, and have contented themselves with attempting to remove the *product of the disease*, namely, the malignant new growth, glands, etc. But little regard has been given thus far to the real cause of this new growth, although infinite labor has been expended in the laboratory to discover its histological characters, mode of development, etc. And all this in spite of the fact which every one must recognize, that all growth, whether normal, abnormal, or malignant, depends upon the character of the blood supply, which again derives its quality from the food and drink taken, and the manner in which the metabolism of the system is carried out.

Cancer has too long been regarded as a purely surgical affection, and the surgeon as the sole arbiter of the fate of those suffering from this most fatal disease. With the steady rise in its mortality, of over twenty-five per cent. since 1900, as shown by the United States mortality tables, under this line of action, it would seem well for the medical men to take up the study and to endeavor to learn if there is not some basic cause, thus far overlooked, which may be found in the metabolic action of the system,

as influenced in many ways, such as by the diet, mode of life, etc. Should we not try to discover why cancer is increasing so greatly with civilized life, while it is rare in some animals and seldom if ever seen in certain aborigines? Literature is full of isolated facts tending to show conclusively that the disease is but an aberrant action of originally normal tissue cells, resulting from a vitiated blood stream.

Space does not permit the full presentation of facts which have been collated elsewhere,<sup>1</sup> nor to do more than mention the names of some of the eminent surgeons, there quoted, who have expressed strongly their belief in the constitutional nature of cancer, from erroneous living. Among these are Lambe, Abernethy, Willard Parker, Sir Astley Cooper, Sir James Paget, Esmarch, and Sir Arbuthnot Lane, as also Walshe, in his classical study of cancer. Finally, Dr. William J. Mayo, in his recent president's address before the American Surgical Association, has expressed himself in no uncertain way in regard to there being some constitutional cause leading up to the aberrant action of cells in cancer.

While the exact condition of the blood which excites normal cells to become cancerogenic and then feeds them in their luxuriant growth, is not capable of demonstration yet, and perhaps never will be, clinical study reveals certain conditions of the system so constantly observed in patients with this disease that there can be little if any doubt that they are contributory elements, at least, to the production of malignant disease; these relate to the conditions of faulty metabolism and faulty imperfect body elimination. These errors may be observed, not only in advanced and recurrent cases of cancer, but also in those which are in very early stages; indeed their occurrence in recently forming cancer, and in patients soon after operation forms a strong argument for their causative relation to the disease.

The evidences of imperfect metabolism and faulty body elimination in cancer are found in the condition of the blood, and in the excretions from the kidneys, bowels, and skin, and minute and careful study will seldom fail to detect these departures from normal in patients with this disease. It is impossible in this brief article to present any full account of these errors which have been elaborated in the reference already given, but a brief mention may be made of some of the most important items.

The blood is known to present great degenerative changes in cancer, which increase as the disease advances; the hemoglobin content tends constantly to fall and the red cells to exhibit various phases of degeneration. The white cells increase and the proportion of their varieties changes greatly. Unfortunately few if any studies have been made in pre-cancerous conditions of relative health, but it has been recorded that after the surgical removal of a cancerous mass there has been a decided increase of hemoglobin, as I have witnessed, and a high leucocytosis has disappeared, only to return again with the recurrence of the tumor. It is recognized that the cancerous cells themselves secrete a malignant hormone, which aids in increasing the depraved condition of the blood as the cancer advances; for just

as the particular and peculiar cells of the various secretory and excretory organs produce a hormone which probably influences other secretions, so all the cells of the body, healthy and diseased, produce something of a secretion which has some influence on the economy.

When cancer juice is injected intravenously a marked lymphocytosis arises, which is followed by the appearance of large mast cell myelocytes in the blood. This cancer juice is supposed to be autotoxic in cancer patients, and to comprise albuminoids, which being in quantities too great to be quickly neutralized, poison the system, especially the blood and the hematopoietic organs. In cancerous cachexia a diminution of carbonic acid, a constantly diminishing alkalinity, and an increase of acid principles in the blood have been definitely demonstrated,

be extremely deficient, both as to the actual quantity passed in twenty-four hours, and in its total solid elimination, which, of course, is the true indication as to the efficiency of this excretion. In many cases, even of very early cancer, in which the urinary secretion has been measured and recorded every day for weeks, I have found the elimination of solids often less than one half of the amount called for by the body weight of the patient. As the tumor has melted away under proper dietary and other general treatment, the kidneys have often brought up the removal of waste material to a normal standard. So constantly have I observed this faulty urinary elimination early and late in these subjects, that I cannot but believe that it indicates some defect in metabolism which has a bearing upon the genesis and rebelliousness of cancer.

*The action of the bowels, in regard to their true eliminative function, is a more difficult problem to study, and yet from long observation I am convinced that it plays a most important part in connection with cancer.* I am not aware of any laboratory studies which have been made concerning the intestinal discharge in this disease, and my deductions are entirely clinical. Sir Arbuthnot Lane, in one of his lectures on intestinal stasis, has recently emphasized the fact that one of the terminal results of this may be cancer, and the more I have considered the subject, in connection with very many patients, the more the truth of this statement is impressed upon me. It will surprise many to learn how very commonly there is imperfect intestinal elimination in the subjects of cancer, both in the very early, formative stages and throughout the whole course of the disease, which is further accentuated when the time comes for them to take morphine. So commonly have I recorded this, especially in private patients, that I might almost say that is the rule, and time and again I have noticed that if real constipation occurs there is an increase of pain in a cancerous lesion, with more or less of relief from active purgation. The constant occurrence of this imperfect intestinal elimination points strongly to the possibility that the toxins produced by the millions of microorganisms generated through intestinal stasis and fecal putrefaction are the real, incidental cause of cancer. While this is only a clinical conclusion, it is hoped that laboratory research turned in this direction will confirm the finding.

*The liver* has been shown by many researches to exhibit many departures from normal action in connection with cancer. Reid, from the Cancer Research Laboratory, in Manchester, England, reports that "in cancer the liver, while not involved in the disease, is still unable, for some reason, to perform its functions in synthesizing urea. The organ is functionally injured, no lesions having been found to explain its insufficiency. . . . cancerous subjects form proteids which the liver is unable to deal with, so that they are excreted unchanged, or nearly so." Blumenthal states that urobilin is increased in a large proportion of cases of cancer, and others have confirmed hepatic functional disorders in connection with the disease.

*The relation of the elimination from the skin to cancer* has, of course, never been studied, and perhaps never will be. But there are certain considera-

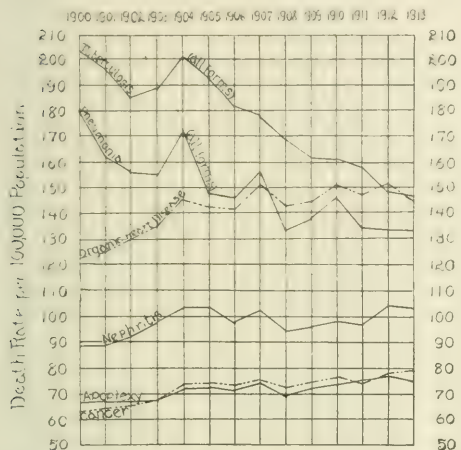


CHART: The mortality from organic heart disease, nephritis, poxemia, and cancer has risen steadily since 1900. It we accept the fact that the increasing death rate of the first three is largely the result of modern civilization, especially from erroneous eating and drinking, it would appear that cancer is due to the same cause. (From United States Mortality Statistics, 1913.)

pointing, in all probability, to the existence of an acid intoxication.

*The urine in cancer* has been investigated by very many observers, and although no definite and specific changes have been as yet found which are surely indicative of the disease, very many departures from the normal have been reported which are of significance, and under complete volumetric analysis the urine of a subject of cancer is rarely if ever that of health. Many observers agree that there is a disturbance of protein metabolism manifested in the urine, and an increase in colloid nitrogen to more than double the normal amount: there has also been reported an increased elimination of xanthin, oxyproteic acid, and urinary ammonia.

The urea in the urine is almost invariably diminished, often very greatly, as I have verified time and again in many cases. There is also an increase of aminoacid nitrogen, showing that the liver, even when not involved in the disease, is still unable to perform its functions in synthesizing urea.

The urinary secretion will constantly be found to



skin, which may be of an important connection with the general derangement or failure of elimination in this disease. We know that the skin performs most important functions in connection with regulating the heat of the body. While the relative amount of solids in the sweat is small, the daily total given off by the sudoriferous and sebaceous glands is not inconsiderable, and its character is known to vary considerably under certain conditions, urea and uric acid occurring at times, while cholesterol, an element of importance in cancer, appears in the sebaceous excretion. To connect the skin is apt to be dry and inactive, and possibly later researches may show that it also shares in the deranged metabolic condition connected therewith.

It is realized that the study of cancer along the lines here indicated is yet in its infancy, as it has heretofore been regarded almost wholly from its histological and surgical aspects. The microscope and experimental work on animals have seemed to engross most of the attention, to the relative exclusion of careful clinical observations of the real "precancerous" conditions occurring in the system, which lead up to the disease.

Endocarditis, nephritis, and apoplexy are shown, by the United States mortality tables, to have had a continuous and great rise in their death rate, per 100,000, of late years, and, as already mentioned, cancer has had also a coincident rise in mortality of over twenty-five per cent. since 1900. As the three former diseases are recognized to be largely due to the incidents of modern civilization, mainly in the line of erroneous eating and drinking, it would seem reasonable to ascribe cancer to the same cause. Faulty metabolism and imperfect elimination are characteristics of endocarditis, nephritis, and apoplexy, and close and continued observation will show them to be integral features of the bodily condition leading up to and associated with cancer.

ED. BOODER, ASSISTANT.

## CANCER OF THE SKIN.

By S. POLLITZER, M. D.,  
New York.

Cancer of the skin, as distinguished from epithelioma, is always secondary to cancer of the breast or of an internal organ. It appears in the form of firm nodules, pinhead to hazel nut in size, lying under the skin, which may be but slightly raised and of normal or faintly reddened color. The surface epithelium, at first freely movable over these little tumors, may later become confluent with them and break down, giving rise to ulcerating or fungating lesions. The course of these secondary cancers of the skin varies greatly; they may remain unchanged or with but little increase in size for a period of many months, or they may rapidly ulcerate; but a slow development is the rule. Cancer of the skin secondary to visceral cancer—true metastatic deposit the way of the blood stream. The lesions may occur anywhere in the skin, but are generally situated on the upper part of the trunk.

They are usually few in number and there may be but a single lesion of the kind.

Cancer of the skin, secondary to mammary cancer, is more frequent. The lesions are usually numerous and are present as the result of a direct dissemination from the primary growth by way of the lymph spaces. The primary growth in the breast is often small and may occasion no symptoms to attract the attention of the patient. The cutaneous lesions, too, are without subjective symptoms, and so it frequently happens that the patient pays no attention to the malignant disease which she is harboring. A woman of forty-two years was recently sent to me by her physician for an opinion as to the nature of a group of nodules in the skin of the breast, the first of which had been noticed more than eighteen months before. A tumor of the breast was distinctly palpable, but it had not occurred either to the patient or her physician that the innocent looking little nodules had any significance. In another case, I have known a physician with more courage than intelligence, calmly go on boring out the cancerous nodules in the skin of the breast with a stick of silver nitrate for a period of six months before it occurred to him that a diagnosis might be desirable. By that time, there was extensive glandular involvement and the case was hopeless. I call attention to these cases to emphasize the fact that cancer of the breast, like cancer elsewhere, may go on for years without causing enough subjective disturbance to attract the patient's serious attention, and that the presence of one or more painless nodules in the skin of the breast appearing in a woman of middle age should be the signal for a thorough examination of the breast itself.

Cancer *en cuirasse* is a form of cancer secondary to mammary cancer that is extremely rare and presents such striking features that diagnosis offers no difficulty. The boardlike hardness of the affected area, its slow extension, the presence of pinhead, shining lesions that resemble lichen planus papules, the frequent intense itching, and the edema of the arm on the affected side, form a picture that is readily recognized. The primary growth in the mammary gland may escape easy detection under the tensely infiltrated skin.

All the various forms of epithelioma may be classified under two groups—the superficial, flat, or discoidal, and the deep or nodular. The superficial or discoidal form begins as a minute pale red or fawn colored, flat topped, or rounded papule which slowly increases in area and soon presents a more or less raised, shining, or pearly border, with a somewhat depressed centre. Sooner or later a crust is formed—generally as the immediate effect of a slight trauma—and recurs when it is removed, the little ulcer thus disclosed showing no tendency to heal. The lesion slowly extends, encroaching more and more on neighboring tissue, and may ultimately destroy an enormous extent of surface, involving perhaps the greater part of the face, and terminating in extension to the lymph glands and general carcinosis, or death may result from hemorrhage following erosion of a large artery or vein. Sometimes the epithelioma is preceded for many years by a circumscribed area of superficial scaling, on part

of which a crust may develop, and the lesion will soon present the ordinary appearance of a superficial epithelioma and run the usual course.

Sometimes the formation of an ulcer on an epithelioma is followed by an exuberant outward growth of the neoplasm, giving rise to the hypertrophic, papillary, or fungating variety of epithelioma. This exuberant growth may later break down and leave the ordinary appearance of an ulcerated epithelioma, or it may persist for a long time as a cauliflower excrescence, which becomes denuded of its epidermic covering and presents a bright red surface covered with a scanty, viscid, seropurulent secretion.

Another modification of the discoid or superficial variety of epithelioma is that known to English writers as rodent ulcer. The basis for this distinction is wholly clinical. The process is usually limited to the upper portion of the skin, though extension to the deeper tissues and even the bones, with involvement of lymph glands occasionally occurs. As a rule, rodent ulcer persists as a superficial lesion for an indefinite period. Cicatrization of one part of the lesion may occur while the ulcer extends at another, an irregular serpiginous outline resulting. Rodent ulcer is most frequently found on the upper part of the cheeks, the sides of the nose and near the margins of the eyelids. The firm, scarcely raised border, the hard, irregular floor, showing no granulations, and the scanty secretion, are the characteristic features.

In the deep or nodular form of epithelioma, the process begins as one or more nodules situated under the epidermis, which at first may or may not be raised above the surrounding level. With the growth of the tumor, the surface epithelium becomes involved, breaks down, and the lesion then presents the usual appearance of an epitheliomatous ulcer. The ulceration is commonly deeper, and the amount of new growth around the ulcer greater, than in the superficial form. The nodular form is far more apt to result in involvement of the neighboring glands than the superficial form.

A special form of epithelioma not included in the foregoing classification is that known as Paget's disease of the nipple. As the disease sometimes occurs in other regions—scrotum, thighs, buttocks, abdomen, etc.—the name, malignant papillary dermatitis, is perhaps preferable to the original term. The disease begins as a dermatitis simulating a moist and crusted eczema. The diagnosis is based on its chronicity, its resistance to treatment, the deep red color, the denuded, granulating, moist or crusted surface and the sharply marked, slightly raised circinate border of the lesion. Cancer of the breast—in the case of disease of the nipple—and involvement of lymph nodes, with the usual termination, is inevitable unless radical intervention stops the process as soon as a diagnosis is made. The progress of the disease, however, is frequently very slow. I have recently sent a woman of fifty-one years to the operating table, in whom the disease had been present for fifteen years.

The course of an epithelioma can never be accurately predicted. The rule, subject to many exceptions, is that the growth is slow, and many years may elapse before the patient finds the little sore

worth noticing. A small superficial lesion may remain stationary for an indefinite period, and then quite suddenly begin to extend rapidly; or its growth may be rapid from the start. The deep or nodular forms are more apt to extend rapidly, and glandular involvement occurs more frequently. Epitheliomata situated on the lips or on the sides of the face in front of the ear, where the normal movements of the underlying muscles produce alternating pressure and tension, are apt to result in early gland involvement. Involvement of the glands is rather rare in the superficial forms—discoidal, hypertrophic, and rodent ulcers.

It would be vain to attempt a description of all the variations which may be presented in the clinical picture of epithelioma. The diagnosis is usually made without difficulty. Any persistent crusted or ulcerated lesion of the face or hands in a patient at or after middle age, is probably epithelioma. The hard, raised, waxy border, the hard nodular base, the tendency to bleed on removal of the crust, the history of a gradual development, of a previously existing "fleshy mole," or of a long continued scaling or warty patch—these are sufficiently characteristic features to warrant a diagnosis of epithelioma. One form of epithelioma, fortunately rare, presenting the picture of a superficial scaling lesion with abrupt faintly raised borders and spreading superficially for a long period without producing ulceration, occurs on the mucocutaneous surfaces—the lips and the glans penis, and presents a picture so different from the ordinary forms that even the expert will hesitate to make a positive diagnosis in the absence of a microscopical examination. Epithelioma is often confounded with lupus. There is no reason for confusion. Aside from the clinical differences, lupus is a disease that has its inception in childhood or adolescence; epithelioma is a disease of advancing years. An ulcerating gumma is sometimes mistaken for epithelioma. The borders, the floor, and above all the profuse seropurulent secretion of a gummatous ulcer should suffice to differentiate it from epithelioma. The Wassermann test may serve only to add to the confusion. A syphilitic with a small ulcerating gumma may give a negative Wassermann reaction. On the other hand, the syphilitic enjoys no immunity to epithelioma. I have seen a tabetic with a strongly positive Wassermann reaction treated for a long time with mercury on account of a sore on the lip which proved to be an epithelioma. The patient's life might have been saved but for the loss of time due to the error in diagnosis.

Epitheliomata occur more frequently in men than in women, in the ratio of about three to one. While it has been observed as early as the tenth year of life, the disease is rare before the fortieth. It is more frequent in cold climates than in warm, and accordingly is rare in the dark skinned races. The frequency of the disease in this country seems to be increasing. Certainly the statistics of the American Dermatological Association, gathered by expert observers in the larger cities throughout the country, point to this conclusion. These statistics cover nearly 700,000 cases of skin diseases seen by the members of the association during a period of thirty-four years. During the first fourteen years,



the ratio of epitheliomata to the total of skin diseases is 1 in 1,000, 1 in 1,500 in 10,000 cases, during the next ten years, 100 in 10,000; and during the last ten years, 100 in 10,000. The incidence of cancer of the skin in the practice of American dermatologists has more than doubled in the last period compared with the first.

The great majority of epitheliomata—about seventy-five per cent.—occur on the head, mainly the face, and perhaps half the remainder on the hands. This observation seems to indicate an important factor in the etiology of the disease. The face and the hands are those parts of the integument most exposed to extraneous influences—traumata of all kinds, ranging from direct physical injuries to the more subtle influence of a thermic and actinic nature. It is true that the face, the meeting place of many complex planes of growth in the embryo, is peculiarly liable to harbor foci of misplaced epidermic cells—it is the most frequent seat of the epidermic inclusions which in later life appear as moles or soft warts—and that many an epithelioma has its origin in these embryonal inclusions; but the influence of sunlight in the production of epithelioma is obvious in the rare disease known as xeroderma pigmentosum, and a less marked degree in the more common condition known as sailor's skin, in which we probably have the combined effect of sunlight and exposure to wind and cold. The role of the x ray in producing keratoses and epitheliomata is well known.

The influence of direct trauma is seen in the frequency with which the history of an injury, such as a bite on the hand, figures in these cases. Any prolonged irritating agent on the skin may lead to the development of epithelioma. The scrotal epitheliomata of chimney sweeps and workers in paraffin and tar illustrate this point. Chimney sweep's cancer, once fairly common in England, is no longer seen since the passage of a law forbidding the practice of cleaning chimneys by climbing through them. One of the most striking evidences of the role of traumatism in the production of epithelioma is afforded by the great frequency with which this disease occurs on the abdomen and thighs, among the natives of Kashmir who carry iron fire boxes suspended by a cord from the neck in such a way that the little stoves rest against the abdomen or thighs, where they often cause burns. Of 1,189 cases of epithelioma treated in the Kashmir Mission Hospital, 848 (seventy-one per cent.) occurred on the thighs and abdomen, regions in which epitheliomata are rarely seen in other parts of the world. Epithelioma of the lip in smokers is probably also of traumatic origin.

Any condition of the skin or mucous membrane which results in a loss of the normal elasticity of the surface epithelium, may cause epithelioma, through the tendency to repeated small lesions of the epidermis due to its altered condition. In this way, keratoses of all kinds may lead to epithelioma. Indeed, not only frequently repeated trauma, but any long continued disturbance in the epidermis may lead to epithelioma. We have epitheliomata developing on the site or at the border of a chronic ulcer, simple or syphilitic, or an ancient plaque of psoriasis, on a patch of lupus, on the tongue or cheek

where a rough or sharp tooth keeps up a chronic irritation.

It is an old observation that the syphilitic is prone to develop epithelioma. Hutchinson, many years ago, called the attention of the life insurance companies to the great risk of epithelioma in this class of patients. There is no reason to believe that his constitutional disease has made the tissues of the syphilitic more liable to epithelioma, but the syphilitic is subject to a variety of lesions of the skin and mucosa which constitute points of chronic irritation that may result in epithelioma. One of the gravest forms of epithelioma is that occurring on the tongue, and the syphilitic is subject to ulcerative lesions of the tongue which here, as on the skin, may serve as the starting point of epithelioma. He is furthermore subject to a form of keratosis of this organ, which frequently results in cancer. We do not know the causes of leucoplakia. Tobacco and syphilis are the two factors to which the condition is usually ascribed. But leucoplakia occurs in non-smokers, and tobacco certainly cannot be incriminated in the cases of leucoplakia occurring on the glans penis or the labia. That leucoplakia is more common in the syphilitic than in others is generally assumed and probably with justice. But leucoplakia certainly occurs in a considerable proportion of nonsyphilitics and furthermore, whatever the process, it is not affected by the antisiphilitic treatment nor does it in any way present the histological features of a syphilitic lesion. Leucoplakia consists in an alteration of the type of cornification in which the normal type of mucous membrane cornification is replaced by the type peculiar to the skin. Normal mucous membrane contains no stratum granulosum; the cornification takes place without the formation of ceratohyalin. In a patch of leucoplakia there is a considerable layer of cells containing ceratohyalin and it is this opaque granular layer, interposed between the surface and the deeper vascular tissues, that gives to the patch its white color. A patch of mucous membrane altered in this way has its elasticity or pliability somewhat impaired. When we consider the infinite variety of movements to which the tongue is normally subject, and the constant succession of foreign bodies which are brought in contact with the tongue in mastication, we can readily understand that the surface of the patch of leucoplakia will be the seat of repeated minute tears and cracks which may serve as the stimulus to epithelial proliferation here as they would elsewhere and lead to cancer. Leucoplakia is neither syphilis nor is it cancer; but it occurs frequently in the syphilitic and often provokes cancer because from its nature it affords the opportunity for repeated injury of the epithelium.

Chronic irritation is the factor that causes the development of epithelioma on the basis of moles—the embryonal epidermic inclusions which are so common under the integument of the face. A distinguished surgeon, a few years ago, recommended that every infant at birth should be carefully examined for these slight deformities and the moles promptly excised. The procedure is impractical because these structures, unless they are deeply pigmented, are rarely visible until many years after birth. The best treatment for a mole is to leave

it alone unless its situation is such that it is subject to irritation. A mole situated where the pressure from a stiff collar, from a corset, or from the pincenez, or where the use of the handkerchief may serve as a repeated source of irritation, or where there is danger of repeated injury from the razor is a proper subject for surgical treatment. Treatment, however, should be radical. Any method which does not insure the complete removal of every single included epithelial cell must be condemned, because any cells left in the scar tissue produced by the treatment will be subject to constant irritation from the scar itself and may readily respond by active proliferation. The practice of treating epidermic moles by electrolysis, caustics, freezing, etc., should be stopped. I have seen three cases of epithelioma in young women develop from moles treated by these methods. A mole should be completely removed by the knife or let alone.

A few words on the treatment of epithelioma. An epithelioma begins as a microscopic object. When it is first seen it is very small. This is the time to treat it and there is, in general, no better nor safer method of treatment than the knife. When the situation of the epithelioma renders this method impractical, as when the lesion is situated near the margin of the lids or the tip of the nose, any one of the various destructive agents may be employed, x ray, radium, chemical caustics, etc. But, whatever the method, thoroughness in removal of the affected area is the keynote to success. There should be no nibbling at an epithelioma. Incomplete removal subjects the remnant left behind to greater stimulation and may result in an incurable condition.

51 EAST SIXTIETH STREET.

## UTERINE CARCINOMA TREATED BY RADIUM.

### *A Review of Fifty Cases.*

BY WILLIAM S. NEWCOMET, M. D.,  
Philadelphia.

The conception that carcinoma of the uterus is a disease to be associated with, or to follow the menopause, would from this list of cases appear to be erroneous. At the same time one is forcibly impressed that there is a need of some modification in several other points that have taken a firm hold upon the medical profession.

It will be found upon examination of the appended list that about one half of the patients have been under forty-five years of age; and, further, that many had passed the operative stage unconsciously; not, as many believed, from neglect; not from meaningless indifference; not objecting to a serious operation, as is so often flouted; but from the fact that they were in the main symptomless, or that these symptoms were so slight as not to attract the attention of the unfortunate patient. Therefore, symptoms cannot be regarded as trustworthy evidence upon which the extent of the disease can be based. Furthermore, in three of these cases the condition followed so closely upon a recent labor as to give the patients the idea that the bleeding was only a lochial discharge, while in one instance the passage

of fecal material through the vagina was the first warning.

These observations may be biased, as most of the cases in this list had passed the stage of operative intervention; and in only two could the recurring disease be regarded as slight; the general condition was good and both recovered promptly after treatment. From this it might be inferred that where disease recurs after operation radiation should then be taken as a matter of choice, but the whole subject is so entirely new and the lack of sufficient evidence from other sources so apparent, that it makes us believe our observations have been influenced by enthusiasm.

This paper will deal with a review of fifty patients with advanced carcinoma of the uterus applying at the American Oncologic Hospital during the years 1912, 1913, and 1914, with notation of only the more important points of interest.

About five years ago, the author reported a series of cases suffering from advanced carcinoma of the uterus, that was treated with one mgm. of radium. A marked influence was noticeable in two, while one was of special interest on account of the control of hemorrhage, lessening of discharges, and general comfort produced by the applications. While the patient died at the end of the third year from nephritis, the local manifestations of the uterine disease were greatly altered. Strange as it may seem, the influence of radium upon this present list of cases does not seem to be essentially different, although the amount of radium used was ten or twenty times as great. This series was reported before the College of Physicians of Philadelphia.

As these fifty cases were in all instances in the advanced stage of the disease, past any operative procedure, it would be impossible to give an absolutely correct list of ultimate results, which necessarily would be materially altered from month to month, owing to the recurring exacerbations of the disease; and while this series should be divided into those in which the disease occurred about the cervix, when as a rule it is very rapid in its course; and those occurring in the body of the uterus, where the tendency to extension is not so marked; it was found impossible so to divide them, as in many instances all the pelvic structures were more or less involved, and some, unfortunately, escaped microscopical examination.

The following general divisions have been made: 1. Patients who left while under treatment; 2, those still under treatment; 3, those who died either while under treatment or shortly afterward; 4, unimproved (left the institution and have been lost from sight; no doubt most of them have died); 5, improved; 6, greatly improved (where the disease process disappeared and was not detectable upon local examination).

The first group contained four cases and was included only because it might otherwise lead to a selected list and garbled conclusions; likewise the second group, which contained two cases; both may be passed without comment, as they lack interest. The next division embraces those cases, about fourteen in all, that ended fatally while under observation, the time varying from two weeks to three years; the majority were fatal within a few months

died during initial treatment, so that the extension of the disease followed its natural course with practically no observable change. Two cases, however, which cannot be passed without notice, were terminated from hemorrhage, a complication that radium is supposed at least to control.

Another case of extreme interest was one referred to the hospital by Dr. Richard C. Norris. In this case the disease subsided under treatment and left only a few nodules in the upper vaginal vault. When this woman came under observation she was bed-

died from the effects of a fecal impaction, owing possibly to the effect of treatment upon the intestinal tract; post mortem examination showed very little disease remaining in the pelvis. Several other cases showed marked temporary improvement for a few months, owing no doubt to the control of bleeding and the subsidence of pain, but there was practically no improvement in the local condition.

At this point it might be well to call attention to a rather peculiar complication observed in several cases where the disease temporarily disappeared, and

| No.  | Sex | Age | Mar. | Single | Duration of Disease | No. of Child. | Condition      | Operation | Duration of Treatment | Effects of Treatment                                   | Remarks   |
|------|-----|-----|------|--------|---------------------|---------------|----------------|-----------|-----------------------|--|---|
| 1368 | M   | 41  | W    |        | 1 mo.               |               | Advanced       | Yes       | 5 mos.                | Less hemorrhage  | Temporary improvement   |
| 1369 | S   | 41  | W    |        | 1 mo.               |               | Advanced       | Yes       | 3 mos.                | Less hemorrhage  | Temporary improvement   |
| 1370 | W   | 41  | M    |        | 1 mo.               |               | Advanced       | Yes       | 4 mos.                | Less hemorrhage  | Temporary improvement   |
| 1371 | M   | 40  | S    |        | 1 1/2 yrs.          |               | Advanced       | Yes       | 1 mo.                 | None   | Less discharge  |
| 1372 | M   | 40  | S    |        | 1 1/2 yrs.          |               | Advanced       | Yes       | 3 mos.                | None   | Post mortem showed very little disease in uterus                                      |
| 1373 | M   | 40  | S    |        | 1 1/2 yrs.          |               | Advanced       | Yes       | 9 mos.                | Less hemorrhage and discharge                          |   |
| 1374 | C   | 41  | M    |        | 1 mo.               |               | Advanced       | Yes       | 1 mo.                 | None   |   |
| 1375 | C   | 41  | M    |        | 1 mo.               | 10            | Advanced       | Yes       | 5 mos.                | None   |   |
| 1376 | C   | 41  | M    |        | 1 mo.               | 10            | Advanced       | Yes       | 8 mos.                | Discharge and hemorrhage less                          | Post mortem, negative   |
| 1448 | M   | 41  | M S. |        | 1 mo.               |               | Advanced       | Yes       | 5 mos.                | None   |   |
| 1449 | S   | 41  | M    |        | 1 mo.               | 4             | Advanced       | Yes       | 2 yrs.                | Disease disappeared                                    | See notes   |
| 1450 | M   | 41  | M    |        | 1 mo.               |               | Advanced       | Yes       | 1 mo.                 | Slight improvement                                     |   |
| 1451 | B   | 41  | M    |        | 1 mo.               |               | Advanced       | Yes       | 1 mo.                 | None   |   |
| 1452 | K   | 41  | M    |        | 1 mo.               |               | Advanced       | Yes       | 4 mos.                | None   |   |
| 1453 | E   | 41  | M    |        | 2 1/2 yrs.          | 2             | Advanced       | Yes       | 1 yr.                 | None   |   |
| 1454 | S   | 41  | M    |        | 1 mo.               |               | Advanced       | No        | 1 yr.                 | Temporary improvement, possibly due to less hemorrhage |   |
| 1455 | W   | 41  | M    |        | 1 mo.               |               | Advanced       | Yes       | 1 yr.                 | None   |   |
| 1456 | W   | 41  | M    |        | 1 mo.               |               | Advanced       | Yes       | 4 mos.                | Less hemorrhage  |   |
| 1457 | W   | 41  | M    |        | 1 mo.               |               | Advanced       | No        | 2 wks.                | None   | Became insane (colored)   |
| 1458 | W   | 41  | M    |        | 2 yrs.              | 17 mos.       | Advanced       | Yes       | 1 mo.                 | None   |   |
| 1459 | D   | 41  | M    |        | 2 yrs.              | 30 yrs.       | Advanced       | Yes       | 1 mo.                 | None   |   |
| 1460 | D   | 41  | M    |        | 2 yrs.              | 30 yrs.       | Advanced       | Yes       | 1 mo.                 | Left after one treatment                               |   |
| 1461 | W   | 41  | M    |        | 2 yrs.              | 20 yrs.       | Advanced       | Yes       | 2 mos.                | None   |   |
| 1462 | M   | 41  | M    |        | 2 yrs.              | 20 yrs.       | Advanced       | Yes       | 1 wk.                 | None   |   |
| 1463 | M   | 41  | M    |        | 2 yrs.              | 20 yrs.       | Advanced       | Yes       | 3 mos.                | None   | Never well since last labor   |
| 1464 | M   | 41  | M    |        | 2 yrs.              | 20 yrs.       | Advanced       | None      | 1 mo.                 | Hemorrhage less  | Temporary improvement   |
| 1465 | F   | 41  | M    |        | 2 1/2 yrs.          | 3 mos.        | Advanced       | Yes       | 1 mo.                 | None   | Disease first noticed by fecal movements. Per vaginam, associated bleeding with labor |
| 1466 | S   | 41  | M    |        | 2 yrs.              | 3             | Advanced       | Yes       | 3 mos.                | Less hemorrhage  | Mania followed  |
| 1467 | D   | 41  | M    |        | 2 yrs.              | 6 mos.        | Advanced       | Yes       | 2 mos.                | Controlled hemorrhage                                  | Died of hemorrhage (see notes)  |
| 1468 | D   | 41  | M    |        | 2 yrs.              | 6             | Advanced       | Yes       | 2 mos.                | Less hemorrhage  | Left  |
| 1469 | D   | 41  | M    |        | 2 yrs.              | 2             | Advanced       | Yes       | 5 mos.                | None   | Several operations  |
| 1470 | H   | 44  | M    |        | 2 yrs.              | 5             | Very rapid     | Yes       | 2 wks.                | None   | Left  |
| 1471 | M   | 44  | W    |        | 8 mos.              | 6             | Advanced       | Yes       | 2 mos.                | None   |   |
| 1472 | W   | 44  | W    |        | 18 mos.             | 1             | Gond           | Yes       | 3 mos.                | Disease disappeared                                    | Recurrence after operation, area limited  |
| 1473 | S   | 44  | M    |        | 18 mos.             |               | Advanced       | Yes       | 6 mos.                | Hemorrhage less  | Temporary improvement   |
| 1474 | F   | 44  | M    |        | 3 mos.?             |               | Very rapid     | Yes       | 1 mo.                 | None   |   |
| 1475 | B   | 47  | M    |        | 6 mos.              |               | Advanced       | Yes       | 2 mos.                | None   |   |
| 1476 | A   | 42  | M    |        | 6 mos.              |               | Very rapid     | None      | 6 mos.                | None   | Acute mania   |
| 1477 | K   | 42  | M    |        | 1 yr.               |               | Very rapid     | Yes       | 3 mos.                | Improved   | Recurrence slight after operation   |
| 1478 | S   | 42  | M    |        | 1 yr.               |               | Very rapid     | Yes       | 3 mos.                | Improved   | (see notes)   |
| 1479 | S   | 42  | M    |        | 1 yr.               |               | Very rapid     | Yes       | 3 mos.                | Improved   | Followed child birth (see notes)  |
| 1480 | C   | 47  | M    |        | 9 mos.              |               | Advanced       | None      | 1 yr.                 | None   | Left  |
| 1481 | C   | 47  | M    |        | 1 yr.               |               | Poor condition | None      | 2 wks.                | None   | Operation   |
| 1482 | C   | 47  | M    |        | 1 yr.               |               | Poor condition | None      | 4 mos.                | Less hemorrhage  | See text  |
| 1483 | W   | 54  | W    |        | 1 yr.               |               | Poor condition | None      | 1 mo.                 | None   | Died  |
| 1484 | R   | 54  | W    |        | 1 yr.               |               | Poor condition | None      | 3 mos.                | Improved   | Disease of very slow type   |
| 1485 | R   | 54  | W    |        | 4 yrs.              | 4             | Fair           | Yes       | 6 mos.                | Less hemorrhage  |   |
| 1486 | B   | 54  | W    |        | 3 1/2 yrs.          |               | Fair           | Yes       | 3 mos.                | Improved   | Postoperative   |
| 1487 | D   | 54  | M    |        | 3 1/2 yrs.          |               | Fair           | Yes       | 2 mos.                | Much improved  | Recurrence after operation  |
| 1488 | D   | 43  | W    |        | 16 mos.             | 6             | Advanced       | Yes       | 3 mos.                | Less hemorrhage  | Improvement slight  |

ridden and hemorrhages were profuse. She entered the hospital in November, 1912 (Case 1,452). Improvement was rapid, and at the end of five months she was able to leave the institution. At this time one of the nodules was excised, and pathological examination proved it to be adenocarcinoma. Further treatment was deferred on account of lack of radium, and not until the following year was she readmitted. While ulceration was not so extensive as upon her former admission, treatment had practically no effect and death resulted in December, 1914. This woman had remained perfectly well for about fifteen months.

Case 1,368 showed marked improvement owing to the control of the local disease, but the patient

the ulceration healed in the upper vaginal vault. Atresia followed and the vagina became so contracted from the dense, fibrous nature of the scar tissue, that the finger could be introduced only with the greatest difficulty and caused great pain. This contraction invariably made subsequent treatment difficult, as the disease usually occurred above the constricted portion.

The unimproved list numbers twenty-four cases; many might be included in the preceding group. As they lack interest, they need not be mentioned.

In eleven instances the amelioration of symptoms was sufficient to have the cases included under the caption of improved. While in many instances improvement was temporary, it gave the patients



some hope and comfort and relief from their usual distress. It is in this group, however, that we find some promise and obtain the stimulus for further study of cases in which, although the list is too long for individual study, the points of interest will be considered under special groups.

The remaining groups contain five, and considering the general condition of the cases when they entered the hospital, the results are very gratifying. Marked improvement was observed in one case in which the disease occurred in an old woman and showed very little tendency to advance. The woman's physical condition was exceptionally good, although the case was inoperable and treatments were irregular (Case 1,761).

Three other cases of postoperative recurrence in which the disease had just begun to ulcerate in the vault of the vagina were promptly restored to health (Cases 1,725, 1,790, 1,802). The patients were all in good physical condition when treatment began, and the recurring disease was discovered by their medical attendant.

Another patient in whom there was extensive postoperative recurrence and in whom the exhaustion was profound, still remains free from local disease, has regained her natural weight, and is attending to her usual duties (Case 1,662). This woman still complains of severe pain, which, in all probability, is due to hidden disease, or possibly to inability to free herself from the use of narcotics. Another case in which the disease improved and which has not been included in this group, was referred for operation.

#### LOCAL AND SYSTEMIC EFFECTS.

Radium did not seem to have such special influence upon any one case that it required a distinctive classification. Its effect, however, could be clearly classified upon several points, particularly where certain tendencies preexisted. Yet it would be difficult to draw conclusions on some points, for instance, as to any toxic effect, for in most instances the patient suffered from sepsis when coming under observation, and very few were without some febrile reaction before treatment.

While the ages of these patients varied from twenty-seven to eighty years, the influence upon the disease process was merely a matter of type of disease and not a type of patient. This was also true as to the age of the patient; several of the younger women showed marked improvement.

*Hemorrhage.* Most uterine carcinomata tend to bleed, especially upon manipulation. Some, more than others, give rise to periodical hemorrhages, which at times are most dangerous, and these are the cases that seem to respond favorably to radium. No doubt the temporary improvement is, in most instances, due to the recuperation of the system because the bleeding has been temporarily abated. Possibly the alteration of the tissues accompanying abatement of hemorrhage will be observed at times, but even where there is little local improvement, hemorrhage and discharge are often materially lessened.

A very interesting question in the application of radium to these cases deals with the safest time to withdraw treatment. Two cases, of profuse

bleeders, both under the age of forty years, were admitted to the hospital, and after treatment showed marked improvement, so that they were allowed to return to their homes; about a month or six weeks later, they were taken with fatal hemorrhage. It is difficult to explain this complication, and while it might have been the natural course of the disease, the improvement in both instances before leaving the institution hardly justified this opinion.

*Sepsis.* It naturally follows that fever, due to the absorption of these toxic products, is lessened and temporary improvement is noted. This gives rise to a general feeling of well being, and the patient believes that the growth of the disease has been checked. However, as the disease naturally extends beyond the reach of the rays, the patient will begin to decline; or the radium seems to lose control, and recurrent disease at the old site, followed by extension within the abdominal cavity, terminates the case.

*Pain and nervous symptoms.* It is generally conceded that radiation, as a rule, relieves pain, and in many instances where radium was used in these uterine cases, this was found to be true. Still there was a large proportion in which it failed to have any influence whatever; and, furthermore, some patients complained of increased pain after the applications, this too in some where it had a marked beneficial effect. It would follow, therefore, that radium under such circumstances cannot be relied upon as an analgesic.

A number of patients showed a decided increase in mental excitement, loss of sleep, and in three instances developed what might be recognized as acute mania. These symptoms apparently did not bear any relation to pain and seemed to be in large number for so short a list; to be present in somewhat higher percentage than usual. In one instance the local disease improved to such an extent, that the physician attending at the time of death commented upon this fact, and concluded that it was a toxic condition from some other than that usual to the local disease.

The foregoing cases can be excluded from those in which the excitement was due to drugs, or their absence when they had been suddenly withdrawn, their loss having several times given considerable trouble. The condition is probably toxic, directly or indirectly due to radiation upon the system.

At times some of these patients showed a marked irritability of the bladder, no doubt due more to a local irritation from the effects of radiation than from any cause depending upon the general nervous system. It never gave any serious trouble and subsided quickly upon cessation of the applications.

#### TECHNIC

The amount of radium used in each case was from ten to forty mgm. element contained in small tubes, and these surrounded with aluminum and lead, depending upon the condition of the tissues. Gauze was then placed about the metal, and this in turn covered by a rubber, celluloid, or glass tube. After the applicator was completed, it was placed within the vagina (rarely within the uterus) for three, four, or even eight hours daily, every other day, or even at longer intervals to suit the demands of the individual case. Duration was measured by the toler-



and of general reaction, sensations, and control of symptoms. Planning of exact treatment was avoided, and nothing of the sort was attempted. The general indication was the comfort of the patient. It seems to appear to have to describe the exact method used in each case, as many modifications had to be made, depending to a great extent upon the local conditions.

In conclusion, it may be stated that while radium cannot be recommended as an agent to control carcinoma of the uterus, as there is no evidence to show that it controls metastasis, it does inhibit its local growth in many cases, and even advanced cases can be temporarily restored. With the evidence of the complete disappearance of the disease, the general improvement of the system can scarcely be laid to a psychological impression. Therefore, the more general use of radiation in cases of uterine carcinoma is to be recommended, especially as a postoperative procedure.

BAKING AND THIRTY-FIFTH STREETS.

## CANCER OF THE UPPER AIR TRACT, WITH SPECIAL REFERENCE TO ITS TREATMENT WITH RADIUM.

BY WOLFF FREUDENTHAL, M. D.,

New York.

In an excellent editorial article on Some Cancer Fallacies, in the February issue of the *International Journal of Surgery*, Dr. Paul J. Rosenheim says:

Despite the tremendous activity displayed in the study of cancer in the last two decades, its essential cause remains a mystery, as ever. However discouraging this may appear at first sight, substantial progress has been made in the investigation of the predisposing causes, and certain popular beliefs which have long created alarm among the timid have been shown to be fallacious. There is not a shadow of a doubt that chronic irritation is the most prominent predisposing factor of malignant disease, and the recognition of this is of the utmost significance from a prophylactic viewpoint. It has been demonstrated that benign growths, such as warts, moles, and naevi, when subjected to constant irritation, may become starting points for cancer; and there would seem to be a more or less close etiological connection between chronic gastric ulcer and cancer of the stomach, gallstones and cancer of the liver and pancreas, cervical tears and uterine cancer, syphilitic lesions and cancer of the tongue, chronic mastitis and cancer of the breast, to mention only a few instances of so called precancerous conditions.

**Etiology.** In this paper I shall take the privilege, for the sake of brevity, of classifying under "cancer" all kinds of malignant neoplasms. It may not be amiss to say a few words on the etiology. In that respect Doctor Rosenheim's words hold good, not only for general surgery, but for rhinolaryngology as well. No doubt chronic irritation of the throat, the tongue, etc., is a very important factor in the production of cancer, and it is a well established fact that when malignant disease attacks the organism, it will develop first at its locus minime resistentie. Just as a gallbladder that has been irritated by gallstones for ten or twenty years constitutes a favorable primary focus for such disease, so does a larynx, the resisting power of which is reduced by irritation, or a tongue that has been irritated by tobacco,

alcohol, or other agents,<sup>1</sup> to which may occasionally be added a lingual ulcer of but a few months' standing caused by a sharp tooth, etc.

In other parts of the air tract this theory does not hold good, or at least has not been demonstrated. Consider, for example, neoplasms originating from the antrum or from the nasopharynx, without any history whatever of former nasal trouble. As a rule, these regions are as quiescent as any part of the body can well be, and yet many cases of cancer occur here. Or consider the middle ear; there, too, I have seen several instances of cancer without any previous history of aural or nasal complications.

Of the parasitic theory of cancer that has been studied so thoroughly of late, I will only say that it has excited a good deal of discussion. At the present time, the views of most investigators seem to coincide that there is a justification for that theory. It is to be hoped that the near future may bring us a solution of these problems.

In many instances it is difficult to diagnose and

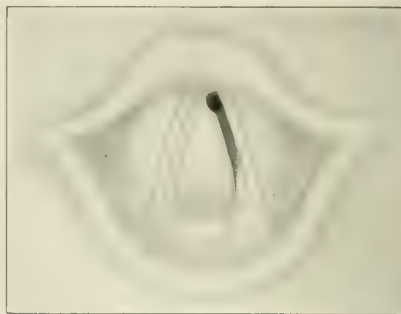


FIG. 1. Syphilitic swelling of the left vocal cord, Case 17, December 12, 1913.

operate on cancer in any part of the body, but the greatest difficulty arises in the larynx. Let us consider first the

**Diagnosis.** Over and over again, the writer has observed patients who presented clinically the typical picture of cancer of the larynx. Microscopically, however, that diagnosis had not been made by several reliable observers. I can therefore only repeat here what has been said by me so often, that for the diagnosis of such cases the clinical appearance of a tumor is of equal value with the microscopical. In other words, if the laryngologist is convinced of malignancy in a given case, it is his duty to advise radical operative intervention, even if the microscopical examination does not corroborate his diagnosis. Otherwise, valuable time is lost. The responsibility is grave, and every possible precaution must be taken in order to avoid mistakes.

And let me say right here, that in no field are errors so liable to occur as in supposed cancer of the larynx. Three examples may illustrate this:

**CASE I.** Oscar F., aged forty-one years, watchmaker, seen May 7, 1913, complained of hoarseness and slight pain in the throat. On inspection, a mass was seen occupying

<sup>1</sup>The abuse of tobacco is, indeed, in this connection, is still *sub* surface. This is not because in our prohibition era some people, against other occupation might consider the time ripe to bring a national society for the prevention of smoking.

the left pyriform sinus, and a positive clinical diagnosis of carcinoma of that region was made. A few days later, in the presence of several laryngologists, a number of large masses were removed under suspension laryngoscopy, by means of Killian's large forceps. Following is the report



FIG. 2.—Same case, showing swelling of the vocal cord and ventricular band, January 11, 1909.

from the pathologist: "The specimens removed from the larynx show no new growth. There is moderate infiltration of the subepithelial connective tissue with round cells. The epithelium is slightly thickened and in places shows small polypoid excrescences. . . . Diagnosis: Chronic inflammation."

On the ground of these findings, the family decided against an operation in spite of my protests. On September 7th, I saw the patient again, i. e., exactly four months later. At that time the right side of the larynx was also involved and large glandular swellings were noticed outside on the neck. Another piece was removed for microscopical diagnosis, and the pathologist's report was: "Normal laryngeal tissue. No new growth." Finally, a radical operation was performed which the patient survived only two months, the diagnosis of cancer being beyond question.

CASE II. Mrs. X., aged sixty-five years, came to New York on account of hoarseness which she had had for the last three months. It appeared over night. She had three healthy children, had always been well, and had had no miscarriages; no symptoms of lues. On examination, a brownish looking swelling was seen on the left vocal cord at the anterior commissure (Fig. 1); the cord itself was somewhat thickened, and subglottically this induration ap-

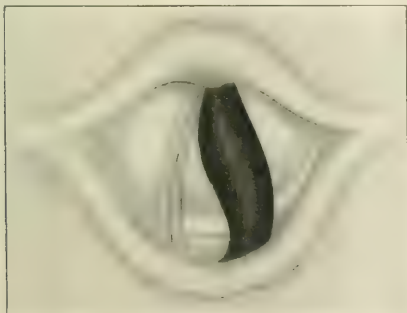


FIG. 3.—Swelling advanced so far as to cause slight dyspnea.

peared whitish. No glandular involvement. No Wassermann recorded, nor would patient consent to have a piece removed for microscopical examination. When I saw her again, on January 11, 1909, the appearance had changed (Fig. 2). The ventricular band showed a good deal of swelling, which covered the vocal cord. At that time she decided to undergo treatment, and potassium iodide was

given. But the mass kept on growing so rapidly that on February 1, 1909, there was occasional dyspnea and involvement of the posterior wall of the larynx. On that date a piece was removed, and the diagnosis of cancer was returned. The patient refused operation, and potassium iodide was pushed. She took it for five months, with the result that the whole process cleared up, only a slight thickening of the ventricular band remaining. The microscopist was a recognized authority.

CASE III.—Louis Z., aged thirty-nine years, a fish dealer from Newark, N. J., had trouble with his throat for the past year; for the last three months he had pain, which was worse on swallowing. Spat a good deal, but no blood. Coughed occasionally. On examination a mass was seen on the epiglottis with a smooth surface and a small ulcer on top of it, which impressed me very much like a gumma that was beginning to break down. Wassermann negative. However, potassium iodide was given, but all the symptoms grew worse. When I saw him again, five weeks later, the picture had changed entirely. The mass had grown extensively, so that little of the epiglottis was visible. Several pieces were removed and sent to two different pathologists for microscopical examination. One of the gentlemen declared the neoplasm to be an epithelioma, while another gave as his diagnosis, papilloma. Within two weeks irregular



FIG. 4.—Epithelioma of the base of the tongue (case III).

masses appeared at the base of the tongue, etc. (Fig. 4.) The whole appearance pointed undoubtedly to the diagnosis of epithelioma, which it really proved to be.

These three cases represent errors that had been made in different directions. Some cases will always puzzle us and their diagnosis will be a matter of grave doubt. In that respect, the writer cannot agree with so experienced a colleague as Dr. J. C. Beck, of Chicago, who believes that there is not much difficulty in the recognition of cancer of the larynx "in the presence of the cardinal symptoms of persistent hoarseness, particularly in older men" (*Annals of Otology*, p. 167, 1914). Perhaps Doctor Beck had had the bad fortune of seeing mostly advanced cases, where hoarseness had persisted for a long period, and perhaps that may explain his "most pitifully discouraging" results with laryngectomy. But it is of the greatest importance, as Doctor Beck himself points out, to diagnose and operate in these cases at the earliest possible moment. At such a time, hoarseness has not always been present

for a long period and grave results do occur, and mistakes at that critical period will happen.<sup>2</sup> But in the majority of cases we are in a position to avoid errors, and, by means of our clinical experience and modern laboratory methods, are able to differentiate between carcinoma and syphilis, tuberculosis, scleroma, etc.

As to operative procedures, we have to disregard most of the rules laid down by general surgery, and this must be done even at the start when an attempt is made to remove intralaryngeally a piece of the growth for examination. The custom now-a-days is to do a radical operation immediately after such a specimen has been shown to be of malignant character. In practice, such a procedure is not always feasible for many reasons, and yet the removal of a small piece is imperative for our further action. In one of my cases the patient wanted to know immediately the nature of his malady, having to leave town for several weeks in order to arrange business matters. Here, with the double curette, I removed quite a portion of the neoplasm, and immediately cauterized the part with the galvanocautery. Thus, a clean cut was made and the lymph channels were closed up at once. The latter assertion is theoretical only.

If, then, the diagnosis of malignancy has been established, we ought to operate at the earliest possible moment. "So long as patients are willing to be operated upon," says Bainbridge, in his recent work on cancer, "so long must surgeons operate, until some better method has been positively established." Since it has been shown that carcinoma owes its origin to preexisting epithelium and not to connective tissue, we have to consider it primarily as a local disease and this local process has to be removed as thoroughly as possible before a secondary growth appears in other parts of the body. Consequently, a mammary gland thus affected has to be removed with all its annexa in order to prevent the spread of the disease.

In the upper air tract, such a procedure is seldom possible, and yet we have seen good results. Take, for instance, the malignant tumors of the nose and its accessory cavities. Here, an absolute removal of the neighboring parts, to which the disease may have extended, is practically impossible; yet Denker, of Halle, reports on the beneficial influence of radium (*vide infra*).

But after a case has passed through the primary stage and has undergone marked development, the question of the feasibility of an operation will arise. The question whether to operate or not to operate is uppermost. It can be answered much more accurately now-a-days than formerly. Thost, of Hamburg, has shown in his *Atlas* that a good Röntgen picture gives positive evidence as to the origin and extent of the process, even in cases where accumulations of secretions, edematous conditions, and masses of the tumor prevent an inspection of the larynx. We have then to differentiate between the more benign, i. e., operable cancers of the larynx, originating mostly from the vocal cords, and those

arising from or in the recessus pyriformis. The former, if detected early, are more amenable to operative intervention, followed by treatment with radium; while the latter, recognized in the röntgenogram by the pathological changes of the thyroid cartilage, the invasion of tumor masses, etc., are, as a rule, inoperable. In these cases, one often finds hard glandular tumors on the same side of the neck, or cysts that had been present for many years.

The x ray picture of the thyroid cartilage shows a sieve-like appearance which Thost attributes to the carcinomatous invasion of the cartilage. S. Iglauer<sup>3</sup> has not found it in four cases of carcinoma of the larynx, but has seen it in normal larynges. However that may be, operable cases ought to be operated in; but how about the inoperable ones?

There is no doubt that patients with apparently hopeless cases can be made comfortable by rational conservative treatment. It has often been a pleasant surprise to me to see how beneficially a few weeks of such treatment has acted upon patients. They were enabled to swallow food, they looked better, and they even gained in weight. The question, "Is it worth while?" asked frequently by pessimistic people, cannot be discussed, as pessimists have no place in medicine. The fact is that we are able in many cases to make the patient comfortable and to relieve him. This is accomplished by radiotherapy and other modern methods at our disposal. The beneficial influence of the actinic rays, or as generally termed, phototherapy, in the alleviation of pain has been witnessed for many years and described repeatedly by the writer. Furthermore, x ray tubes (Coolidge's) have been used extensively for their analgesic effect, and described elsewhere. But the main remedy at our disposal now-a-days is radium.

#### RADIUM.

Before entering into the merits of radium, I repeat once more that an operable growth ought to be removed surgically. There are exceptions to this rule, for example, certain tumors of the nasopharynx, which give an absolutely bad prognosis when operated upon, and a few others; but these are the exceptions. In other cases in which the diagnosis of malignancy cannot be made easily and quickly, radium ought to be applied immediately as a matter of precaution. If the case turns out to be syphilitic or tuberculous, no harm has been done, while if the patient is suffering from real cancer the process may have been retarded. If, then, we decide upon a radical operation, radium ought to be applied again immediately after its performance. In that way we are able in a number of cases to prevent the spread of the neoplasm into distant parts of the body.

But in speaking of the therapeutic effect of radium we naturally first think of inoperable cases. It has already been mentioned that there are many ways in which such a patient can be made comfortable, but of greatest value here is the applicability of radium. By its means, not only can life be prolonged, but often an inoperable tumor can be changed into an operable one. Of fundamental importance in regard to radium were the words of



Wickham and Degrais, who from the start asserted that by this agent we are able to exert a beneficial influence only on accessible tumors, but not on metastases. Everybody who has had a large experience in this field will agree with these authors. If the neoplasm has spread extensively, the best we can achieve is a diminution of the original mass, and that often means a great deal in neoplasms situated in the throat or esophagus, so far as temporary relief is concerned.

In the *Handbook on the Biology of Radium*, edited by Professor Paul Lazarus,<sup>4</sup> of Berlin, Frederick Kraus says that an exact basis for radium therapy has not been established, but that a more solid foundation than the clinical proof of its effect on the sick cannot be given.

That radium does not cure every cancer, even in its initial stage, is too well known. There is a great variation in its effect on different patients and on the malignancy of the various types of cancer. Some persons are hypersensitive to radium, and certain cancers fail to yield to it. On the other hand, cases have been reported from all parts of the world which have been cured and remained so. Alas! Their number is not great as yet. But just these cases—few as they may be in comparison with the large number not cured—have to be taken into consideration as of real importance; otherwise therapeutic pessimism will become so paralyzing that even cases with a favorable prognosis will no longer be operated in. Very justly, Anschütz, of Kiel, says that there are many carcinomata whose character we do not know. That has been confirmed by the application of radium and mesothorium. We have learned that from microscopical findings an accurate prognosis cannot be given. The same holds good for radium, and all that I can say is what I have reiterated many times, namely, that there are some tumors which are influenced favorably by it and others which are not. For that reason alone one ought to be more than careful in promising a cure.

Histologically, the main feature of the effect of radium is seen in the formation of new connective tissue (Exner, Czerny and A. Caan, Wickham and Degrais). The development of such tissue is very active in certain cases, and its rapid growth apparently breaks up the cancerous nodule into many cell groups. This division goes on constantly until finally the cells perish. Macroscopically, therefore, a caustic or destructive effect is noticed.

But radium has not as yet come to supplant surgery; it is only an aid in fighting cancer. Its most logical use is therefore after the surgical removal of the tumor. Then it will destroy the soil on which cancer has grown. On the other hand, occasionally after a "conservative" operation (Denker, Marschik), radium will prevent the extension of the primary focus and apparently destroy the lymph channels leading to other parts of the body. In that way the recurrence of a tumor has been delayed for a number of years.

In a case of Marschik's, of a school teacher, aged

seventy years, the maxillary sinus had been opened for supposed suppurative sinusitis, but a tumor was found. That was removed and radium then applied, and the patient was well after three months! In a third case, that of a six year old child, Denker removed a sarcoma of the superior maxilla and then applied 1.5 mgm. of radium, with the result that the plainly visible swelling of the cheek and floor of the nose disappeared. Malignant tumors of the esophagus, whether they are in the upper portion or just above the cardia, have been greatly benefited by radium or mesothorium, the improvement being only temporary and showing itself by the ability of the patient to take fluid and semifluid nourishment. As to the mode of application of radium in tumors of the upper air passages, I wish to refer to my former publications. The following facts, however, may be mentioned here.

As filters there has been used rubber of 0.5 mm. thickness; or aluminum 1/100 to one tenth mm.; or lead 0.1, 0.2, 0.5 up to one mm., and two mm. in thickness. Of course we have employed capsules, etc. As to the quantity applied, Lazarus and others believe that too small doses are not only of no value, but may accelerate the growth of the tumor. On the other hand, we should warn against the use of too large quantities of radium, for they, too, may have done harm.

In suitable cases we have resorted to the intra-tumoral application of radium, as first recommended by Strebel, in 1903 (*Deutsche Medizinische Zeitung*, 103), and employed later by Czerny and Caan, and others; i. e., radium was introduced directly into the centre of the tumor mass. Such a procedure is possible in any part of the body, with very few exceptions. The writer has used it in that way in tumors of the tonsils, of the nasopharynx, the nose, masses on the neck, etc. One of the few places where this is not possible is the larynx. In intralaryngeal tumors, it is always advisable to get as near to the neoplasm as possible, i. e., to apply radium intralaryngeally. The patients tolerate the procedure very well, but the larynx must be inspected every day in order to avoid edema of the glottis and tracheotomy. As soon as the larynx or trachea has to be opened there is great danger of extension, and for that reason alone a narrowing of the already limited lumen of the larynx by edema, etc., must be prevented.

In addition to the cases just cited, the following may be recorded:

CASE IV. Mary S., aged eighteen years, was first seen at the Manhattan Eye, Ear, and Throat Hospital by Dr. Samuel M. McCullagh,<sup>5</sup> December 2, 1908. For many years she had had a sinus under the right cheek, which discharged at various times. In June, 1908, she first noticed a growth on the cheek below the inner canthus of the right eye. It was cystic in character. Gradually the nasal bones were pushed over to the left side of the face, and there was marked fullness of the right side. On December 21, 1908, a mass was removed by Doctor McCullagh (diagnosis, osteosarcoma). Very soon there was a recurrence. April 28th, second operation (diagnosis, fibrosarcoma). March 30, 1910, recurrence just above the alveolar process. On March 30, 1910, she was referred to me for radium treatment, the growth having extended very rapidly. On April 20th, radium was applied for fifteen hours; and on June 8th, for thirty-six hours. On September 27th, there was no trace of the growth, and there was no recurrence

<sup>4</sup>In his introduction, Professor Lazarus expresses his deepest thanks "to all those coworkers who have made valuable contributions to this work of international science,"—i. e., to men like Bashford of London; Noorden, of Vienna; Degrais, of Paris, and a host of others. I would ask: Will the world ever see again international works like the one cited, or has this dreadful war ruined even that aspect of human aspirations and ideals?

<sup>5</sup>See the writer's article on The Therapeutic Value of Radium, *Annals of Otolaryngology, Rhinology, and Laryngology*, March, 1911.



consequently that is for a period of more than five years. The tumor, which was apparently cured completely in 1904, has since then recurred several times. It is now about the size of a small egg, and is very hard. It is situated in the lower part of the throat, and is a serious illness of venereal disease. *Status present:* About nine months ago, the patient began to experience a feeling of pressure in his throat on the right side whenever he spoke. This increased, and very soon thereafter he applied for treatment. On examining the throat, an irregular mass of tissue was observed, springing up from the right tonsil and extending from between the pillars of the fauces to the base of the tongue. It bled profusely when touched. The patient had some difficulty in swallowing, and felt pressure in his throat when speaking. His voice was muffled. There was absolutely no sign of any present or previous syphilitic affection. This was corroborated by a well known dermatologist, who examined the patient several times. A microscopic examination of a piece of tissue was made, and the growth was found to be a round celled sarcoma. From the very first the patient was given potassium iodide in ascending doses up to eighty grains, three times daily, and later on, inunctions. This was kept up for six weeks in order positively to eliminate the diagnosis of syphilis, but there was absolutely no diminution in the size of the tumor. On the contrary, it rapidly increased in size, so that the interspace between the pillars and the base of the tongue up to the median line was finally filled up by the mass, which was larger than a pigeon's egg. No view of the larynx could be obtained, as the mass concealed the entire epiglottis.

As antitoxic treatment showed no results whatever, the only thing left to do was surgically to remove the growth, but as all my former cases of sarcoma of the tonsil had terminated fatally very shortly after operative intervention, I was not much inclined to have this patient operated upon, nor did he himself much care to undergo an operation. So we subjected him to radium emanation for ten minutes at the first sitting, twenty minutes at the second, and later for thirty minutes, using ten mgm. of radium of 1,000,000 strength. From the moment the radium was applied, the retrogression of the neoplasm was so striking that it could not fail to attract notice. I watched this case with my four assistants, and a good many other colleagues who happened to visit the clinic. After the first application, a part of the mass sloughed away, and after eighteen applications only a fragment remained. This also disappeared very soon, but we continued the sittings in order to be positive.

The patient was cured and remained so for six years. In the summer of 1912, however, he began to complain again. During my absence he was treated for lues. For months he was given the iodides, injections of mercury, and finally salvarsan, but without avail. This time, the neoplasm had grown more on the outside, and the patient complained of much pain. When I saw him again, there was a considerable mass within the pharynx and a swelling outside as big as a man's fist. Radium was applied, with the result that the former disappeared almost entirely and considerable pus was evacuated. This caused the outer mass to shrink, but it was still quite large. I proposed to open it from the outside, let the pus out, remove any diseased tissue, and then apply radium again. The patient refused any such operative procedure, and left the clinic. He died soon afterward and the diagnosis of sarcoma was corroborated.

The last case deserving of mention here is also from my clinic. It was that of a Mrs. S. A., aged forty-two years, married, with three children. She had had no miscarriages. She had suffered from "catarrh" as long as she could remember. The full history will be given in a later publication. Suffice it to say here, that she also had a sarcoma of the tonsils, which disappeared after the application of radium. She has been cured for the last eight months, but the time may be too short to give a final opinion.

The study of the rays of radium has produced results of the greatest practical importance, not only

in the domain of physics, but also in the field of medicine. Thus far, the results in the latter are few, but they are very encouraging. When the application of a small tube of radium to a tumor can cause it to disappear, even though in only a small number of cases, when an inoperable growth can be changed into an operable one, and the lives of some patients saved or prolonged, we cannot help being grateful to those whose names are linked with the discovery of this wonderful metal, namely, Becquerel and the Curies.

1003 MADISON AVENUE.

## THE NEGATIVE AND POSITIVE DIAGNOSIS OF CANCER OF THE GASTROINTESTINAL TRACT.

BY LEWIS GREGORY COLE, M. D.,  
New York.

During the last half decade the Röntgen method of examination has made remarkable advancement in the diagnosis of gastrointestinal lesions, particularly in the positive or negative diagnosis of gastric carcinoma. Prior to five years ago, exposures were not sufficiently rapid to obtain the necessary detail for the diagnosis of early cancer and its differentiation from non-malignant filling defects of spasm, adhesions, and pressure from without. At that time it seemed almost incredible that we should have placed at our command a method by which one might make a negative or positive diagnosis of gastric cancer and might even detect the localized indurated area in its precancerous stage. But the prophecy of this attainment was fulfilled so rapidly and that diagnosis was such a relatively small part of our task compared with the much broader scope of gastrointestinal diagnosis and Röntgen indications for surgical procedure, that it lapsed into obscurity and has not had sufficient emphasis.

Even within the last year we have frequently heard it stated by men of international reputation as diagnosticians and gastroenterologists, that there is no way of making an accurate diagnosis of early gastric cancer, or indurated gastric ulcer, and in a recent article one of these men stated that in only ten per cent. of the cases was the x ray an aid. Such statements are believed by the great majority of general practitioners who read the articles, and consequently thousands of patients are robbed of an opportunity of obtaining a definite diagnosis of cancer at a stage when the diagnosis is of any value.

We are fortunate, therefore, in having an opportunity of presenting this aspect of the problem in an issue devoted solely to the subject of cancer, where the various methods of diagnosis may be compared with each other under the same cover.

Cancer comes as a "thief in the night" and gets a firm grip on the very vitals of the subject without causing enough symptoms to make the patient consult a physician. In this respect gastric cancer is not unlike cancer in any other part of the body; for instance, cancer of the breast is usually discovered accidentally by the patient herself, and if detected in the early stage when there is any hope

of surgical cure, there are none of the constitutional or local classical symptoms of mammary cancer, and it is unhappily true that gastric cancer progresses far beyond the stage when there is any hope of surgical cure before developing any of the classical

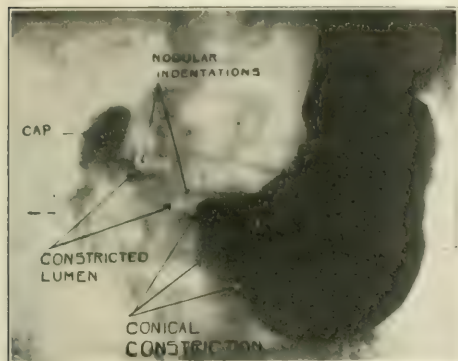


FIG. 1. Typical carcinoma.

symptoms of gastric cancer such as emaciation, coffee ground vomitus, palpable tumor, and dilatation from obstruction.

In fact, the functional gastric disturbances resulting from lesions at some distant point, such as chronic appendicitis, pericolic membrane, stone in the kidney, Lane's kink with obstruction and dilatation of the terminal ileum, gallstones, and cholecystitis cause gastric symptoms that are far more severe than those of early or even moderately advanced gastric carcinoma. Patients suffering from early cancer may have some slight prolonged gastric symptoms, and the physician who recognizes them as the "green light" signal and applies to the roöntgenologist for aid, will detect the lesion before the well known "red light" danger signal appears, and the relief of these symptoms without the negative diagnosis of carcinoma is dangerous, because it may allow the patient to go on and develop an advanced carcinoma while under the observation of the physician.

It is only by recognizing the lesion at this early stage that there is any hope of surgical cure. If the carcinoma involves the pars pylorica, particularly if it is of the annular type and causes obstruction, symptoms of obstruction may present at a relatively early stage; but it is difficult to determine solely from the clinical symptoms whether the condition is due to malignant growth of the stomach, to the nonmalignant cicatricial contraction following or accompanying ulcer of the cap, or to a functional retention without organic obstruction. Gastric analysis and any other laboratory tests which help to confirm the diagnosis may be used, but if the conclusions reached by the use of any of these methods are at variance with a positive roöntgenological diagnosis, they should not be considered for an instant. To wait for the development of symptoms discernible by other methods robs the patient of the opportunity for surgical cure.

When we consider the large number of cases

where the diagnosis of gastric cancer or ulcer is made by clinical methods and nothing is found roöntgenographically or surgically, and then reflect, on the other hand, that seventy-five per cent. of the cases of carcinoma that are presented for x ray examination are far beyond the stage of surgical cure, the value of the classical symptoms is rendered somewhat uncertain. The plight of the diagnostician would, therefore, be pitiable unless he had some other method upon which to fall back, and as it was by the Röntgen method that these conditions were first recognized, we look to that method for the solution of the problem.

Moreover, the general public is rapidly becoming aware of this state of affairs, and as a result of this education I find that more than half of the patients who present themselves for x ray examination of the gastrointestinal tract state that they, rather than the doctor, suggested the examination. As a result, the patient frequently says: "I have been under Doctor Blank's care for two or three years. Didn't he know that my cancer could have been diagnosed by x ray at a much earlier stage than this?" While I invariably protect the doctor by stating that the symptoms of carcinoma were not there, this is an evasive answer.

To approach the subject more personally, each patient over thirty years old who presents himself with abdominal symptoms might also confront us with this question, Have I or have I not cancer of the stomach, indurated ulcer of the stomach or cap, gallbladder infection with or without calculi, or renal or ureteral calculi? Even the most careful and experienced diagnostician would be somewhat embar-

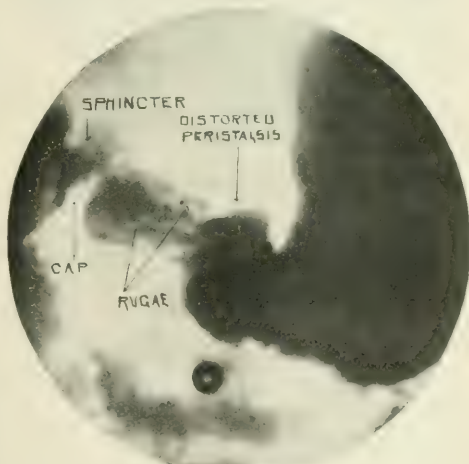


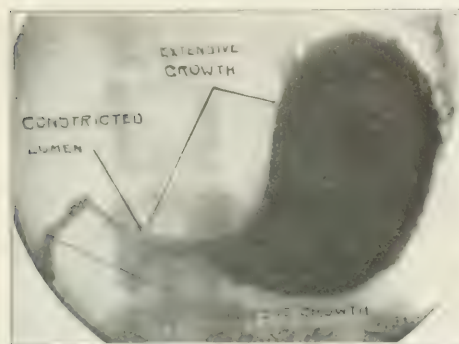
FIG. 2. Typical spot.

assed if required to give an unequivocal answer. Yet the roöntgenologist may answer these questions with a definite Yes or No with as great a degree of certainty as he would make a positive or negative diagnosis of fracture of the hip, and furthermore, he can differentiate the malignant from the non-malignant lesions with remarkable certainty. Syph-

ilis of the stomach very closely resembles carcinoma. Therefore, the microscopic examination should be made in all cases prior to operation, especially in smaller growths of young subjects.

The time has come, therefore, when a man need not remain in doubt for a single day as to whether he has gastric cancer or a precancerous area of induration which at any instant may become malignant. If either of these lesions is known to be present, a roentgenographic examination is of inestimable value in determining whether surgical procedure is necessary, and if so, whether a radical operation is indicated or only a palliative procedure is possible.

For our purposes, all types of carcinoma, adenocarcinoma, sarcoma, and indurated gastric ulcers may be included under the term cancer of the stomach. At the present time it is the consensus among surgeons, and to a large extent among diagnosticians, that indurated gastric ulcers are the source of gastric carcinomas, and that whether the base of an indurated gastric ulcer has begun to undergo carcinomatous degeneration can be determined only by a careful microscopic examination after its removal.



If this is so, indurated gastric ulcers must be considered malignant or precancerous until they are proved otherwise by microscopic examination after their removal. A differential diagnosis between indurated ulcer and cancer can be made with about the same accuracy by a serial roentgenographical examination as by surgical exploration without the microscopic examination of a specimen. It is only by the removal of these small indurated areas that one can hope for a permanent surgical cure of gastric cancer. They can be readily detected by serial roentgenography and their size determined to within one sixteenth of an inch.

What percentage of them have a carcinomatous base or will eventually develop into carcinoma, can be determined only by following a large number of cases over a period of years. Then by comparing the number of those that become cancerous with the mortality resulting from partial gastrectomy, one could determine whether or not removal of the ulcer is justifiable.

This communication is addressed primarily to the general practitioner and diagnostician and therefore

any extensive discussion of the methods of examination is unnecessary. Two methods of x ray examination have been used. One, the European or continental method, depends upon recognizing by means of a fluoroscopic examination a certain group of gastric symptoms designated as a "symptom complex" or as "Röntgen signs." These, as the name suggests, are only symptoms and not direct evidence of the cancer itself. They vary as greatly as the observers who describe them, and for accuracy in diagnosis they do not compare with the direct method of examination. The other method is based on the recognition of morphological defects in the wall of the viscera. When these defects are large they may be observed by fluoroscopic examination or one or two roentgenographs. But in the early stages of gastric cancer or in cases of indurated gastric ulcer with a possible precancerous base, the lesion can be detected with accuracy only when serial roentgenography is employed, and the scope and accuracy referred to in this communication deal solely with the serial method of examination.

When the gastric walls are invaded by new growth, they fail to expand to their normal dimensions. As similar "filling defects" are also found in benign conditions, such as adhesions and habitual spasms of the muscular coat, certain points of differentiation between malignant or nonmalignant findings must be especially noted in determining upon the diagnosis. This differentiation is based on a study of the following comparative data:

#### Malignant. (Fig. 1.)

- Rugæ are absent.
- Lumen of constricted area is constant in size, shape, and position.
- Peristaltic contractions are absent in involved area.
- Lumen is encroached upon by nodular growth projecting into the wall of the stomach.

Line of invasion is characterized by nodular indentations, similar to finger prints in a ball of putty.

#### Nonmalignant. (Fig. 2.)

- Rugæ show with unusual distinctness and run obliquely or transversely.
- Lumen varies in size, but never completely relaxes or contracts.
- Peristaltic contractions in involved area are abnormally wide and shallow.
- Lumen is diminished by a contraction of the muscular coats of the stomach without the projection into the lumen of localized areas.
- Line of invasion may be sharp and clear cut or finely serrated by the rugæ coming to the surface, but shows no nodular indentations.

Frequently the various nonmalignant lesions can be differentiated from each other, but in other instances it is best to state the location and extent of the lesion and determine whether there is sufficient obstruction to warrant surgical procedure, leaving the question of cause to the pathologist.

The absence of rugæ in the involved area is perhaps the most reliable differential point between malignant and nonmalignant lesions. If the rugæ are distinctly visible, the condition may be safely defined as nonmalignant, caused by spasmodic constriction of the muscular coat or by adhesions involving the peritoneal surfaces. If the constricted area is devoid of rugæ, the lesion involves the mucosa or submucosa and is probably malignant or premalignant.

Another important indication of a malignant con-



dition is the absolutely constant size and contour of the deformities which it causes. If the lesion is a spasmodic or nonmalignant organic condition, the distortion will assume slightly different aspects during the different phases of a gastric cycle. On the other hand, the presence of new growth entirely deprives the gastric wall of flexibility, so that the involved area presents exactly the same outlines in all the roöntgenograms of the series.

#### TYPES OF GASTRIC CARCINOMA.

Gastric carcinomas may be classified as of several types, according to the form, extent, and location of the lesion as observed roöntgenologically.

TYPE I. The lumen of the stomach may be encroached upon by a nodular growth in the wall of the viscus, from which projections extend into the normal tissue at the line of invasion, like peninsulas or islands (Fig. 5). This gives a peculiar appearance to the fluid cast of the stomach, suggesting finger prints in a piece of putty.

TYPE II. The growth may be formed of one large, fairly smooth mass, projecting into the lumen from one wall or curvature of the stomach (Fig. 4). The uninvolved portion may function in a normal manner, and there may be no obstruction to the passage of chyme. At an earlier stage when the growth may or may not be malignant, it appears as a small constant induration (Fig. 7), which so closely resembles a broad peristaltic contraction that it is necessary to use great care in differentiating the two phenomena; but it will be seen in studying a series of roöntgenograms, that the induration does not progress pylorusward nor relax during diastole. These cases are readily detected at an exploratory laparotomy, and are amenable to surgical procedure. But the surgeon cannot determine their malignancy with any greater degree of certainty than the roöntgenologist. He does not know whether he has prevented a carcinoma by excising an in-

roöntgenograms of a series are matched over each other, it will be seen that the constricted area is constant in size, shape, and position. Where the growth joins the normal tissue, the line of invasion may have a wormeaten appearance, with overhanging edges (Fig. 6), or it may be conical or funnel shaped, the flaring edge of the conical area corresponding to the line of involvement, while the apex of the funnel terminates at the most constricted area.

TYPE IV. Small annular growths, which are found at the extreme end of the stomach, are usually of the adenocarcinoma type, and freely movable (Fig. 6). In two cases which presented a typical roöntgenographic picture of this type of involvement, the growth was considered benign by the surgeon at the time of operation. In one of these cases, a gastroenterostomy was performed and the patient died later of gastric carcinoma. The other was a case

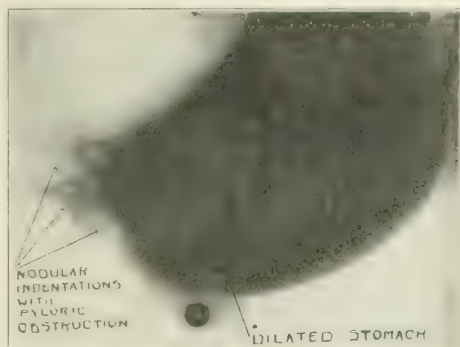


FIG. 5.—Pyloric obstruction. Surgery for removal indicated.

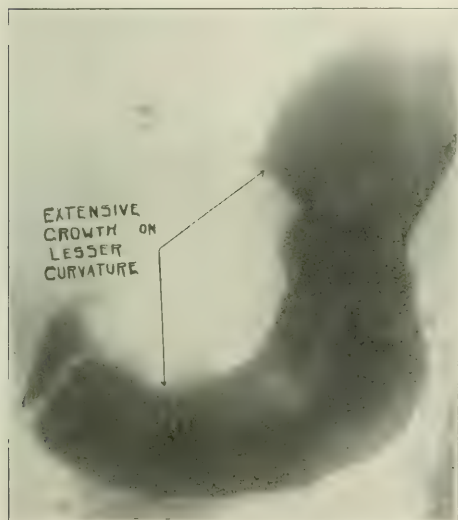


FIG. 4.—Carcinoma on lesser curvature, too extensive for removal. No obstruction; no occasion for gastroenterostomy.

durated ulcer or removed an early carcinoma until he receives a pathological report after the specimen has been examined microscopically.

TYPE III. The growth may be annular, involving the entire circumference of the gastric wall. An extensive involvement may reduce the diameter of the lumen to one eighth inch or even entirely obliterate it (Fig. 1). If the

diagnosed and reported by Doctor George as carcinoma of the pylorus. At operation the surgeon excised the affected tissue, simply because it was easy to remove, believing it to be an ulcer. The surgeon and pathologist both considered it benign on gross examination. Microscopic examination, however, proved that it was malignant. In spite of the fact that the microscopic findings proved its accuracy, the case has been cited as an example of the absurd presumption of a roöntgenologist's diagnosis.

It is a fortunate circumstance when a marked narrowing of the gastric lumen, causing retention and dilatation, results while the growth is still small. Such lesions which cause symptoms early, while the growth is freely movable, offer a good opportunity for surgical cure. In one case of this type, the gastric secretions were so nearly normal that the patient was kept under observation in the hospital for six weeks before an operation was performed.

TYPE V. The scirrhus carcinoma, which involves a considerable area without projecting appreciably into the gastric lumen, is the type of growth most likely to escape detection by roöntgenological methods. The absence of the peristaltic rings in the involved region is the *first clue* by which this lesion is identified. That part of the stomach infiltrated with carcinomatous cells is less pliable than the normal gastric walls, and the peristaltic rings are therefore obstructed in their progression pylorusward when they reach the areas of infiltration. An absence of the deep angular sulcus on the lesser curvature is of great importance (Fig. 3). As a simple demonstration of what happens, a string may be tied around an inflated rubber tube where a small patch has been applied. The patched portion will not be creased by the string like the rest of the tube.

Another finding characteristic of scirrhus involvement consists of slight irregularities in the wall of the stomach, visible only upon close observation, which present an absolutely identical contour in all the roöntgenograms, as can be seen by matching the roöntgenograms over each other. Such growths occur frequently on the lesser curvature. Small constant creases on the greater curvature near the pylorus, which very closely resemble a peristaltic sulcus, frequently call one's attention to the extensive lesion on the lesser curvature which might otherwise escape detection.

If the involvement is extensive and the stomach considerably contracted, the distensibility of the gastric walls causes a dilatation of, and retention in the lower end of the esophagus. A condition known as "Schramm's" calls particular attention. It is important to differentiate this condition from the Haudek niche, caused by a perforating gastric ulcer of the lesser curvature.

FIG. 2. In gastric cancer, particularly those in which a



Annular carcinoma. Stomach distended.

Röntgenographic examination is not made until the patient presents classical symptoms of cancer of the stomach, there is such complete obstruction that even the hair line of bismuth, connecting the lumen of the stomach with the small intestine is not visible. In these cases the apex of the cone or funnel shaped constriction, indicates where the constriction originated (Fig. 5). Unfortunately, a large percentage of the carcinomas found röntgenographically belong to this group; and this will continue to be the case until the laity and profession realize that, in order to detect carcinomas at an early stage, all patients past forty years of age with even slight gastric symptoms, must be examined röntgenographically if the lesion is to be detected at a stage when a recognition of the condition is still of some value to the patient.

TYPE VII. The röntgenographic picture of a saddle shaped ulcer is more graphic than words can describe (Fig. 4). The affected area may conform to the lines of an English saddle, having a more or less flat surface, with flaps extending down on the anterior and posterior surfaces of the stomach, or it may be deep, with a high pomel and back, like a typical McClellan army saddle. While such lesions are usually described surgically as gastric ulcer, all those I have seen proved malignant upon microscopic examination. This type of involvement causes no obstruction to the passage of chyme and no gastric retention. Indeed such a stomach usually evacuates itself with uncommon rapidity, either on account of the diminished hydrochloric acid or because adhesions interfere with the normal function of the pyloric sphincter.

In the detection and interpretation of gastric lesions, serial röntgenography fulfills two functions—that of a scout and that of an architect. As a scout it detects the malignant and premalignant lesions at an earlier stage than any and all other methods combined. But, if the scout is to be of any real value, he must be employed before the enemy has fired the deadly volley which announces to the medical attendant that malignancy is already established.

Serial röntgenography, the architect, is not nearly so much of a character as serial röntgenography, the scout. Alas! In most cases the cancer has advanced to such a stage that x ray as an architect is of little value, except to prevent an unnecessary mu-

tilation of the body in the guise of an exploratory laparotomy. Every single case of gastric carcinoma or precarcinoma in the form of indurated gastric ulcer which is discovered by the x ray scout is submitted to the x ray architect to determine whether or not surgical procedure is indicated.

Inoperable cancers are divided into two groups: 1. Those in which the lesion is too extensive to allow even a gastroenterostomy; 2, those in which gastroenterostomy is possible, but not indicated.

Operable cancers are divided into two groups: 1. Those for palliative relief; 2, those for surgical cure, or cancer prevention.

The first group of inoperable cases is illustrated by Fig. 3. There may be such an extensive growth—usually annular—of the pars pylorica as to prevent the passing of anything except fluids into the duodenum, but the posterior and anterior walls of the stomach may be involved to such an extent that it is impossible to perform even an anterogastroenterostomy. In such cases the patient may be saved the discomfort of an unnecessary mutilating exploratory laparotomy during the last weeks or months of his life.

The second group of inoperable cases is illustrated by Fig. 4. In this group there is no pyloric obstruction, but the growth along the lesser curvature is so extensive that there is no hope of its complete removal, and the patient will die of constitutional symptoms before the growth obstructs the pars pylorica. Therefore, the palliative operation of gastroenterostomy is unnecessary. And unless the pylorus is artificially obstructed, the patient's symptoms are aggravated rather than alleviated.

In this type there is always the question of whether or not the growth is removable, but the Röntgen architect can state with certainty just how

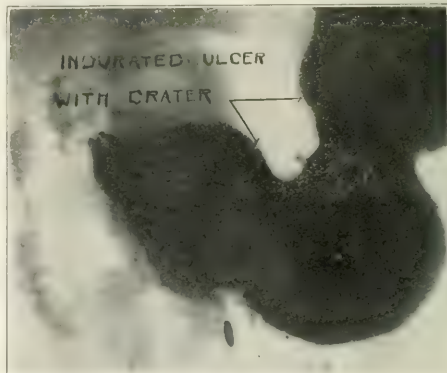


Fig. 7. Precarcinomatous area on lesser curvature. Surgery indicated for complete cure.

much of the stomach wall is involved. The surgeon can then determine before operating whether he is bold enough to attempt a complete gastrectomy, and the patient can decide whether he wishes to take the chance of the high mortality of such a surgical procedure. It is true that some of the cases described under Group 2 of operable cases will, because of extensive glandular involvement or

metastatic involvement of the liver, belong to this class.

*Operable for alleviation of pyloric obstruction.*—A large majority of the cases of carcinoma presented for x ray examination after the development of some of the characteristic symptoms of gastric cancer, come in the class illustrated by Fig. 5. The growth involves the pars pylorica and causes or will cause such an obstruction that the patient would die of inanition before the constitutional symptoms of cancer became very marked. The posterior or the anterior wall of the pars media is not extensively involved, and there is a possibility of successfully performing a postero- or antergastroenterostomy, thereby temporarily relieving the patient of very distressing symptoms. In such cases there is no



FIG. 8a.—Carcinoma.

FIG. 8b.—Spasm.

hope of surgical cure, and it can be decided by the physician, surgeon, röntgenologist, and patient whether the temporary alleviation is worth while.

The operable cases in which there is hope of cure are of two types, those in which one is reasonably sure that the growth is malignant, and those in which there is an indurated ulcer which may or may not be malignant.

The first of these is illustrated by Fig. 6, where there is a small annular growth involving the extreme pyloric end of the pars pylorica, freely movable and demanding immediate surgical procedure regardless of whether or not it causes gastric symptoms. These go on very rapidly to complete pyloric obstruction, with gastric symptoms; and operation is inevitable in a very short time. If the operation is performed in the early stage before the clinical symptoms of obstruction present this type offers hope of a surgical cure.

The second group of the operable cases, illustrated in Fig. 7, are the indurated gastric ulcers which may or may not be malignant. Up to the present time it has seemed wise to follow the trend of general teaching, to consider that all indurated

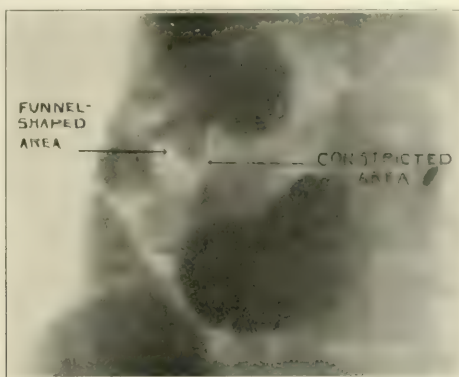


FIG. 9.—Carcinoma, first portion of transverse colon.

gastric ulcers are malignant or may become so at any moment, and to advise surgical procedure for the removal of the induration and the "cancer bearing area."

These indurated areas show very distinctly and are readily demonstrated by serial röntgenography, even when the induration is so small as to require the closest scrutiny and palpation of the gastric wall after the abdomen is open, and in some cases where the Röntgen evidence is very characteristic, the ulcer can be definitely detected at the time of operation only by opening the stomach and examining the mucosa.

*Negative diagnosis of gastric cancer.*—By the use of serial röntgenography it is possible to state with

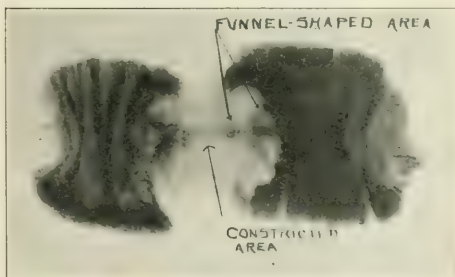


FIG. 10.—Specimen, after removal.

a remarkable degree of accuracy that a person is not suffering from a gastric cancer or from a precancerous indurated gastric ulcer. When a patient past forty years of age has chronic gastric symptoms for several months, and has lost some flesh and strength, it is worth a great deal to him to know definitely that he has neither a gastric cancer nor even a precancerous area of induration. This is



particularly true if there is a family history of cancer.

This rather radical statement is not made without careful consideration. It is based on a negative diagnosis of 907 cases. In order to determine the accuracy of this method of examination, letters are written to the physician who referred the case, or to the patients themselves, every three or six months and inquire, *ante mortem*, to my knowledge, has the negative diagnosis of gastric cancer been proved erroneous, either by later surgical procedure or by autopsy. In two cases, both of them more than four years ago, the subsequent clinical history indicated that the patient died of cancer, but in one of these it was doubtful if the growth was in the stomach.

On one other occasion I stated that any one who knew of a case in which I had made an erroneous diagnosis of gastric cancer, either positive or negative, would confer a great favor by reporting it to me, and I repeat the statement here.

What we have said of gastric cancer applies practically to the esophagus and colon, and with a slight degree of modification to the small intestine. By administering a thick paste of barium or bismuth and water, the lumen of the entire esophagus may readily be determined, either roentgenographically or fluoroscopically. By this technic even the lumen of the normal esophagus may be shown, and if there are any areas of diminished elasticity in the wall, they are apparent. It is more difficult to differentiate the malignant and nonmalignant lesions of the esophagus than of the stomach, but in this region of the gastrointestinal tract, the roentgenological examination may be supplemented by esophagoscopy which may, if desired, be applied also to the cardiac orifice and the upper end of the lesser curvature of the stomach.

In cases of carcinoma the constricted area in the esophagus is constant in size and irregular in shape, and has a wormeaten appearance. The uninvolved portion above the growth is usually dilated. Esophageal carcinoma (Fig. 8) must be differentiated from cardiospasm and esophageal diverticulum and, if possible, from benign cicatricial constrictions.

One case of esophageal diverticulum reported by Doctor Stetton, had been previously diagnosed as carcinoma, but the real condition of diverticulum was readily diagnosed by x ray and a complete surgical cure was obtained by Doctor Stetton.

Cardiospasm may cause such a complete obstruction as to result in an immense dilatation of the esophagus. Selby, formerly of the Mayo Clinic, showed that in cases of cardiospasm the dilated area terminated in a conical point to which he referred as a "dimple" (Fig. 8.)

In some cases the esophagus becomes elongated and folds on itself. This is much more likely to occur in cardiospasm than in carcinoma.

Organic lesions of the colon may be detected with about the same degree of accuracy as a lesion of the stomach. In organic lesions of an annular type the positive diagnosis of carcinoma is readily made, but in some cases the carcinoma may follow extensive adhesions from an old appendicitis, and it becomes more difficult to determine whether the lesion is malignant or not.

The colon should be examined after the administration of a barium clyisma, and also after the ingestion of a barium impregnated meal. In the case of the clyisma the solution should pass all the way to the cecum, and if it does not, one can state that there is an obstruction in the colon or of the colon, pressure on the colon, or spasm of the colon which can be readily recognized.

In cases of carcinoma of the lower end of the sigmoid and rectum, the proctoscope supplements the x ray, and may even supplant it if the growth can be seen and a specimen removed.

We find, however, quite a number of carcinomas of the upper part of the colon. Some of these occur in young persons and are quite amenable to surgical cure. The best illustration of this is the first case that I saw five years ago (Fig. 9). It was that of a woman who presented herself for a Röntgen examination, giving a clinical history of tuberculous peritonitis. The examination revealed an annular carcinoma of the first portion of the transverse colon, and surgical measures were resorted to. Doctor Draper, who operated in the case, removed a section of the colon, and a specimen which was radiographed is reproduced here (Fig. 10). Subsequent Röntgen examinations have been made nearly every year since. There has been no return of the growth, the patient has gained sixty pounds in weight, and is perfectly well and strong.

#### SUMMARY.

1. The rapid development of the x ray diagnosis of gastrointestinal lesions is beyond the comprehension of many of the diagnosticians, or even of the gastroenterologists who are foremost on the firing line.
2. The statement by eminent gastroenterologists that this is no way to make a positive diagnosis of early cancer or indurated gastric ulcer, robs thousands of cancer patients of an opportunity for surgical cure.
3. Gastric cancer comes as a "thief in the night" and gets a grip on the patient before the well known "red light" danger signals of the classical clinical symptoms develop.
4. Nonmalignant functional gastric disorders cause more severe clinical symptoms than early carcinoma.
5. The public is learning the scope and accuracy of the x ray, and demanding its use.
6. The time has come when a man need not be in doubt for a single day as to whether or not he has gastric cancer or a precancerous gastric ulcer.
7. All types of carcinoma, adenocarcinoma, sarcoma, and indurated ulcer are considered under the term cancer.
8. "Symptom complex" and "Röntgen sign" are a snare and a delusion.
9. This communication deals solely with the detection by serial roentgenography of morphological changes in the wall of the viscus.
10. The roentgenological indication of malignant, compared with nonmalignant lesions of the stomach.
11. Types of growth and method of involvement of the gastric wall.

12. The x ray as a scout and the x ray as an architect.

13. Roentgenological indications for surgical procedure: *a.* Inoperable because too extensive for even gastroenterostomy. *b.* Inoperable because too extensive for complete removal. *c.* Operation for palliative relief. *d.* Operation for surgical cure. *e.* Operation for prevention of cancer.

14. We can state that a patient has not a cancer of the stomach with as great a degree of certainty as we can state that he has not a fracture of the hip.

15. Organic lesions of the esophagus may be detected with an equal degree of accuracy, but it is more difficult to differentiate between the malignant and nonmalignant lesions. Gastroscopy is a valuable method of corroboration.

16. Colonic growths are readily detected by the x ray, but here also it is sometimes difficult to differentiate between the benign and malignant lesions, and in the lower sigmoid and rectum proctoscopic examinations are valuable.

In closing, I wish to express my gratitude to the NEW YORK MEDICAL JOURNAL for an opportunity of presenting this aspect of the cancer question.

103 PARK AVENUE.

## CANCER OF THE BLADDER AND KIDNEYS.

BY VICTOR COX PEDERSEN, A. M., M. D., F. A. C. S.,

New York,

Associate in Urology and Chief of Clinic in Urology for Men, Women, and Children, St. Mark's Hospital.

It is very difficult, indeed, within the limits of a brief paper, to discuss a question so vast and varied as neoplasms of the bladder and kidneys, to the exclusion of other segments of the urogenital tract in men, women and children. It would be well nigh impossible to extend this subject at all beyond the limits of these two viscera without producing a veritable booklet far in excess of the allowable length of the papers which are to comprise the series on cancer in the various systems of the body, in this and similar journals during the current month.

In the classification of tumors of the bladder on the basis of clinical pathology, we must distinguish the two general types of benign and malignant with recognition of the fact that the vast majority of all bladder neoplasms are either malignant at the outset or become so if the patient lives sufficiently long or if they recur after removal. The commonest benign growth is the papilloma, which is, as its name signifies, an epithelial papillary growth of the mucosa into numerous, long, slender vascular, seaweed-like offshoots. The whole mass may spring from a slender pedicle or from a broader base, constituting respectively the pedunculated and the sessile types. Both may begin and remain benign in character or may slowly change at almost any period of their existence to malignant characteristics of any degree of virulence, from moderate to marked. It is a well recognized clinical fact that the greater the number and the earlier the relapse after removal of these manifestations, the more malignant and dangerous they are. Within the vision of the cystoscope they appear as delicate, vascular outgrowths,

waving freely in the dilating fluid with its inlet and outlet, and at times displaceable with the ureteral catheters to reveal a slender stalk in the pedunculated form and at times displaceable in little or no degree to uncover the thick base in the sessile type. Histologically they are composed of an epithelial covering on a delicate stroma of fibrous and vascular tissue in the benign varieties. The change from this to the malignant type is indicated by the presence of altered epithelial cells, having irregular forms, size, and number of the nuclei, and various changes in the cell body. Such atypical epithelia may be either in the surface of the tumor in the epithelial layer itself and at any point of various depth within the stroma of the papillae, or the base, or within the bloodvessel cavities. Modern pathology teaches that any of these altered cells establishes the diagnosis of true cancer so that extensive changes are no longer required to settle this question. Sometimes a similar invasion with altered epithelia is found within the wall of the bladder near the base or attachment of the tumor. Clinically it is not easy to suggest the presence of these early changes; but in general a neoplasm which does not wave freely in the fluid, as the latter is let into and out of the bladder within the field of the cystoscope, and which does not accommodate itself to the distention and relaxation of the bladder wall, also under the observer's eye, may be suspected of cancerous degeneration with strong likelihood of truth. It is not necessary for this loss of elasticity to be great or to approach the early stage of infiltration, but rather to be unmistakable, and in particular to be established as a new feature after several preliminary examinations. While by no means an unvaried rule, it is recognized that the sessile form is much more apt to take on cancerous degeneration than the pedunculated variety.

This fact fittingly introduces the subject of papillary carcinoma, which may be essentially cancerous from its earliest periods or develop that tendency from a former papilloma or fibropapilloma. The frequency of the latter transition is the warrant for discussing benign papilloma at all in this paper. In the cystoscopic field the papillary carcinoma is always sessile and very rarely has the papillary offshoots so overhanging the base that the latter is more or less hidden. Inelasticity of the tumor and of its extension into the surrounding mucosa is, as previously noted, a very important and early sign of its malignant nature. Further development of this objective sign is infiltration so that the tumor and its annexa are fixed, not only in form, but also in position in many cases, thus simulating, for example, cancer of the breast as soon as it has begun to involve underlying structures even in moderate degree. Histologically these papillary carcinomas possess the general characteristics of all cancer, in having irregularly formed and nucleated epithelial cells on the surface and penetrating into the substance of the growth and traveling along the lymphvessels and bloodvessels as clusters within their cavities or along their walls. Nests of these epithelial cells are also found scattered lawlessly in all directions. At the same time there is overgrowth of the fibrous and vascular elements of the bladder wall, combined with small

mental cell infiltration, as expression of the inflammation which sooner or later accompanies the process.

The frequency of transition from benign papilloma to papillary carcinoma makes it possible to find parts of the same tumor in which the papillae still present an outline in which malignant degeneration has already progressed to considerable extent. Furthermore, the fact that of several tumors within the same bladder at the same time some may be malignant, and others benign either at their origin or in their development, determines a large variety of microscopic findings in these multiple growths when compared with each other. A still more perplexing condition is that a tumor which at its original removal has been pronounced malignant or benign,

will at its recurrence receive the opposite diagnosis of benign or malignant. This apparent contradiction is to be explained only by the incident that in a given section the prevailing tissue was of the one or the other character. Similarly specimens removed with the high frequency current of Oudin may be so changed as to render a definite diagnosis almost impossible. In illustration, the writer had one of the best pathologists in the country state that such a specimen might be an artifact by coagulation, a piece of epithelioma, or a papilla from a benign growth—all due to the changes within the tissue

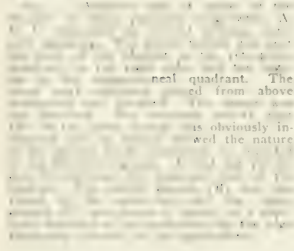
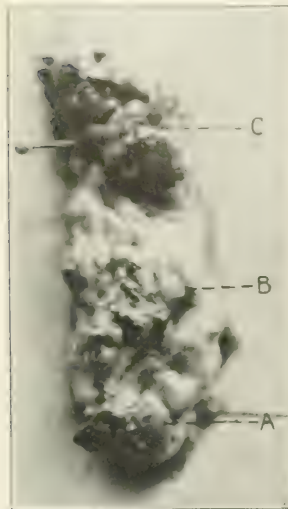
ble, and, third, the multiplication of neoplasms. Only the fourth factor usually considered necessary for the clinical proof of malignancy of new growth of the bladder was lacking—ulceration, which is usually a later development. Any two or three of these four signs will suggest the diagnosis to the experienced eye and the foregoing three did so in this case.

Ulcerating carcinoma or epithelioma of the bladder is another type of malignant growth frequently met and possesses the same clinical and histological characteristics as the same form of neoplasm does in other mucous surfaces of the body. A detailed description is, therefore, not necessary; but it is well to note that the tumor does not begin as a papilloma or a papillary cancer, but as an epithelial manifestation with rapidly thickening, extending, and infiltrating tendencies followed by central ulceration, due to the cutting off of the blood supply by the neocellular proliferation. In the later stages fungoid and papilloid offsets may be developed so as to simulate degeneration from a papilloma. This distinction is of no clinical but of considerable pathological interest in settling the classification of these new growths. The microscope reveals the characteristic anomalous epithelia in nested and wandering cells and all the other elements of epithelioma with central death of tissue as ulceration.

There are other rare forms of cancer of the bladder originating in adenoma and myxomatofibroma, myoma and similar uncommon benign neoplasms. Their rarity makes them of little clinical importance because very often their presence is not suspected until the cancerous degeneration is rather advanced. After this point their symptoms and other manifestations are materially the same as those of the foregoing types of cancer which are distinctly primary in the bladder.

The next logical subject after primary cancer of the bladder is secondary cancer, by extension in direct contiguity from the adjacent organs, especially the vagina and uterus in the female, the prostate and seminal vesicles in the male, and the rectum in both sexes. Inasmuch as the majority of cancers which affect these organs are of true carcinomatous type, it follows that their manifestation in the bladder only duplicates this nature, with the added fact that the earliest signs are vesical fixation to the organ of origin, and congestion, tortuosity, and obstruction of the bloodvessels about the point of union. The latter is a very important diagnostic aid even before changes in the epithelial structures of the bladder are manifest or advanced.

All the foregoing forms of cancer of the bladder are of the glandular type,—carcinoma and epithelioma—so that the next proper subject is the connective tissue type or sarcoma. In the bladder, sarcoma may be of infiltrating and of noninfiltrating variety, each having an unbroken rather than an ulcerating surface and a round, regular, rather than an indeterminate form. It is the malignant tumor of early life, being found even in the first few years of childhood, whereas glandular malignant tumors occur later in life. Exceptionally, sarcoma has been found in the bladder as late as the fiftieth year. They always cause symptoms even if not ulcerating.



set up by the electrical application.

One of the best specimens of multiple and various tumors of the bladder which the writer has had is illustrated in Figures 1, 2, 3, and 4, which are adequately described by the legends under each. The clinical features of this patient which revealed the diagnosis of cancer were, first, the cystoscopic picture of inelasticity and hardness of the lowest growth; second, the high degree of inflammation and irritation of the bladder as that ordinary distention with urine or irrigating fluid was not possi-



Tumors of the bladder may be single, double, or multiple, discrete or confluent, especially in their later extension, delicately or densely pedunculated, sessile, or extensively infiltrating without definite base, fimbriated or smooth, ulcerating or nonulcerating, at first without, and later with cystitis as a complication. They may be situated at any point whatever of the viscus, and various statistics have been evolved tending to indicate those portions of the bladder in which the various forms are most commonly encountered. Adopting the plan of dividing the bladder into five segments, as recently described by the author,<sup>1</sup> namely, the ureterotrigonal or posterior inferior quadrant, the subperitoneal or posterior superior quadrant, the urachal, apical, or anterior superior quadrant, the retropubic or anterior inferior quadrant, and finally the neck, one will find that the majority of these neoplasms for practical and clinical purposes occur in the general region of the trigonum, ureters, and deep fundus. In other words, therefore, the ureterotrigonal and subperitoneal quadrants are the common ground in which these cancers are implanted. In so far as the majority of them are glandular carcinomata, either primary or secondary, one would rather expect them to develop in those portions of the viscus where glands are most numerous, where adjoining organs such as the prostate and uterus are attached and where perhaps persist fetal remnants in the determination of one and the atrophy of the other sex from the period of embryonal development when both sexes are present in the offspring. For these three reasons, therefore, the lower and posterior portions of the bladder which are in closest relation with the sexual organs are the commonest seat of cancer. For clinical purposes these brief remarks on pathology are sufficient, especially with the added fact that the period of life at which the various forms are incident are midlife and endlife for the carcinomatous and epitheliomatous varieties, and infancy and early life for the connective tissue or sarcomatous types. These rules are by no means invariable, but are in agreement with the same rules for cancer in other parts of the body.

With dismissal of the subject of pathology, that of symptomatology presents itself and must include both the subjective and objective symptoms. In early childhood the symptoms are practically only those of observation, because children are not able to describe their sufferings which originate and follow the same course as in adults. The symptoms of tumor of the bladder in children rest on the effect of the growth upon the viscus itself, the urethra, the urine, and the kidneys. The sole distinction between intravesical and extravasical growths is usually that the predominant element in the latter is that of pressure and obstruction from without with irritation of the bladder as a later sign, while in the former the chief element is irritation followed by obstruction. This is a serviceable clinical distinction but it is not invariable. In children and adults the conditions are much the same. The effect on the bladder is, first, hypertrophy through changes in

the elasticity of the bladder wall and obstruction of the normal outlet and, second, irritation through the presence of the new growth as a foreign body at the outset, later by decomposition of the urine, and finally by ulceration and necrosis. The effect on the urethra is obstruction by progress of the growth along the floor of the bladder, involving more and more of the neck, or by direct pressure from without if the growth has begun in a neighboring organ. Such obstruction of the urethra tends to augment the foregoing causes of hypertrophy and irritation of the bladder. The effects on the urine are those of a cystitis of early appearance, great severity, and intractable course, arising from the presence of the tumor as a foreign body and progressing with infection and ulceration in the tumor and obstruction in the urethra. This particular degree of cystitis is one of the four salient points of distinction, clinically speaking, between benign and malignant growths already briefly described.

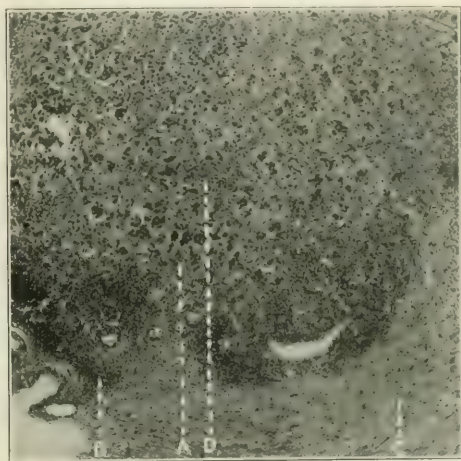


FIG. 2.—A, Low power, showing penetration of cancer toward the submucosa and the muscle layer. The nests of cancer cells at A are growing toward the layer which is at the bottom of the picture at C. Small round cell infiltration is seen in the submucosa, at B. The lymph node at D is probably the one which appears in Fig. 3, which is the high power magnification.

Its obstinate character is perhaps the most important feature. The effect on the kidneys is by way of the ureters which like the urethra become obstructed by pressure or invasion, then directly infected, and finally transmit the purulent process to the kidney on one or both sides. With these several effects in mind it is easy to comprehend the subjective symptoms of the patient. The hypertrophy and irritation of the bladder and the cystitis produce the most painful dysuria and pollakiuria, which, at least in its terminal stages, is without equal for severity and suffering. Pressure of the bladder wall upon the tumor or muscular action as evacuation is completed causes hemorrhage which may be the earliest symptom and forerun all the other manifestations by many weeks or months, so that such "silent" or "symptomless" hematuria is one of the most important urinary occurrences and should always be

1V. C. Pedersen, *Topography of the Bladder*, with Special Reference to Cystoscopy, NEW YORK MEDICAL JOURNAL, NOV. 1913, 1013.

trained in its use by an expert with all the known means of diagnosis, such as cystoscopy, urethral catheterization, radiography, and the like, as pointed out in a paper of the author<sup>2</sup> (Fig. 1).

Another very early symptom is pus in the urine which may antedate the other signs of cystitis and persist for some time before the latter really begins. Such pus need not be a macroscopic feature, but should be an unmistakable microscopic element with bladder cells distinctly predominating. The importance of pus in the urine was discussed by the writer in a previous contribution<sup>3</sup> and need not be further elucidated here more than to say that the general practitioner must have it traced to its source by an expert through the same steps and methods as those detailed for hematuria above. It is not possible to give a complete picture of the symptom-complex of cancer of the bladder, but one may sum it up by saying that in the early stages there may be

Space forbids further minutiae of the subjective symptoms and requires a few remarks on the objective symptoms or physical signs and the laboratory findings. With the necessity of early diagnosis in mind, we may say that there are no physical signs by inspection, palpation and percussion of primary cancer of the bladder, except perhaps in children in whom bimanual examination, with the internal finger in the rectum, will sometimes establish the presence of an infiltrating mass. In secondary cancer, however, the bimanual examination will often detect the primary origin of the growth and suggest its extension toward or into the bladder. General anesthesia is essential in all these examinations.

Extensive neoplasms of the bladder, by which the cavity of the viscus is entirely filled and the organ distorted and displaced so that cystoscopy is impossible, may of course be recognized by standard physical methods. Such a case is illustrated in Fig.

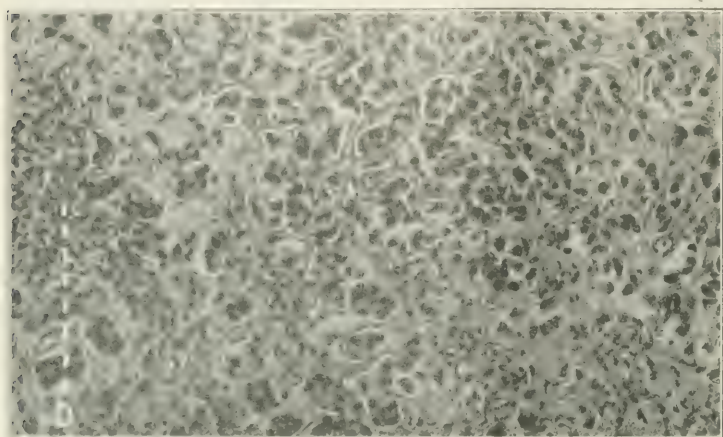


Fig. 1. Photomicrograph of bladder tissue showing extensive neoplasia. The lymph node at D is probably involved.

only slight hematuria, scanty pyuria, and variable foreign body signs. None of these conditions need be constant, and in fact they are apt to be relapsing at first with intervals of comparative rest from all symptoms, which however tend to become shorter and shorter and finally disappear into the state of constant symptoms, which by the same process of increase, very soon reach definite degrees of suffering. Such a moment marks the full establishment of the tumor and not infrequently the time when the more moderate methods of treatment to be described hereinafter are no longer available. The progress thereafter is that indicated by the various effects of the tumor already described in their relation to the bladder, urethra, urine, ureters, and kidneys. The golden moment of diagnosis, therefore, is during the period of uncertain and masked symptoms and not during the establishment of the unmistakable and rapidly increasing signs.

5 under the writer's care after a long period of unspeakable symptoms. In a certain sense this paper is concerned only with earliest manifestations of the disease in which strictly modern means of diagnosis are almost always available even in children, especially urethroscopy and cystoscopy. None of the early symptoms of possible new growth, even after a single appearance, should ever be passed by the family practitioner without submitting the patient to this class of investigation at properly trained hands. Promiscuous and "free-for-all" cystoscopy, such as is practised by not a few who have had a brief course in the work, have purchased perhaps one instrument only, and see but few cases in a year, is mentioned only to be called an imposition on the rights of the patient, exactly as would be a retinoscopy in the same circumstances. Quite to the contrary, such a diagnosis must be made by one who is doing this work, not only from day to day, but also from hour to hour in private and in public, and who is possessed of all the armamentarium. The latter includes direct and indirect and retrovision, inspection and catheterizing and operation, full calibre and subcalibre (for children) cystoscopes, and direct and indirect vision, water dilating and air dilating urethroscopes, as the nucleus around which are gathered a very large supply of other special instruments too numerous to mention here. The general cystoscopic features of tumors of the bladder have already been noted in the early paragraphs of this paper as part of the subject of

<sup>1</sup> J. B. Williams, *Bladder Cancer*, New York, Medical Journal Co., 1905.

<sup>2</sup> J. B. Williams, *Bladder Cancer*, New York, Medical Journal Co., 1905.



pathological varieties in which they seemed to belong exclusively as a means of differentiation pathologically as well as clinically. Repetition is therefore not advisable, except of the one point that every tumor of the bladder must be inspected with

bladder, in at least four relations or characteristics. These four elements of the case have already been stated, but may be advisedly repeated here as the number, hardness, ulceration of the growth and intractable cystitis secondary to its extension. It is

acknowledged that multiple tumors are almost invariably cancerous, either each itself or one or more of the entire group, as was illustrated by the case of the author previously noted in this paper, in which two of three masses were cancerous and the third papillomatous. The hardness, inelasticity, or infiltration of the tumor, in the mass itself, or its annexa, or both, is another very important clinical sign of malignancy. Of these three terms, infiltration had best be retained for extension of the tumor into the surrounding tissues, and the other two for the conditions of the mass itself. Necessary associates of them are congestion and vascularity. Ulceration, whether superficial or deep, limited or extensive, single or multiple, at any portion of the new growth always suggests cancer. Cystitis from the foreign body action of the mass early, from the fermentation of the urine later, and finally from the

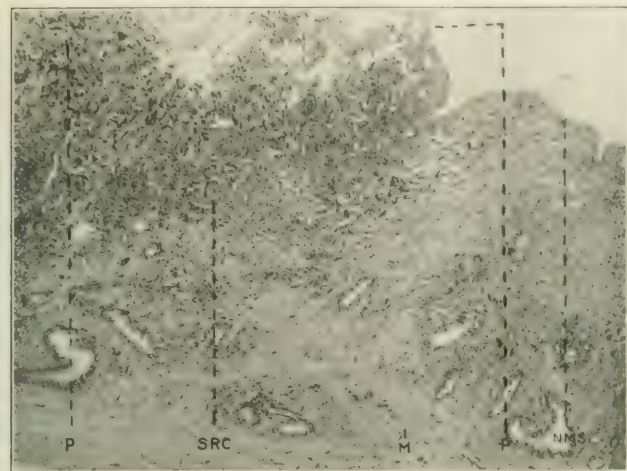


FIG. 4.—Microphotograph of papilloma of the bladder after treatment with the high frequency current of cadin. This is the third tumor of those shown in the figure blank. P, P are the papillary outgrowth. NMS is the normal mucous surface of the bladder. It will be noted that the epithelium is very much denuded by action of the current. SRC is the small round cell infiltration and M the muscle layer.

the normal vision and close vision instruments, during rest in distention and during activity in evacuation and dilatation. A caution to remember is that a small tumor near the neck may escape detection, except with the cystourethroscope, which permits absolute examination of this region. The wisdom of a urethroscopy subsequent to the cystoscopy is illustrated by the case of the writer reported in the paper on hematuria previously cited, in which a papilloma existed within the bladder and another within the prostatic urethra. Radiography of the bladder in cancer is of very little value in the early stages—the most important of all stages; but when the tumor has reached considerable size and the bladder has become distorted and contracted, then the x ray may reveal these changes rather definitely, especially if the organ is filled with collargol or other impervious menstium. While of acknowledged value, therefore, as an additional means of investigating new growth of the bladder, it cannot be regarded as anything more than a corroboration of the other methods.

While the foregoing objective signs and symptoms are sufficient to establish the fact of a neoplasm within the bladder, it is quite another matter to make a diagnosis of the nature of it. Two distinct methods stand in clear contrast in this matter and may be denominated as the clinical or conservative and the radical or laboratory procedures. Clinical or conservative diagnosis takes into account the subjective and the objective symptom complex and especially the conditions of the tumor within the

necrosis, is intractable in cancer and completes the quadruplet of important clinical signs which



FIG. 5.—Internal aspect of right and left halves of author's case of extensive carcinoma, primary in the subperitoneal quadrant of the bladder and occluding almost the entire cavity. U, urethra; P, prostate; V.S., vesical sphincter; V.C., vesical cavity; Ur., ureter greatly hypertrophied; S.C., surface of cancer necrosing; B.C., base of cancer; V.D., vas deferens. It will be seen how extensive and infiltrating the mass of the growth is. There was no cavity left in which cystoscopy could possibly be performed, but the urethra was not occluded.



must always be searched for and weighed in any case. The radical or laboratory diagnosis denies that the foregoing elements are sufficient proof either all together or in various subgroups of the four, and insists that fragments of the tumor shall be removed through the bladder with the operation cystoscope and passed to the pathologist for section and decision. The instruments available are one of the various forms of rongeur, scissors or snare. Occasionally the electric cable of the high frequency current of Oudin will cut off at the base a portion of the tumor which may be recovered for examination. While this method has much to recommend it from the standpoint of scientific interest, it has a number of objections and disadvantages. Incision into any tumor before complete removal thereof and for diagnostic purposes is recognized as one of the errors of the passing generation of surgery, in that it tends to spread into the circulation of lymph and blood the cancer elements, either organisms or cells, and thus to create the source of secondary deposits. The presence of cancer cells within the lymphvessels and bloodvessels in the early stages of degeneration from benign to malignant growths has already been pointed out in bladder tumors. How vastly important, therefore, it is to leave the growths alone and to follow the later teaching of the passing generation of surgery by removing the tumor widely in every possible case and thereafter by completing the refinements of laboratory examination! This is the recognized custom in cancers of the breast, rectum, and other portions of the body, in which neoplasms do not seem to possess the same unvaried degree of malignancy shown by almost all bladder growths. It, therefore, seems to the writer doubly important not to incur any such hazard in the field of which this paper treats. A corollary of the foregoing elements of diagnosis is that of recognition of the relations between the cancer and the adjoining organs, in the primary cases by spreading outward from the bladder and in secondary cases by spreading inward toward it. One might therefore designate degrees of cancer in each case according to circumstances; those with no changes in the annexa, those with invasion of the surrounding mucosa alone, those with involvement of the muscle coat in addition, and those with penetration into the perivesical tissues. It is manifest that early diagnosis is concerned with the first group more than the other three, as being that which offers the best opportunity of operative cure and is less concerned with each of the others in the order given in that, even in the second group, the disease has already extended beyond the control of ordinary operative work. The difficulties of diagnosis from a single thread of tissue, especially one which may have been altered by the action of the high frequency current of Oudin, is illustrated by the following report from one of the best pathologists of New York city on a specimen which came away attached to the cable and clinically appeared to be one of the fibriae of a papilloma, which, however, in being double and in having a sessile, rather firm attachment, may very well be cancerous. The report reads as follows:

fragments of epithelium, and fine capillaries fused into a solid mass. It is an artificial agglomeration of tissue fragments and not real tissue.

Yet I am suspicious that it contains portions of a tumor, papilloma or malignant epithelioma, I cannot tell which. Most of the cells could well come from normal mucosa in a state of inflammation. Others seem to be somewhat hypertrophic and atypical and these suggest papilloma or carcinoma. The exact nature of the process cannot be told from this material. I am sending you the section so that you can draw your own conclusions.

Manifestly such a restricted report is not the sign of incompetence or indifference of the pathologist, but rather, first, of the difficulties in his way in making a diagnosis from a very small and indeed almost always a too small specimen, and, second, those in the way of the urologist who with the implements available invariably secures only a small fragment, which may, as in the foregoing specimen, be profoundly altered in the very act of coming away.

(To be continued.)

## THE TREATMENT OF EPITHELIOMA BY MODERN RADIATION.\*

By RUSSELL H. BOGGS, M. D.,  
Pittsburgh.

Röntgenologist, Allegheny General Hospital; Dermatologist and Röntgenologist, Pittsburgh, Columbia, and St. Francis Hospitals.

By modern radiation we mean the use of radium and the Röntgen rays with the improved technic, either the Coolidge or the hydrogen x ray tube. Present day results in the treatment of epithelioma, when the radiation is so given, are much more effective than in the early days of radiotherapy. Epitheliomas situated on mucous membranes in more advanced cases, even with extensive glandular involvement, have been apparently cured by this method. With our present technic much quicker and deeper results can be produced.

There have been two methods of radiation in the treatment of epithelioma; namely, the fractional dose and the massive or intensive. In the early days of radiotherapy it was not uncommon to hear of patients receiving a hundred and fifty or more treatments for a small epithelioma. Those who are familiar with past results, will remember that a certain percentage of cases were permanently cured; certain cases improved up to a certain point, and then, after remaining quiescent for a period, began to take on malignant tendencies again; and that some far advanced cases were unaffected by the mild treatment. It has been proved conclusively that prolonged treatment and often repeated mild exposures are ineffective in treating epithelioma, whether using radium or the Röntgen rays. The dose may be divided into a few strong treatments, but not into unlimited and repeated mild exposures.

From the beginning of radiotherapy the best results were obtained by the dermatologists and röntgenologists who gave strong treatments and relatively few in number. Frequently during the past ten years, I have seen small epitheliomas which someone had given perhaps two hundred treatments, covering from one to three years, and, instead of having an epithelioma, the patient would have a

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Röntgen ulcer with a degenerated ring around the outside. The operator, who had treated only a few cases of epithelioma, considered that it was progressing favorably and kept giving x ray treatment with a view of clearing up the lesion. Usually no reaction had been produced, the operator undoubtedly being afraid to give a full dose promptly which would have produced the desired effect.

In such cases of epithelioma, I always counsel surgical removal of all degenerated tissue, as Porter advises in the treatment of chronic Röntgen ulcers on the hands of some operators. This has resulted in a permanent cure in almost every case in which no glandular involvement has taken place. Frequently such cases have been reported as radiotherapy failures, and surgical successes have been claimed when permanent cures were accomplished by excision, whereas, if the true pathology had been known, only a Röntgen ulcer had been removed, the epithelioma having been entirely destroyed by radiation. Obviously there would be no recurrence if all the degenerated tissue was removed, but if any unhealthy tissue is left, it will soon become more malignant than ever.

Every dermatologist and röntgenologist has seen the same condition, but many have failed to realize that they were dealing with a Röntgen ulcer instead of an epithelioma. It is true that many epitheliomas have been cured by using the five minute or mild treatments covering many months, but when such a method was used there were many recurrences. Under such treatment it was also true that there were instances in which the primary epithelioma underwent involution up to a certain point, and after remaining quiescent for a time, began to assume malignant tendencies while under the influence of radiation. The application of such small amounts of radiation to the skin continued over a long period of time, will produce atrophy, telangiectasis, pigmentation, even without erythema.

Epithelioma, it should be remembered, is carcinoma in the epithelial structures of the skin, and the successful method of treatment involves the complete destruction of all carcinomatous tissue. The term, epithelioma, is very unsatisfactory and is applied to epithelial growths, whether benign, semi-benign, or malignant in character. The variation in degree of malignancy has accounted for such diversified opinions in regard to treatment. The term, benign, should never be applied to epithelioma when it is an innocent looking lesion, which in time will show its malignant and destructive character.

True epithelioma has certain pathological characteristics. It represents a purposeless proliferation of cells, extending beyond normal limits and invading adjacent tissue, especially the lymphatics, accompanied by slight inflammatory changes. The cause of the inflammatory process is an unsettled question; most likely it is due to the elaboration by the pathological cells of an irritant, but it may be due to the abnormal cell acting as a foreign body. On account of some confusion over the term, epithelioma, most dermatologists have classified the lesions under three varieties—superficial, deep, and papillary—which are described in about the same manner in all textbooks.

It is astonishing how common epithelioma is and how many cases may be seen in a day's search in any of the large cities. Epithelioma, at least in the early stage, does not seem to cause any alarm among the inhabitants of a community. The disease comes on so slowly that often no one takes any notice of the victim until the condition is incurable. Many physicians still ignore the early changes in the skin, which should be recognized at once, and advise their patients that treatment is unnecessary. The most important matter in epithelioma, from a clinical standpoint, is to recognize the lesion early when the cure is easy.

After the age of forty years, it is the duty of every physician to remember the possibility of epithelioma in all persistent lesions which are constantly inflamed or show evidence of degenerative changes. The time has come when physicians are being severely criticized by the laity by their belittling many apparently trivial and trifling skin lesions. When undecided, they should at least seek the aid of some competent consultant. Neglect is as deplorable and inexcusable as improper treatment.

It is impossible to treat any form of malignant growth intelligently, without realizing that the virulence increases and decreases very strictly with the richness or poverty of the lymphatic supply in the various parts of the body. Therefore, epitheliomata in special sites must always be carefully considered, as well as the stage of progress, before selecting the method of treatment. The location rather than the size of the lesion must determine how radically it should be removed.

It is a principle, applicable in all cases, that any method which does not cause complete destruction of all epitheliomatous tissue, should not be employed. After considering the permanency of cure, we must also look to the cosmetic result. The absence of retraction, depression, and prominent scars, also freedom from pain and convenience of application, are great advantages in the method selected. There have been many methods of treating epithelioma, ranging from the internal administration of arsenic to radical surgical removal. It is a well known fact that the superficial caustics so often applied cause irritation, which simply increases the blood supply and stimulates growth. All irritating procedures which are inert are to be condemned, as they are worse than no treatment at all.

Fortunately, at the present time, among many of the best physicians there is a strong tendency to condemn the use of some of the older and inadequate measures which have kept the patients from seeking early treatment. The principal cause of failures might be attributed as much to an inaccurate technic in the use of the method employed, as to the patient's coming late with a large amount of glandular involvement. Until lately the value of a legitimate, conservative, and nonsurgical method of treatment in most cases has never been strongly emphasized.

As a result of the tremendous strides made in recent years in radiotherapy, practically all the leading surgical authorities today recognize its value as

Radium and the x ray, I believe, should always be considered first, because, when they are properly applied, practically all epitheliomatous tissue can



be made to disappear, and there are fewer recurrences than after any other method. Scientific doses can insure progress in radiotherapy, and should be regarded from two different points of view, that of physics and that of therapeutics. Physical doses may be fairly exact. Therapeutic doses, that is to say a knowledge of the quantity and quality for a particular case, cannot be indicted with the same certainty. The dose not only depends on the experience gained from a certain technic, but it also proceeds from a knowledge of the clinical characters of the epithelioma and of the susceptibility of the patient. Such characters being variable, it is certainly impossible to establish any fixed rule for all cases treated. The most striking results obtained by radiotherapy have not been confined to the small epithelioma, but have followed the treatment of lesions for which there was no hope of cure by any other method; radiotherapy has prolonged the lives of the patients, relieved their sufferings, and occasionally cured.

It happens that the radiations from radium or the x ray tube are of a complex character as regards penetration; and as it is necessary for some of the rays to be absorbed before reaction takes place, it follows that it is the rays of low penetrability that are the most physiologically active. Often rays of too low penetrability given in small quantities are the cause of failure. So there is no difference in the principles involved, whether it be the x rays or radium. Radium has the advantage of being applied in parts inaccessible to the x ray, and its radiation is constant and definite. The great disadvantage is its limited supply as well as its cost, and that with it only small areas can be treated—thus leaving the adjacent lymphatic glands untreated, which is the most important factor in treating all forms of malignancy. There are many cases where both radium and the x ray should be used.

My experience corresponds with that of Pusey that the rodent ulcer tissue yields, as a rule, more readily than the squamous cell carcinoma, but in the skin, squamous cell epitheliomata may be destroyed by either radium or the x ray with definite certainty.

Radiotherapy is applicable, according to my experience, in all forms of epithelioma, but when the lesion is situated on the lower lip, in many instances, it may be advisable first to remove it surgically and then ray the adjacent glands intensely. Very often a patient comes for consultation with a large ulcerated growth on the lower lip, with extensive glandular involvement. Here it seems advisable to apply radium to the lip and x ray the adjacent glands by the massive method. In these advanced cases I have seen more accomplished by radiotherapy than by surgery. Soon after the first application of radium the ulcer, which has been discharging freely, becomes smaller and the discharge is lessened, and in the first series the glands are partially blocked. My reason for advising radiation before removal in this class of cases, is that, out of a number of advanced cases of epithelioma of the lower lip which I have seen, in which the lesion and the glands were removed first, not a single case was permanently cured. This is also the experience of others; but it should be remembered that in such cases radiation

must be given heroically with the idea that the physician is certain to produce the required reaction in the desired length of time. Anyone who has not the courage to push the treatment in this manner, should undoubtedly give no treatment at all. Weak treatments may only stimulate. On the other hand, a small lesion usually can be successfully removed by any one of many methods. But as we can never tell how malignant a small, almost invisible lesion on the lower lip may become after removal, radiotherapy should be used at least postoperatively.

In a recent clinical lecture, Dr. John B. Murphy spoke of the great shock he received on reading an article in one of the British medical journals, wherein was analyzed a series of cases of epithelioma of the lip extending over a period of twenty or twenty-five years. It was demonstrated from the cases that could be traced that fifty-two per cent. of the patients who had carcinoma or epithelioma of the lip, without any demonstrable metastasis at the time of operation, died a cancer death. Doctor Murphy further stated that seventy-six per cent. of the patients who have demonstrable enlargement of the glands at the time of operation, die a cancer death. Nothing could better support the position that many of the röntgenologists are taking in regard to epithelioma situated on the mucous membranes, than Murphy's wide experience. There are many röntgenologists and dermatologists who have treated from five hundred to one thousand cases of epithelioma during the past fifteen years. They have treated many cases in all stages and of all degrees of malignancy, and their opinions should be as valuable as those of the surgeons. How many surgeons are there in the United States that have operated in a thousand cases of epithelioma? Each often sees the failures of the other, but the recurrent and inoperable cases nearly always come to the radiotherapist as a last resort. From Murphy's report and experience, we see that surgery was ineffective when no demonstrable metastasis was present in fifty-two per cent. and in seventy-six per cent. of the cases. This shows the necessity of using either radium or the x ray, or both, in these cases. There is no question that many of these could have been cured if the patients had had the benefit of radiation, and some even when the disease was recurrent and inoperable.

Epithelioma of the lower lip was discussed by Pusey before the American Dermatological Association, St. Louis, May, 1912, and he reported thirty-five cases which he had treated by the x ray. He had only two failures in the thirty-five selected cases of lower lip epithelioma. The mean average interval that had elapsed after the treatments was six years. The subject was discussed by Pollitzer, Grinden, Hartzell, Ziesler, McKee, Engman, Ormsby, and Bulkley. While the speakers differed somewhat, all except Engman were of the opinion that epithelioma of the lower lip could be treated by the x ray satisfactorily, provided that the cases were selected by an expert and the operator was qualified. They all agreed it was a perfectly legitimate method of treatment, but it was a method which was liable to abuse if it was not restricted to its proper field. These dermatologists all have national reputations and all have seen many epitheliomas of all types, in

the various stages. This was three years ago, and at present much better radiation can be given and results can be obtained in more advanced cases. To illustrate, I will report a case briefly:

CASE I. Mr. C., aged fifty-two years, who had an epithelioma involving nearly all of the lower lip, deeply ulcerated and very painful with glandular involvement, was referred after having received various treatment for eighteen months. Radium was applied to the lip for forty hours and the submaxillary and cervical glands were given intensive radiation from the Coolidge tube. At the end of two months, the ulceration of the lip was healed and the glands were no longer palpable.

The results obtained by radium and the x ray are similar in the treatment of external epithelioma, but when the lesion is situated on mucous membranes in cavities, radium should always have the preference. I believe no time should be lost in treating every case by radium as soon as it is diagnosed. The x ray should not be used through a speculum, thus losing valuable time, if radium is available. I see so many patients coming late where the physician or surgeon had made an early diagnosis, and, not knowing the value of radium, had given treatment by some other means when the lesion was situated so that it was inaccessible to any other form of treatment.

Leucoplakia is a condition which can be cured by a few applications of radium or mesothorium, and responds unsatisfactorily to any other method. If left untreated, the liability to ultimate malignant change must always be remembered. The stage at which epithelioma situated on a mucous membrane is diagnosed and treated determines the prognosis more than in the case of any other malignant condition.

In epitheliomata of the mouth, throat, or any mucous membrane, the radioactive substances can be placed in close proximity to the growth, and are superior to the Röntgen rays as far as the local treatment is concerned. But in all cases, particularly if the disease is advanced and the lymphatics are involved, the Röntgen rays are superior to any quantity of radium anyone has used up to the present time for the treatment of the lymphatic glands.

The vast majority of those using radium exclusively have not treated the adjacent glands by the Röntgen rays. The application of radium locally to a malignant growth does not reach out far into the surrounding tissues, and if the cancer cells have spread before treatment into the adjacent lymphatics, the radium can have no effect in preventing metastasis. Most of the Germans who are using radium, never use it alone, as many radium institutes do, but supplement it by treating the adjacent lymphatic glands wide and radically. Hence their superior results in epithelioma of the tongue, mouth, throat, lower lip, or any place where glandular metastasis always occurs. I always use the x ray from a Coolidge tube powerfully excited over the lymphatic glands. Otherwise, I should expect my results to be only temporary and to bring discredit upon the most powerful weapon we possess in dealing with many malignant cases. In epithelioma of mouth, throat, or lower lip, I not only treat the cervical glands on both sides, but the supraclavicular and mediastinal glands as well. Too small doses of radium and not treating wide of the mark have been the

value of x ray, or do they not know how to apply this form of radiation? No surgeon would remove a local growth and leave adjacent diseased glands untreated. This is what many radium enthusiasts are doing, and with modern Röntgen therapy, glands can be treated which cannot be removed surgically. To illustrate the combined method, let me report the following cases:

CASE II. Mr. R., aged forty-five years, referred to me by Dr. B. M. Dickinson, had a carcinoma involving his left tonsil and pharynx. This started four and a half months ago as a small ulcer on the left tonsil, which gradually increased, and the tonsil kept enlarging, until at the time I first saw him the growth almost filled the throat. He could swallow only liquids, with difficulty, and could not speak above a whisper. Several physicians had treated him for the past three months, during which time the growth increased rapidly. He was finally referred to Doctor Dickinson, who examined his throat and told him that he was beyond operation. He also stated that he could live only four months at the most, considering the rapid growth of the tumor, unless radium would check the disease. Radium was applied daily, as long each day as he was able to retain the tubes. Within ten days the growth began to decrease in size, and at the end of six weeks the growth had entirely disappeared and no visible sign of the disease remained. When he first came, the cervical glands were involved and were treated with heavy x radiation from the beginning. The glands did not show any appreciable diminution for three weeks, and were much slower in decreasing in size than the growth in the throat. On account of the severity of the case, both the radium and x ray treatment were pushed to the limit.

This man has been working for the past month, his voice is normal, and he is in perfect health. Of course the time is too short to call this a permanent cure. Since the time I first saw him, he has not taken any medication of any kind.

CASE III. Mrs. S., aged fifty-four years, referred by Dr. B. M. Dickinson, had an inoperable epithelioma involving the posterior wall of the pharynx extending up into the posterior nares. The ulceration gave a similar appearance on the mucous membrane to an epithelioma situated on the skin, that is, it was indurated, etc. The cervical glands were involved on the right side. The duration of the disease was about three months, according to the story of the patient. On account of the irritability of her throat, she was able to retain the tube of radium for only short periods at a time. Radium was applied almost daily as long as she could retain the tube, during the first month, giving a total of twenty-two hours. Treatment was discontinued for two weeks, when the lesion was much improved. The reaction, which had been marked, was disappearing. The lower part of the ulceration was healed, but it was only improved high up where the radium had not been kept in contact with lesion. Then Doctor Dickinson passed a string through the nose, to which I attached the radium and drew it high up into the posterior nares and gave ten hours' treatment in two days. The patient went home, and when she returned in three weeks nothing remained except a questionable spot in the upper part. This was touched with cautery, and when examined three weeks later there was no sign of disease. The ulceration was completely healed, leaving a healthy looking surface. Coolidge x ray treatment caused a complete disappearance of the enlarged glands.

Successful treatment of epithelioma by modern radiation, let me state in conclusion, is no longer experimental, but an established fact, whose value is recognized by the best surgeons and advanced practitioners everywhere. That radiation applied by the trained and skillful radiotherapist will destroy epitheliomatous tissue, has been definitely proved, and in cases of epithelioma on mucous surfaces, inaccessible to treatment by other methods, it is the only weapon at the hand of science to combat malignancy; miraculous as its results have been shown

to be, it cannot be expected to compensate for professional negligence in referring cases. Early diagnoses are essential to insure the positive benefits of the prophylactic treatment; and precancerous changes, so well recognized clinically, must be regarded seriously. In cases in which excision is advisable, radiation comes almost as an indispensable adjunct. Doses may be intense, but it has been found that they cannot be divided with success into numerous small ones. Applications of caustics, etc., to which a portion of medical faith was pinned in the past, are fast diminishing, and it is now generally agreed that any method that does not destroy epitheliomatous tissues in their entirety, is to be condemned. Wonderful as the record of radiotherapeutic treatment of epithelioma has been, authorities agree that we have not reached the end. While these new weapons are ours today, the future is pregnant with possibilities for greater achievement for humanity with radiation.

EMPIRE BUILDING.

## CANCER OF THE FEMALE BREAST.

*The Superiority of Treatment with Aluminum Filters and the Broad Cross Fire Method,*

BY WILLIAM BENHAM SNOW, M. D.,  
New York.

The x ray in the therapy of cancer will in the future, we believe, be accorded a much larger place than at the present time. Its destructive action upon epithelial cancer cells was one of its earliest conquests in therapeutics, and it has now become an established and recognized method of treatment of superficial cancer. Success from its employment in nearly all such cases is so uniform, and the cosmetic effects are so perfect, that no doubt exists as to its superiority to the knife. It was also an established fact for a long time that, in cases of recurrence after operation, if not too long deferred, it was possible in nearly all cases to remove every superficial evidence of the disease when a properly graduated technic was employed. In all inoperable cases it is uniformly advised by the surgeons. The prognosis, however, with the recurrent cases has been so generally considered bad, the removal of the superficial recurrence by the x ray being so often followed by a second recurrence through the channels of the mediastinum, finally terminating in cancer of the liver or other internal organs, that it has served only to lengthen life without effecting complete eradication of the disease. So pregnant was the mind of the writer with this idea that, two years ago, when a case of cancer of the breast was referred to him, in which recurrence had taken place along the whole length of the scar, within one month of the operation, I said to Dr. Cora M. Ballard, the physician presenting the case, that we could remove all external evidences of the trouble, but the patient was doomed and would probably die within one year, as had been the result in the past, because the involvement in the mediastinum was not destroyed.

The writer has objected to the removal of the chain of glands running to the axilla and above, under the clavicle, when not enlarged for this reason.

In the case in question the radical Halsted operation had been performed. After making that statement the thought was suggested, Why not ray the mediastinum with sufficient energy, as well as the recurrent lesion, and thereby entirely eradicate the disease? Accordingly for the first time we instituted a method of treatment, new to us, and, so far as we know, not previously published.

The value of the aluminum screen had been so well established as a preventive of superficial dermatitis, filtering out, as it does, rays of lower frequency than the x ray, which occur with it, and which produce the superficial dermatitis, that it was adopted for all deep radiations. The screen of aluminum was between two and three mm. in thickness and was placed in the tube holder over the opening beneath the tube. The technic employed was substantially as follows: Three exposures were made on alternate days with the x ray from a high speed static machine, employing one and one half milliamperes of current through the tube with the anticathode fifteen inches from the surface of the patient at the nearest part. Fifteen minute exposures were made to each side—obliquely with the arm placed above the head from each side in front, at an angle of approximately forty-five degrees, from the anterior surface of the body, with a broad ray which exposed both the side and front of the body, obliquely; the more direct rays falling practically over the axillary line. The arm held above the head permitted the exposure of the axilla and the surface about two inches above the clavicle. These two anterior exposures were followed by a third exposure, the tube being placed directly over the median line of the back above the spinal column, in such a manner that the rays were acting from the hair line to the lower margin of the ribs behind.

Two days later, two exposures were made obliquely from the posterior aspect, the direct rays falling midway between the vertebral column over the median line and the axillary line on each side. This was followed by a third exposure directly over the sternum, exposing from the neck to the ensiform cartilage anteriorly. When the recurrence was marked over the site of operation, additional heavy raying was directed to those parts. These exposures were made alternately front and back, as described, on three days each week with forty-five minutes of exposure each time. A high vacuum tube was employed. In the first patient upon whom this method was employed, a very malignant case, recurrence had taken place within four weeks of the operation. The treatment was continued from December 29, 1913, to April 2, 1914, when the patient was discharged. The patient was last seen on June 15, 1915, and is now in perfect health with no evidence, external or internal, of recurrence.

This method has been employed in other cases as follows:

CASE II. Miss B., aged fifty years, referred to the writer by Dr. Herman Grad, was operated on in the Woman's Hospital, January 2, 1914. The case was carcinoma of the left breast as shown by the pathological findings. The tumor was so extensive that there was insufficient flap to cover the wound after removal. An opening the size of a silver dollar was present when she came under observation on March 17, 1914. The skin was firmly adherent elsewhere, and there were indications of a deeper



the tumor, the breast being in perfect health which was not observed before operation. No radiological change was noted at the time. This patient was treated from June 1, 1913, to the present. The tumor is still in place, the aluminum screen two mm. in thickness. Treatments were given three times a week for the first two months and she was kept under observation until the present time, receiving occasional treatments. On June 1, 1914, the tumor was 12th, showed absolutely no internal involvement, and externally every evidence of cancer had disappeared and the patient was clinically cured.

(II) Miss C. (referred to me by Dr. Herman Grad) March 26, 1914, was suffering from a very extensive growth. At the time of operation the tumor involved the mediastinum and the glands of the axilla, the latter very extensively. She was operated upon in December, 1913, and did not come under observation until March 26, 1914, when there was marked evidence of recurrence, with great pain and suffering over the whole side and internally. Treatment was kept up by the broad cross fire method until August 22, 1914. For a time after treatment was instituted there was but little relief from pain, but later it was marked, which gave great encouragement. There was relief from pain and some reduction of the induration. For a time the condition remained *in statu quo*, but later there were evidences of toxemia, probably due to a breaking down of the cancerous growth internally, and the treatment was discontinued. The patient died a short time later.

CASE IV. Miss A., aged twenty-three years, referred to me July 7, 1914, gave the history of having had a small tumor in the right breast, which first appeared when she was about fifteen years of age. It grew slowly until the age of nineteen years when it began to grow very rapidly, until the breast was "one hard lump." Shooting pains were noticed in the tumor and in the right lung. Nothing was done for the growth until after March, 1912, when while the patient was sick in bed, a nurse noticed the lump, and advised her to see a physician at once. Dr. William H. Lawrence, of Overlook Hospital, Summit, N. J., operated, April 16, 1912. At the time of the operation Doctor Lawrence reported it to be an ulcerating tumor with enlarged glands in the axilla and cancerous in character, but the pathological findings were lost. A radical operation was performed. In April of the following year, the growth recurred in the right axilla and was operated upon by Doctor Sweet in the Springfield (Mass.) Hospital on May 28, 1913. The growth, which was the size of a small hen's egg, after examination was reported to the patient to be cancerous. A tumor recurred again in September following. Later x ray treatment was given patient, but no further operation was performed. On July 7th, the case was referred to us for relief from internal pain with the hope of making her more comfortable, which was all that was expected, as her case was considered hopeless. The condition included the presence of a recurrent tumor in the right axilla and an indurated tumor in the left breast. The patient was suffering a great deal of pain internally, and was in a critical condition indicating internal involvement, which was not then verified by the writer by an x ray radiograph. At this time the case appeared to be hopeless, but the above described broad cross fire treatment was instituted substantially as described in Case I. Treatment was continued for forty-five minutes each time and three times weekly from July 7, 1914, until the last week in December, 1914, when she was discharged with no evidence of malignancy externally or internally, as shown by a radiograph of the mediastinum. The patient after spending four and one half months in school at Baltimore showed practically no signs of recurrence and soon weighed eighteen pounds more than when she first came under observation and was in perfect health. Externally a small protuberance was removed in May, which was found not to be malignant.

There is a question in the minds of some who have had observation of this case as to its having been malignant, but in the writer's judgment and the judgment of the surgeons who operated, and in view of the course of the growth with repeated recurrence, there is no doubt that it was malignant. Unfortunately the pathological records have been lost.

CASE V. Mrs. B. was referred to the writer by Dr. Her-

man Grad, October 14, 1914. She had been operated upon one month previously for a slight cancerous growth in the right breast, starting in the nipple. Raying was continued from October 14, 1914, to February 19, 1915, when she was discharged. A radiograph taken on June 11, 1915, showed no involvement of the mediastinum and the external appearance was normal.

CASE VI. Miss P. came under observation June 1, 1914, with an ulcerating cancer of the left breast, involving the whole gland, which was adherent. The x ray was administered for two months, when the gland became freely movable. She was then operated upon by Dr. Herman Grad at the Woman's Hospital and returned for raying six weeks later. The cross fire method was employed in her case, and was persisted in.

There is now marked evidence of metastasis of which we are, however, not certain though the patient has lost weight, and is in a physically bad condition. Externally there is still some induration at the site of the operation. It must be said, in justice to the method, that the patient neglected to resume her treatments for six weeks after the operation, and at other times neglected them.

CASE VII. Mrs. W., the wife of a physician, was referred to me by Dr. Cora M. Ballard, of Brooklyn. The patient had been operated upon with the removal of the right breast and axillary glands. It was a very malignant type of carcinoma, as shown by the pathological findings. After operation the wound showed no disposition to heal. The patient came under observation, September 26, 1913, one month after the operation. Treatment was given with the x ray from two aspects, one obliquely from the anterior aspect, the other obliquely taking in the whole side. The wound, which for four weeks had not united, healed very rapidly. Exposures were made with doses of one and one half milliamperes of current at fifteen inches from the surface with a filter for fifteen minutes each time, and treatments were continued three times weekly until November 18, 1913, since when no treatments have been administered. There was never any evidence of recurrence and the patient recovered perfectly.

These cases were treated without any annoyance whatever from dermatitis, and we believe the use of the aluminum screen is demonstrated as an essential feature in the accomplishment of the ends sought, because enough energy can be employed, when a high vacuum tube is used, and with sufficient frequency entirely to destroy the cancer cells in the superficial tissues, as well as in the deeper structures of the mediastinum. While these cases reported are too recent to establish the fact that there may not be subsequent recurrence, at least five are at the present time clinically cured, demonstrating at least the great value of the ray as an important part of the treatment of malignancy. These cases were all of the carcinomatous type, which has generally proved most resistant to the x ray, sarcoma responding generally more promptly than carcinoma.

The use of the x ray before operation in every case may even forestall operative procedure unless the joint use of surgery and the Röntgen ray is to be considered. Why operate upon a malignant tumor when the mediastinum is involved, unless as an adjunct to the x ray treatment, which is indicated for the removal of large masses of tumor. When tumors of the breast, however, are of small dimensions and not absolutely diagnosed as malignant, why should such tumors be operated upon at all when the x ray will entirely eradicate benign as well as malignant growths? I put this in the form of a question, because it has been established as a dictum of the cancer commission that all small tumors of the breast should be operated upon lest they become malignant later. It has been further set forth by

medical authorities that the chances of recurrence are very great, the argument being to remove them before they become malignant. Our experience with a large number of small tumors of the breast has demonstrated that such tumors will uniformly disappear under x ray treatment.

The notion that the x ray stimulates malignant growth has arisen from the fact that many timid operators have used it in a lackadaisical fashion with which it is not possible to effect the destruction of the cancer cells. Those who are afraid of the consequences of the x ray in the treatment of malignant or other conditions, had better gain confidence before they employ it, and by inadequate exposures bring disrepute on an agent that is so effective in the destruction of malignant growths.

Case III and Case VI also demonstrate the fact that when the cancerous growth has obtained too extensive a hold upon the tissues, either as recurrent or prior to operation, the prognosis is bad even if the broad cross fire method of raying the mediastinum is used. We believe that the x ray should be used as soon as possible after every operation for cancer. Some authorities have already established the method of raying into the wound immediately after the removal of the tumor, before the wound is closed. There can be no objection to this; but it is probably not necessary if the case is radiated immediately after operation.

The aluminum screen should be used in all cases, and the first dose of rays should be nearly a massive dose, using the rays as above described for a length of time just short of a massive dose—thirty or forty minutes of the dose given—following on alternate days with fifteen minute exposures. By this method the cancer cells are overwhelmed at the outset and not stimulated, thereby insuring a better prospect for an ultimate successful outcome. If a technic similar to the one described, or a more heroic one, if justified, is employed, it is the writer's opinion that by the joint use of the Röntgen ray with surgery is afforded the greatest possibility for the cure of malignant disease.

2020 BROADWAY.

## SOME COMMENTS ON A NEW ANTISERUM FOR CANCER.\*

BY WILLIAM N. BERKELEY, A. B., PH. B., M. D.,  
New York,

Attending Physician, Good Samaritan Dispensary.

I shall mention, first, what may be reasonably expected of a scientific remedy for cancer, and why I think my remedy may be called scientific; secondly, as to the serum, what it is, how it works, how it should be given; thirdly, what the results have been.

As to the first point, thoughtful students of the subject have long realized that local remedies for cancer, like x rays, radium, and fulguration, can rarely meet the indications in full, because typical cancers metastasize, and the secondary growths develop in distant vital organs where local treatment is impossible. Therefore a scientific remedy for cancer will be one which is soluble in the blood and

lymph, capable of transportation thereby to all portions of the organism, and possessed of a selective affinity for the cells of the tumor to be destroyed. It does not follow that because a remedy is scientific, it will be a panacea. Salvarsan does but little good in advanced tabes; twenty-five per cent. of the patients with diphtheria of the larynx still die, however large the dose of antitoxin; and after the fifth day antitoxin is of little value in any case of diphtheria. The opinion may be hazarded, also, that no specific remedy for tuberculosis will ever save the life of a pulmonary subject when there are large cavities in both lungs; and that when a neglected breast cancer has spread in mass to the liver, spleen, and backbone, nothing short of an intervention of Providence will achieve the patient's recovery.

Admitting some reasonable limitations, therefore, to the efficiency of all scientific treatment, I need not apologize for the narrow field which is open to my own remedy.

My remedy is not strictly "an antiserum for cancer"; it is an antiserum for a particular cancer, the cancer being removed by operation from a particular patient, and the serum being intended to prevent recurrence in that same patient.

The antigen is obtained by extracting the cancer with water, and precipitating the nucleoproteids and globulins. The tumor must be as fresh as possible, and untreated with antiseptic or hardening agent; but simply wrapped with sterile gauze and forwarded to the serum laboratory as soon as it leaves the operating table. The extract naturally contains, not only the proteids and water soluble extractives of the cancer cells, but also of the residual cells of the organ involved by the growth. This does not, however, appear to mar the efficiency of the resulting immune body. Whether there be, or not a specific "cancer proteid," such an antibody as arises from the injection of this antigen is a highly complex substance which disorganizes the intracellular economy of the tumor cells, and renders them incapable of maintaining their independent existence.

The antigen tried against the serum of normal sheep—this animal has for various reasons been the most satisfactory one to work with so far—has proved negative in all the cases tried. But after three weeks of injections, at intervals of a few days, antibody is easily demonstrable by a complement fixation test; and after two or three months the serum of the experimental animal, in amounts as small as 0.001 c. c., binds complement readily (rigid New York health department technic, three units of amboceptor, ice box fixation). This fact was apparent to myself from my own work over a year ago; but inasmuch as many of the professional serologists say still that it is impossible, I have sought the kind assistance of Mr. John Koopman, the serologist of the health department, who ranks as an authority on the subject. Mr. Koopman authorizes me to say that he has repeated and confirmed the foregoing tests over and over again. I feel safe in saying that the presence of an appreciable amount of antibody in my serum cannot longer be denied by anybody who knows how to do a Wassermann test. And the test is still satisfactory in serum over a year old, showing that the cancer antibody is quite as stable and permanent a com-

\*Read, by invitation, before the Bronx Medical Association, June 2, 1903. See preceding page, a comment, by Dr. J. Lewin Amson, of a patient treated with the serum.

found as other antibodies of the same general character.

A few words must be added as to the administration of the serum. It is put up in rubber stoppered bottles of six c. c. capacity. It should be given intravenously in rapidly increasing doses—six, twelve, twenty-four, thirty c. c. at a time. It is not worth while to give less, in all, than 100 c. c., and 150 c. c. affords better chance of permanent protection. The fluid must be warmed before injection, and the larger doses are best given diluted with an equal amount of sterile saline, using any good salvarsan apparatus. Neither blood nor albumin has appeared in the urine after its use; and the reaction otherwise has been generally insignificant, fever, headache, and urticaria being the worst symptoms, and these soon disappearing. In over 500 injections given to about 100 patients there have been two cases of "shock." Both these patients recovered promptly. If administered with care I believe the remedy to be perfectly safe.

Coming finally to the important part of the subject, I must try to answer briefly the question, What are the clinical results?

First, I have to say that of about fifty cases injected after a primary operation between two and four years ago, about eighty per cent. remain entirely well today. Under ordinary circumstances this would have been the percentage of recurrences. It seems fair to say, too, that with increasing skill and experience in making the serum, and larger knowledge of what constitutes an effective dose, the next fifty cases will show a still more encouraging per cent. of apparently lasting cures. Of the above "cured" cases, a number have followed a demonstrably incomplete extirpation—inaccessible portions of the tumor being undoubtedly left behind at the time of operation. Details of most of these have been reported before; I append two unreported cases here, with the kind permission of Dr. Walter Gray Crump, of New York, the operator, whose letter follows<sup>1</sup>:

NEW YORK, February 20, 1914.

Dear Doctor Rodenberg:—At last after much delay I am able to report on the two cases of cancer operated in by me last spring and for which you furnished the serum. The understanding with both these cases was that, inasmuch as you tendered the serum, and I, my operative services, they should report to me each month for six months, then every three months for another year. I have written them both several letters and also communicated with Doctor Pratt and Doctor Rodenberg, who sent them to me. At last, by a strange coincidence, both came to see me this week, and the results in both cases exceed my fondest hopes and my wildest fancy.

At time of each operation I felt that I had left macroscopical portions of malignant growth behind, and fully expected that ere this both pelvises would be pretty well filled with new growths. Both cases, however, after very careful examination, reveal no evidences of recurrence, and the patients are greatly improved in general health. The following is an abbreviated résumé of the cases:

Mrs. Sarah J. S., New York, aged fifty-seven years, widow, referred by Doctor Rodenberg. First examined by me May 17, 1913. Mother died at fifty-nine years of some kidney trouble; father at sixty-eight years of so called Bright's disease. Mother of several children. She weighed about 165 pounds at time of operation—anemic—

her hemoglobin being about thirty-seven per cent. She had passed the change of life some ten years before; had been flowing almost constantly for eighteen months, during which time she had been under the care of a physician, who had never examined her (not Doctor Rodenberg).

She had an advanced adenocarcinoma of the uterus, which was somewhat fixed in the pelvis, especially on the left side. On May 28th, she was operated on at the New York Medical College and Hospital for Women, a complete hysterosalpingo-oophorectomy being performed. Preceding the abdominal work, the uterus was packed with plain gauze and the cervix closed with several stitches. The vaginal vault was then painted with iodine and carbolic acid, immediately counteracted with alcohol; the vagina was then firmly packed with a long piece of gauze saturated with the following solution: Bichloride of mercury, one in 2,000, one part, fifty per cent. alcohol one part; one ounce of glycerin to every seven ounces.

Left ureter was displaced and uterine artery tied outside of ureter. After removing uterus, several enlarged glands were removed by blunt dissection along the course of the left common iliac. One gland about the size of a hazel nut and a number of smaller ones were left, because in trying to remove them we opened the left iliac vein, which flooded the wound, blocking same each side of opening; this was repaired with fine chromic catgut, but on account of the severe anemia, it was thought best not to operate further.

On June 5th, one bottle of serum was injected subcutaneously, two on June 12th, three on June 21st. On July 10th, one bottle was injected intravenously, two bottles on July 21st, and two bottles on July 25th. On February 18, 1914, the patient weighed 171½ pounds, feels perfectly well, but is still somewhat anemic.

Mrs. F. X. H., Astoria, L. I., referred by Doctor Pratt; aged fifty-five years; married; born in Canada; is a French Canadian; two children, three miscarriages, the last miscarriage twenty-five years ago. Puberty at seventeen years, menopause at forty-three. Mother still living, father killed at sixty-eight years of age. After five years of amenorrhea, began to flow, November 11th, and this has continued ever since.

I operated April 11th, at Flower Hospital, assisted by Doctor McDuffie—complete hysterosalpingo-oophorectomy; a little plain gauze placed over cervix and vaginal vault one half inch below cervix; then sutured together, completely closing off vaginal fornices; vagina then treated with iodine, full strength, counteracted with alcohol.

Patient made an uneventful recovery, being discharged May 3d. On June 5th, one bottle subcutaneously, June 10th, one bottle, June 12th, two bottles with marked reaction; June 14th, one bottle; June 19th, one bottle intravenously; June 25th, two bottles intravenously, marked reaction immediately; patient had to be kept in office four hours and sent home in a cab.

Saw or heard nothing of patient after this until February 7th, when she called to consult me about her sister, whom she thought had the same condition; returned again on the 19th, at which time I made a thorough examination of her. She had gained weight, is a woman of full figure with red cheeks, perfect picture of health. Vaginal vault perfectly normal and no evidences of new growth in pelvis. Perfectly normal in all her functions, bowel, bladder, sexual.

To the further question, Must the serum be strictly autogenous for successful use? a short and full answer cannot yet be given. Some of the common cancers show a surprising chemical similarity. Cancers of the breast, whether arising from the skin, from the modified skin of the nipple, or from the milk ducts, seem to be as safely treated by "stock" breast antiserum (which I call for convenience "semiautogenous") as by a strictly autogenous preparation. When a particular cancer of the breast is hard, small, and scattered, yielding little extract, a stock breast serum is a much safer preparation to use. Also, I have found to my surprise, that ordinary cervix cancers ("solid" cancers of the cervix) are as successfully treated by breast serum as by cervix serum. So far as I know from



present experience, stock breast serum will also greatly benefit cancers of the lip, tonsil, tongue, and gullet. But I have had no chance at these tumors after a primary operation, or even when the original growth was fresh and small. The patients have been sent to me when the tumor was in a state of hopeless advancement.

Lypoblastic cancers, from the stomach all the way down to the rectum, require autogenous or semiautogenous serum after operation, and the same is true of the adenocarcinomas of the cervix and fundus uteri. There is a tradition that these "adeno" tumors are relatively benign, often not recurring, at least after a thorough operation, but this has not been my experience. Three such cases, recurrent, have been brought to me in the last two years—too late for my serum to accomplish anything.

With the queer atypical "cancers" of the ovary, and with sarcomas in general, I have little or no experience; it has seemed wiser to restrict attention for the time being to the common and clinically typical conditions.

Being itself a proteid substance, the antiserum automatically excites in the patient's tissues the formation of an *anti-antibody*; and a malignant mass which cannot be destroyed in two or three weeks of frequent and overwhelming injections is too far advanced to be amenable to treatment by my method. The effect of the remedy, therefore, upon extensive and inoperable growths, while often very gratifying for a time, is palliative and temporary only. But I repeat that, after a primary operation, my serum promises to be clinically successful in about eighty per cent. of the cases in preventing recurrence, if an autogenous or semiautogenous preparation is used at the first available moment after operation, and the dose is correctly estimated. As a routine postoperative measure I can recommend it unconditionally in all such cases.

134 EAST SIXTY-SECOND STREET.

### Therapeutic Notes.

**Radium in the Treatment of Aural Diseases.**—W. Sohler Bryant, in the *Transactions* of the American Otological Society for 1914, reports his experiences with radium in the treatment of a number of cases of chronic ear disease. Two effects were sought—destructive and stimulating; often both were used in the same ear. The destructive action was tried particularly in cicatricial states of the middle ear and in degeneration of the auditory nerve and labyrinth; in atrophic middle ear catarrh, on the other hand, as well as in otosclerosis and auditory neuritis and labyrinthitis, not only destruction of pathological tissues but also stimulation of the growth of the remaining cells was sought. The applications were made in the auditory canal and consisted in the introduction of a glass tube containing five mgm. of the radioactive compound, mesothorium bromide, wrapped in thin tin foil. Although the treatment seemed to have little influence on the causal factors in the various conditions studied, its action on the

residual effects of ear disease proved valuable. The ears of forty patients were treated, comprising the following conditions: Otosclerosis, nine cases; atrophic middle ear catarrh, twelve cases; effects of middle ear suppurations, thirteen cases; nonsuppurative labyrinthitis, two cases, and hypertrophic middle ear catarrh, four cases. The results were: Hearing decreased in one case, unchanged in six ears, improved in thirty-three ears, much improved in fourteen ears, and restored to normal in six ears. On the whole, Bryant considers the indications for radium treatment to include all forms of functional derangement of the ear when the causal factors have been removed. In applying the treatment the reaction of the individual must be carefully watched and the dose nicely gauged. The applications should always commence at a minimum and be gradually increased, the time and duration of an exposure being governed by the results of the previous exposure.

**Treatment of Hospital Gangrene.**—A writer in *Presse médicale* for October 8, 1914, points out the fact that, as shown in the European war, the so called hospital gangrene cannot, in military practice, always be avoided owing to the frequently soiled condition of the soldier's skin and clothes and the prolonged interval sometimes elapsing between the reception of the wound and the first application of treatment by skilled hands. He describes the remedial procedures that have given best results in this condition in Vincent's experience. The wound should be first carefully freed from pus and the putrid layer characteristic of the gangrenous disease. Diphtheroid false membranes should be removed, unless so adherent that hemorrhage results, and the wound irrigated with a diluted Labarraque's solution:

R Liqueur sodæ chlorinatæ.....f̄iv (120 c. c.);  
Aque, .....Ov (2500 c. c.).  
Misce.

The wound should then be dried and a powder of the following composition dusted over it and introduced into all of its recesses:

R Calcis chlorinatæ recentis, .....3i (30 grams);  
Acidi borici pulveris, .....3ix-xiv (270-420 grams).  
Misce.

In the preceding formula the relative amount of chlorinated lime should be regulated according to the severity of the local infection. The wound should be covered with an ample coating of the antiseptic powder, and the surrounding healthy skin should also be dusted over with it. A dry dressing should then be applied. In two or three days the condition of the wound will have undergone a complete change, the odor will have disappeared, and healthy granulations will be seen.

The first dressing may be renewed in twenty-four hours if there has been abundant discharge and the antiseptic powder has become soaked with fluid. If this is not the case, the dressing need not be changed for forty-eight hours. Rapid recovery from gravely infected wounds was brought about by this treatment in many instances. Equally satisfactory effects are to be expected in wounds infected with putrefactive organisms or with the common pyogenic bacteria.

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## EDITORS

CHARLES E. DE M. SAJOUS, M. D., LL. D., Sc. D.

CLAUDE L. WHEELER, A. B., M. D.

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NEW YORK, SATURDAY, JULY 3, 1915.

## A SPECIAL CANCER NUMBER.

We are glad to learn that the NEW YORK MEDICAL JOURNAL was one of a few prominent medical journals which, by their prompt acceptance of the proposal of the Committee on Health and Public Instruction of the Medical Society of the State of Pennsylvania, to devote their first July issue to the discussion of malignant disease, set an example to over fifty scientific publications, which the latter promised to follow. This issue of the JOURNAL has been planned and replanned for over six months, and we offer the final result to our readers with justifiable pride. None of the original communications which appear herein, we believe, would have been written but for our earnest solicitation. We do not wish it to be thought that the writers were lacking in enthusiasm; quite the contrary. They were anxious that their work should show plainly the thoughtful care bestowed upon it. Perhaps we ought to say that the order in which these communications appear was dictated almost exclusively by mechanical considerations and that there is no question of relative merit. The communications are full of hope for the future. Let us hope that before long the curtain is to be suddenly lifted to disclose a picture of brilliant conquest, of successful results awaiting the presentation.

TO STANDARDIZE THE WASSERMANN  
REACTION.

The immense value of the Wassermann reaction in the diagnosis and therapy of syphilis, and the great importance of the application of the same principles to other diseases, stamp this as one of the important discoveries of modern medicine. Since its discovery, however, it has undergone a process of modification and evolution to such a degree that now each laboratory is almost a law unto itself, and each does its Wassermann in its own peculiar way.

The procedure, however performed, is by no means a simple one. It requires good laboratory facilities, excellent technic, and well balanced judgment for its proper performance and interpretation. Unlike some similar reactions it is not a specific antigen-antibody reaction, and its exact nature is by no means understood. It is both qualitative and quantitative; there enter into it five different elements, most of which cannot be weighed or measured; their quantitative relations must, like toxins and antitoxins, be judged solely by their effects. These five elements are the fluid or serum to be tested, the antigen, the complement, the amboceptor, and the red blood cells.

The serum to be tested may be used active or inactivated by subjection to a certain degree of heat for a limited time. Its quality also may vary. The antigen—one of the most important elements, if not indeed the crux of the whole procedure—is variable both in kind and in quantity. The number of antigens in use are many, and their final value is not yet accurately determined. A serum negative with one may be positive with another. Guineapig serum is almost universally used for the complement, but its titration and the quantity used are not fixed definitely. Then the hemolytic system, that is the amboceptor and red blood cells, is not uniform. Most laboratories use the antisheep rabbit amboceptor and sheep's blood cells, some use antihuman rabbit amboceptor and the corresponding human red blood cells, and others may use still some other system. The titration of the amboceptor, the quantity used, the presence in the serum to be tested of natural amboceptors, the quantity and age of the blood cells, and other things, all are to a certain extent variable factors which may seriously affect the results. Finally, to go no further into details, there must be considered numerous minor, yet important variations in technic, the personal equation of the worker along with his experience and his sincerity, and the application by the clinician of the laboratory result to the bedside—is there any wonder at the dissatisfaction?

Some of these uncertainties are, as stated, inseparable from the test, but many of them could be

eliminated. Sufficient time and effort have been expended upon the reaction to lead to certain fairly definite conclusions as to its value and its limitations. From the laboratory standpoint it would seem now highly proper to make some concerted effort toward standardization. Doubtless serologists will disagree violently on many points, but, on the essential considerations harmony is probably not unattainable.

The JOURNAL ventures to make the suggestion, therefore, that some competent body of serologists should now undertake the task of establishing a standard method or methods of doing the Wassermann reaction. Such action need not of course be final, and necessary modifications could be introduced as circumstances might dictate. Like the standard methods of milk and water analysis, this would lend to the procedure a stability which could not but result in greater uniformity on the part of the laboratory worker and increased confidence on the part of the clinician, with a consequent wider and saner use of a very important test which at present is involved in some confusion.

#### SURGEONS NOW AND THEN.

In the time of Louis XIV and of Henry VIII a process of differentiation was under way, for there were then barbers proper or perruquiers, barber surgeons, and surgeons; the barber surgeons were made to confine themselves to minor operations of bloodletting and drawing of teeth, while on the other hand the surgeon was prohibited from "barbery or shaving." This distinction has been broken down in recent years by the surgeon, who must frequently act as barber before undertaking his more specialized activities. The barber's sign, two centuries ago, consisted of a striped pole, with a basin suspended from it. Both the basin and the stripe indicated that his surgical function was of special importance, for the former represented the receptacle for blood, and the latter the ribbon for wrapping the arm during and after bleeding. The basin has disappeared from the sign, but the striped pole is of historic significance to the man of medicine and he should humble himself before it as he enters the tonsorial parlors. Whether the alternating red and white so often seen were significant of a white bandage about an arm we do not know, but it might well have been the case.

Until the time of Lister doubtless both barber and surgeon were alike, equally aseptic and septic. Then came a separation in this respect, but more recently the wielder of the razor and shears is also finding, partly from compulsion, that cleanliness makes him more godly in his trade.

While the barber now limits his surgical practice to squeezing out of black heads or extracting burrowing hairs, he on the medical side applies facial massage and attempts to cure seborrhea, alopecia, and ringworm. Cleanliness inside and out is an essential of health and, so far as can be accomplished by external treatment, the barber might, with sufficient training, excel the dermatologist who only prescribes.

The barber, though his fees are small and his working hours long, is still working in line with the prouder manipulator of the scalpel, for the latter is still but a cleanser of the inside of the body. Alas, how foul the material he must often remove and how dirty and disgusting the job! And the former is a cleanser of the outside of the body. The barber will flourish when the surgeon has faded under the glare of the rising sun of sanitary and hygienic knowledge, which, by example, the former is even now helping to foster.

#### AN ACTIVE PRINCIPLE FROM THE THYROID GLAND.

It has long been known that the thyroid gland was the one organ of the body in which iodine was present in any considerable amount. From clinical studies combined with post mortem and surgical observations, from physiological and pharmacological researches, and from the labors of the biochemists we have enormously advanced our knowledge of the functions of the thyroid gland and have learned to know something of its potential activities. We have learned its value in the treatment of myxedema and cretinism, and we know something of the mechanism of the production of the symptoms of Graves's disease. But we still remain ignorant of the precise active substance or substances in the gland or its secretion; this is not because no attempt has been made to isolate them, but rather because of their elusiveness. Quite recently, however, an American worker in the field of biochemistry—E. C. Kendall, of the Mayo Clinic (*Journal A. M. A.*, June 19, 1915)—has reported the results of his attempts to isolate the active substances from the thyroid gland.

He found that after hydrolysis of the gland substance by sodium hydroxide in alcohol the resulting products could be separated into two groups, the one soluble in acid and the other insoluble. Each of the two groups contained about half of the total iodine of the gland. By further hydrolysis of the group which was insoluble in acid he obtained a crystalline substance which contained sixty per cent. of iodine. This new substance is at present believed to be diiodo dihydroxyindol, but its exact formula has not yet been positively determined.



The *colloidal* fraction of the body has all the typical physiological and pharmacological actions which are commonly possessed by extract of the whole gland, and it is found to be exceedingly active, one milligram per diem being sufficient to cause considerable acceleration of the pulse rate in man. Perhaps the most interesting observation, however, was the fact that the other fraction—that soluble in acid—while devoid of the power of producing the physiological actions of thyroid, was apparently quite effective in controlling the manifestations of myxedema and cretinism. From these observations it would seem probable that there are at least two different types of compounds present in the thyroid gland, with widely different physiological properties and of different toxicity.

### THE BIOLOGICAL STANDPOINT IN MEDICINE.

Medicine is a branch of biology; yet it has not been until comparatively recent years, more specifically since the progress in bacteriology, that the biological aspect of medicine has been more and more fully appreciated. The examination of the various fluids of the body and the studies in metabolism have added greatly to our store of knowledge. Studies in immunity, vaccine and serum therapy, organotherapy, pluriglandular disturbances, and comparative anatomy and physiology have further enriched this field. Still more recently the biochemical examination of the body fluids, particularly with the aid of the complement fixation and Abderhalden tests, and the effects of anaphylaxis or allergy have given us much food for thought; withal, we may truthfully say that work in this direction has but just begun.

It is noteworthy that our work in the biological field has not been limited to diagnosis and treatment, but has been directed to a great extent along physiological and pathological lines. We have also assumed the biological standpoint in our observation and recording of the natural history of disease pictures and in our interpretation of the genesis and evolution of certain symptoms and diseases of a physiological and pathological nature in both the physical and psychical sphere of man's activities. The study of heredity has, of late years, attracted considerable attention. The specialties of neurology and psychiatry have been characterized by the tendency to unravel the natural history of the various affections, and great progress has been made in the problems of the feeble-minded, the neuroses, psychoneuroses, and psychoses. Mental disorders have been viewed largely from the bio-

At the same time we note the advance which is being made in understanding the biological significance of physiological processes and of symptoms of disease. For example, we may mention the explanations which have been offered for the occurrence of pain, and its biological value in securing rest and hence lessened activity of the diseased organ. It is in this way that we have come to give valid biological as well as physiological reasons for such symptoms as fever, rapid pulse, respiratory changes, lessened or increased secretion, decreased or increased movement, and the host of other disorders of a local or general nature which accompany bodily disease. Let us take peritonitis as an illustration. Inflammation of the peritoneum leads early to pain. This pain is biologically useful to the individual, since it calls his attention to his condition, brings about rest of the part, and thus aids in healing. The patient seeks his bed and demands medical assistance. If the condition spreads, we have a generalized reaction of the body, with fever, rapid pulse, perhaps increased respiration. Then, unless the pathological process remains stationary or lessens in intensity, intestinal paresis with inactivity of the bowel results, this being necessary to lessen the pain and avoid increase of the inflammatory process. If the condition progresses still further, we have the more severe symptoms of nausea, vomiting, severe constipation or obstipation, etc., all these symptoms being developed in the biological efforts of the several tissues and organs to protect the organism and prevent it from being overwhelmed by the spreading infection. True, the reaction of defense is frequently too violent or inadequate, and the efforts of nature are not successful; but the work is going on constantly. It is an ever existing battle for self preservation—whether it be in the tissues, in the glands and organs, in the body fluids, in the physical or mental world. The same process prevails throughout the host of symptoms and syndromes which we find in the pathology of the human, as well as of all other living organisms.

### THE FATAL THIRD DAY IN APPENDICITIS.

There is little or no excuse in these days for failure to recognize cases of appendicitis and probably it is true that most of them are diagnosed very early. Where the family physician is to be censured, however, is in his failure to insist on early operation. How much the pages of the comic magazines are to blame for the popular prejudice still prevalent against the surgeon's knife is a question, but there is always to be found, if not in the family

of the patient himself, at least among his friends or neighbors, some rabid antioperationist.

It is the task of the physician then to point out the dangers which accompany delay in appendicitis; he should be able to present concisely, briefly, and in a manner intelligible to the patient the advantages and comparative safety nowadays of abdominal surgery, and he should not be content until he has urged operation to the limit of his persuasive powers.

In an article in the *British Medical Journal* for April 3rd, Dr. S. T. Irwin cites forty-five cases in which he has operated for appendicitis. Of these, eleven were operated in during the first two days of the disorder, all with recovery. Of fourteen cases where the operation was performed on the third day, three ended fatally, a mortality of 21.4 per cent. Of the remaining twenty patients, three died, one on the fifth, one on the seventh, and one on the twenty-first day, a mortality of fifteen per cent; or, to put it in another way, among the patients operated on before the third day there was no mortality, among those operated on the third day or later, there was a mortality of 17.6 per cent.

The author concludes that the ideal time for operation is the second day, although there is no objection to the first day if the diagnosis has been definitely established. He says, "let us blot out the third day in acute diseases of the appendix and rename it the first day—after operation!"

### CANCER IN THE UNITED STATES.

It has been suggested by Walshe and others that the steady increase in the cancer mortality during the past century is probably due to greater accuracy of diagnosis. Coley, on the other hand, expresses the opinion that the death rate from cancer "is far greater than the rate shown by the vital statistics for the reason that there is prevalent among the laity a strong prejudice against the name, cancer, the result being that, in many cases of death from cancer, especially from metastatic cancer with internal complications, the family physician, out of respect to this feeling on the part of the family, will assign some of the secondary causes in place of the actual primary cause of malignant disease." In discussing the accuracy of American cancer mortality statistics, Frederick L. Hoffman (*American Journal of Public Health*, June, 1915) says that Coley's statement is not substantiated by any facts derived from actual experience, and points out that it is rare for the health certificate to come to the notice of the family. All mortality statistics are open to criticism on the ground that there are contributing causes of death aside from the principal cause, which is not mentioned. In fact, it is not infrequently difficult to decide without a necropsy which of the concurrent diseases is the main factor in causing death, but Hoffman points out that usually cancer is a perfectly obvious disease not

difficult of diagnosis. It has been stated that the increase in cancer frequently has affected only inaccessible or internal cancers not admitting under nonoperative conditions of accurate diagnosis. This theory is contradicted by statistics of cancer in the city of Frankfurt, Germany, which Hoffman gives. Hoffman concludes that approximately about 75,000 deaths from cancer occur annually in the United States and that the death rate is increasing at the rate of 2.5 per cent. per annum. He states that the disease is much more common than is generally believed, and that it is the fourth in importance as a cause of death in the United States at the age of forty-five years and over. The mortality from cancer in the registration area of the United States during the decade ending with 1912 showed an increase of deaths from 68.3 per 1,000 in 1903 to seventy-seven per 1,000 in 1912.

### INSTANTANEOUS CANCER.

Lebar presented to the Société médicale des hôpitaux, on June 4, 1915, according to *Presse médicale* for June 10th, a soldier twenty-three years old, who was thrown into the air by the explosion of a mine, and the next day showed patches of white hair on the left side of his head. The discoloration was complete from one end of the affected hair to the other, although the hair was not loosened. Lebar thought that the powerful nervous shock due to the explosion set in movement the medullary cells of the hair, the pigmentophagous role of which has been the subject of frequent study by Metchnikoff.

### CANCER IN GREAT BRITAIN.

Unfortunately no check can as yet be discerned on the increase of cancer or malignant disease which has been experienced in Great Britain for many past years. On the contrary, according to the *Lancet* for June 5, 1915, the loss of life from this cause was greater in 1913 than in any previous year on record. The mortality among males was equal to 947 per million living, and among females to 1,155 per million, compared with rates of 913 and 1,117 respectively in the year 1912. The tables show a constantly increasing mortality in proportion to urbanization, which is more serious in the case of males than of females; differences of the dimensions shown may be due to the better facilities for diagnosis in the urban areas, where a much larger proportion of the deaths occur in institutions in which post mortem examination is the rule, than, as in private practice, the exception. The considerable increase of mortality now recorded is very uniform, being common to both sexes in every class of area. It is also widely spread over the different age periods, the chief exceptions being in the case of women at very advanced ages. The excess of female mortality over that of males is concentrated mainly on the ages twenty-five to fifty-five years. At other ages there is either practical equality or a male excess, as at ages from sixty to eighty-five years in the country generally.

The increase of mortality from cancer of various

in children. In both sexes the most rapid rates of increase are furnished by cancer of the alimentary tract, especially the intestines and stomach. Diseases of the female breast also claim a rapidly increasing number of victims, while mortality from uterine cancer is stationary. It would appear that childbearing increases the risk of uterine and diminishes that of mammary cancer; it may therefore be expected that the present decrease of fertility will be accompanied by an increase of mammary rather than of uterine disease. The mortality from cancer of the liver remains stationary. Secondary growths are of especial frequency in cases of breast cancer. Deaths thus certified amount to thirty-three per cent. in the case of the breast, whereas in the case of most other important sites the proportion falls short of ten per cent. Of the conditions complicating death from cancer which do not appear dependent on the existence of a growth, the most important are tuberculosis, diabetes, diseases of the circulatory system, Bright's disease, and childbirth.

#### OUR PRIZE DISCUSSIONS.

Owing to the pressure on our columns in this issue of the JOURNAL from the space devoted to malignant disease, we have been obliged to postpone until next week consideration of the essays submitted in answer to Prize Question CLVIII, How Do You Treat Heartburn? The winning essay will appear in our issue for July 10th.

#### News Items.

**Changes of Address.**—Dr. William N. Berkeley, 100 East 81st Street, New York.  
Dr. William F. C. Steinbugler, to 109 East Eightieth Street, New York.

**Chicago Medical Society.**—Dr. H. Augustus O'Neill presided at the society of the annual meeting held on June 15th. Dr. Charles E. Humiston was elected secretary, and the following were made councillors at large: Dr. Charles H. Miller, Dr. C. C. O'Byrne, Dr. Donald A. Payne, Dr. Fred L. Glenn, and Dr. J. C. Doherty.

**Aid for Belgian Physicians.**—Two contributions of \$5 each were received last week by the treasurer of the Committee of American Physicians for the Aid of the Belgian Profession, one from Dr. Emery R. Hayhurst, of Columbus, Ohio, and the other from the Benton County Medical Society, of Arkansas. The total amount received by this committee is \$747.50.

**The Janeway Foundation at Mount Sinai Hospital.**—Through the generosity of an anonymous donor, a lectureship has been established at the Mount Sinai Hospital named after the late Dr. Edward G. Janeway, who was for many years associated with the medical staff. The foundation has been created for the purpose of inviting important investigators to present the results of their work to the staff of the hospital.

**Conditional Gift for the University of Cincinnati.**—Mrs. Mary M. Emery has promised the University of Cincinnati the sum of \$250,000 for a new medical college building, on condition that an additional \$250,000 be raised for equipment and maintenance.

The university is again giving a premedical summer course in physics, analytical chemistry, organic chemistry, and zoology. The term lasts from June 7th to August 14th, a period of ten weeks.

**Des Moines Valley Medical Association.**—At the forty-fourth annual meeting of this association, held recently in Ottumwa, Iowa, Dr. M. Childress, of Oskaloosa, was elected president, Dr. M. F. Moore, of Martinsburg, first vice-president, Dr. A. Guamer, of Fairfield, second vice-president, and Dr. E. B. Howell, of Ottumwa, re-elected secretary.

**Personal.**—Dr. J. N. E. Brown, formerly head of the Toronto General Hospital, has been appointed superintendent of the Henry Ford Hospital, Detroit.

Dr. Abraham B. Farmanagan, of New York, who was severely injured in an automobile accident on May 22d, returned to his home from the hospital on June 21st, and is now sufficiently recovered to attend to his office work.

**Typhus Fever in Austria-Hungary.**—According to reports received by the United States Public Health Service for the week ending June 11, 1915, there were 489 cases of typhus fever reported in Austria from April 11th to 17th, and in Hungary, 8 cases, with 4 deaths. From the beginning of August to the end of December last year, 279 cases were reported in Austria-Hungary, and from January 1st to March 27th, 4,374 cases.

**New York Post-Graduate Medical School and Hospital.**—Dr. Jonathan Wright has resigned as director of the laboratories of this institution, and Dr. Ward J. MacNeal has been appointed his successor. The following promotions are announced: Dr. Morris S. Fine to be adjunct professor of pathological chemistry; Dr. Richard M. Taylor to be adjunct professor of pathology; Dr. Paul A. Schule to be lecturer in bacteriology.

**Diphtheria Remedies Condemned.**—Proceedings have been instituted against the manufacturers of Barton's diphtheria antidote and against a wholesale druggist and two retail druggists who sold the preparation, on the ground that false therapeutic claims were made for it. Proceedings on the same grounds have also been instituted against the manufacturer of a homeopathic specific and two retail druggists who sold the specific.

**A Fifth Year at Rush Medical College.**—Announcement is made that students entering the medical courses of Rush Medical College, which is the medical department of the University of Chicago, at the beginning of the summer quarter, 1914, or thereafter, will be required to take a fifth year, heretofore optional, for graduation. The work of this fifth year will consist of an internship in a hospital approved by the faculty, and taken under conditions prescribed by the faculty, or advanced work as a Fellow or research student in one of the departments of the college, with the presentation of a thesis embodying original work.

**Resignations from the Staff of the University of Minnesota Medical School.**—Following the example of Dr. Charles Lyman Greene, professor and head of the department of medicine of the University of Minnesota, whose resignation was handed in immediately upon the decision of the board of trustees to become affiliated with the Mayo Foundation, three other members of the medical staff have resigned, as follows: Dr. James S. Gillfillan, clinical professor of medicine, Dr. John L. Rothrock, clinical professor of gynecology, and Dr. C. D. Freeman, clinical assistant in dermatology and venereal diseases. Doctor Gillfillan's resignation is said to be due principally to the demands of his private practice, as he was not actively opposed to the affiliation.

**Measles Still Prevalent.**—There were 1,277 deaths and a death rate of 11.47 per 1,000 of the population reported during the past week against 1,258 deaths and a rate of 11.75 in the corresponding week in 1914, an increase in the absolute number of deaths of 19 and a decrease in the rate of 0.28 point, which is equivalent to a relative decrease of 31 deaths.

The only noteworthy feature of the week's mortality was the increase in the deaths from measles and bronchopneumonia, causes intimately associated.

Viewed from the point of age grouping, the mortality of children under one year of age was considerably higher than the corresponding week in 1914, there being an increase of 49 deaths reported. The mortality at the other age groups was slightly below that of the previous year.

The death rate for the first twenty-six weeks of 1915 was 14.21 per 1,000 against the rate of 14.79 during the corresponding period of 1914, a decrease of 0.58 point.



**Public Health Sermons in San Francisco.**—One of the interesting features of the meeting of the American Medical Association in San Francisco were the addresses delivered on various aspects of public health in fourteen of the churches by members of the association.

**County Medical Societies to Hold Joint Meeting.**—A joint meeting of the medical societies of the counties of Alleghany, Genesee, Livingston, and Wyoming, N. Y., will be held at Letchworth Park, Portage Falls, on Thursday, July 18th. Members of county societies of western New York other than those mentioned are invited to be present. Dr. Louis Fageres Bishop and Dr. William Seaman Bainbridge, of New York, will present papers. A good attendance is expected.

**Cancer Study Meetings in Vermont.**—A series of meetings have been held in the cities of Rutland, Burlington, St. Johnsbury, and Montpelier, Vermont, under the auspices of the Vermont State Medical Society, to inaugurate an educational campaign with regard to cancer. The meetings were organized by Dr. James Hamilton, of Burlington, secretary of the State medical society, and were a success from every standpoint. Among those who held clinics and gave public addresses on various phases of the cancer problem were Dr. W. Seaman Bainbridge, of New York; Dr. Charles Francis Dalton, of Burlington; Dr. Jonathan M. Wainwright, of Scranton, Pa., and Dr. Francis Carter W. of New York.

**New Jersey State Medical Association.**—The 140th annual meeting of this association was held in Spring Lake, on June 22d, 23d, and 24th, under the presidency of Dr. Frank D. Gray, of Jersey City. Dr. Gordon K. Dickinson, of Jersey City, delivered the oration in surgery, and Dr. Stewart Paton, of Princeton, the oration in medicine. Dr. William J. Chandler, of South Orange, was elected president to serve for the ensuing year, and other officers were elected as follows: Dr. Philip Marvel, of Atlantic City, first vice-president; Dr. William G. Schaeffer, of Lakewood, second vice-president; Dr. T. W. Harvey, of Orange, third vice-president. Dr. B. S. English, of New Brunswick, was delegated by the convention to arrange the details for next year's meeting, which will mark the 150th anniversary of the organization of the association. At the annual banquet Dr. Thomas Darlington, of New York, was one of the speakers.

**The Pan-American Medical Congress** met for the seventh triennial session in the Auditorium of the Civic Centre of San Francisco on June 10th. The congress, which met at the invitation of the United States Government, was called to order by the president, Dr. Charles A. L. Reed, of Cincinnati, at ten o'clock, June 17th. Addresses of welcome were made by Surgeon General Rupert Blue, of the United States Public Health Service, and President Victor C. Vaughan, of the American Medical Association, and responded to by Dr. P. de Ovarrio, of Panama. The proceedings of the congress were carried on in six sections as follows: 1. Medicine; 2. general surgery; 3. obstetrics and gynecology; 4. anatomy, physiology, bacteriology, and pathology; 5. preventive medicine and public health; 6. rhinology, otology, and ophthalmology. On Saturday evening the official banquet was given in the California Building and the exposition authorities presented an official bronze plaque to the congress which was accepted by President Reed. Dr. Ramon Guiteras, the secretary general of the congress, announced the names of the new international executive committee which will have charge of the arrangement of the eighth congress to be held in 1918 in some place to be selected by the American members of the committee: Argentina, Dr. E. B. Damaris, Buenos Aires; Bolivia, Dr. H. Mendez, La Paz; Brazil, Dr. Alvarado Ramos, Rio Janeiro; Canada, Dr. T. J. Shepherd, Montreal; Chile, Dr. J. Amunategui, Santiago; Costa Rica, Dr. Carlos Duran, San Jose; Cuba, Dr. Mendez Capote, Havana; Guatemala, Dr. Juan Padilla, Guatemala City; Haiti, Dr. H. Jeanty, Porto Prince; Mexico, Dr. Eduardo Licaga, Mexico City; Nicaragua, Dr. Luis de Bayle, Leon; Peru, Dr. Carlos Morales, Lima; San Salvador, Dr. Carlos Leiva, San Salvador City; Santo Domingo, Dr. Fialo Cabral, Santo Domingo City; Venezuela, Dr. F. A. Risquez, Caracas; Panama, Dr. A. S. Boyd, chief surgeon of Santo Tomas Hospital. The United States members are Doctor Reed, Doctor Guiteras, Doctor Newman, and Doctor Johnson.

**Rhode Island Medical Society.**—The following officers were elected at the annual meeting of this society, held in Providence, June 10 and 11th, 1918: President, Dr. Frank L. Day; first vice-president, Dr. E. D. Chesebro; second vice-president, Dr. John Champlin, of Westerly; secretary, Dr. Jay Perkins; treasurer, Dr. Winthrop A. Risk.

The council for the ensuing year will consist of the officers, the ex-presidents, Dr. J. W. Mitchell, Dr. G. D. Hersey, Dr. W. R. White, Dr. C. F. Barker, Dr. C. V. Chapin, Dr. F. B. Fuller, Dr. A. A. Mann, Dr. F. T. Rogers, Dr. A. B. Briggs, Dr. J. W. Keefe, and councillors: Kent, Dr. J. A. Mack; Newport, Dr. D. P. A. Jacoby; Pawtucket, Dr. C. H. French; Providence, Dr. J. F. Hawkins; Washington, Dr. A. B. Briggs; Woonsocket, Dr. W. F. Barry.

**Medical Library Association.**—This association was organized in May, 1898, with Dr. George M. Gould, of Philadelphia, as its first president, the avowed object being the "fostering of medical libraries and the maintenance of system for the exchange of medical literature among them." Any medical society, association, university, or college having a fixed home and a library of at least five hundred volumes, with a librarian or other attendant in charge, or any individual interested in medical literature or libraries, is eligible for membership. The secretary's report presented at the last annual meeting showed fifty-two library members, of whom three had joined during the past year, and sixty-four individual members, of whom eight joined during the past year. The membership fees are small, but expenses are kept at the lowest possible amount consistent with the service rendered, and consequently, by a careful handling of the funds, the treasurer shows a very substantial balance which will allow a broadening of the work this year. Lieutenant Colonel C. C. McCulloch, Jr., of the library of the surgeon general's office, Washington, D. C., is president, and Dr. John Ruhrh, of Baltimore, is secretary and treasurer.

**A Course for Public Health Officers at the New York University.**—With all the bureau chiefs of the New York city health department on the teaching staff, and with the sanction and approval of the State Public Health Council, New York University will, beginning July 15th, undertake to train health officers. A two year course leading to a new degree—Doctor of Public Health—will be offered, and in addition a six weeks' summer course. The equivalent of the shorter course may also be taken by mail, finishing with a week of laboratory work.

Dr. William H. Park, dean of the medical college, and Dr. Herman M. Biggs, associate professor of medicine and State Commissioner of Health, are responsible for the new course. It has been felt for some time that a health officer should be something more than a good physician. Governor Sulzer's Public Health Commission recommended that the medical colleges of the State introduce courses in sanitary science leading to a degree which might ultimately be required of all health officers. This month the Public Health Council of the State, which has legislative powers when it chooses to exercise them, added a recommendation that the shorter courses also be given.

Through his position as director of the Bureau of Laboratories of the City Health Department, Doctor Park was able to secure the cooperation of his colleagues. The health commissioner, Dr. S. S. Goldwater, and the Health Officer of the Port, Dr. Joseph J. O'Connell, have expressed their hearty approval of the plan. All the bureau chiefs will lecture on their particular subjects, and laboratory and field work will be conducted under their supervision.

The six week course, which is also the beginning of the two year course, includes the whole range of public sanitation. Dr. Haven Emerson, Deputy Commissioner of Health, for example, will lecture on health administration and health laws. Dr. S. Josephine Baker, director of child hygiene, will tell about child welfare work. Dr. John S. Billings, director of the Bureau of Infectious Diseases, will handle communicable diseases, the control and care of tuberculosis, etc. Doctor O'Connell, Health Officer of the Port, will lecture on State and national quarantine.

Candidates for the degree will continue lectures and laboratory work through the first year, and in the second year prepare a thesis upon some problem in public health. The fee for the extension course and for the six week course is \$50. Fees for the two year course are \$200 the first year and \$25 the second year.

## Pith of Current Literature.

### BERLINER KLINISCHE WOCHENSCHRIFT

**Specific Treatment of Pneumonia with Opotechin.**—The active principle, Opotechin or ethyl ferri-oxypotassium, was brought forward by Morgenroth as a specific against the pneumococcus on the basis of an extensive series of experiments on animals and on man. The present article is a report of the experience of the use of this drug in the treatment of the disease as it is encountered in man. The most important element of the use of the drug seems to be to collect the focus, as to obtain the maximum concentration of it in the circulation and yet to avoid the administration of enough to produce toxic symptoms. This end can be attained by giving 0.25 gram of the preparation every four hours night and day. Twenty-six patients were thus treated and in none was there any harmful effect of the drug observed. Only two of the group died, and both of these were in a serious condition when the drug was begun. Thirteen had the treatment started on or before the third day of their illness, and of these all recovered and in all the drug seemed to have a decided effect in shortening the course of the disease. The effect of the drug was less pronounced when its administration was started later than the third day. In some of the patients the drug caused the disappearance of the pneumococci from the blood very promptly. Albrecht Peiper contributes a paper on the same subject in which he arrives at essentially the same conclusions as does Rosenow, although his results were not so favorable. In one case he observed temporary blindness as a result of the administration of the drug.

**Salvarsan Sodium.** by C. Gutmann.—This is a new preparation of salvarsan which is readily soluble in water and is alkaline in reaction and stable. It has the advantages over the older preparation and over neosalvarsan of being much simpler to prepare and to use, and can be given either intravenously or into the muscles. The total amount of distilled water required for its solution is only thirty c. c. Its actions and dangers are the same as those of the older preparations, and it has about the same degree of activity as old salvarsan.

**Diathermy in Military Wounds and Diseases.** by Albert E. Stein.—All forms of joint stiffness, muscular rheumatism, articular rheumatism, sciatica, lumbago, and the neuralgias respond favorably to treatment by diathermy. It was also found to be of decided value in hastening the union of fractures. While its benefits are great, attention should be called to the fact that the procedure is capable of doing great harm, and hence it should not be employed by anyone who has not mastered its technic thoroughly and can never be left to an assistant. It has the great disadvantage of being very long, as much as half an hour has to be resorted to for a slight patient.

### BULLETIN DE L'ACADEMIE DE MEDECINE.

**Etiology of Frostbite.** by François Debat.—Experimental as well as clinical observations showed that the etiology of frostbite is complex, various factors combining, in individual cases, to reinforce

the chief exciting cause—cold. Immersion of the feet in water at 2° C. was sufficient to cause sensory, motor, reflex, circulatory, and thermic disturbances identical with those noted in frostbite of the first degree. Immobility and compression—as by tight shoes and leggings—increase the effect of cold, but compression alone is not sufficient to cause serious trouble; acting only secondarily when the foot has become edematous due to the paralytic vasodilatation which follows the primary vasoconstriction caused by cold. Of 104 patients examined, eighty-nine had been exposed to moderate, damp cold, one to moderate, dry cold, and fourteen to damp cold approximately at the freezing point or below it. Only thirteen in the entire series failed to show some factor predisposing to frostbite. The remaining ninety-one showed, in the aggregate, 199 predisposing factors, as follows: Alcoholism, sixty-eight factors; debility, thirty-seven; general chilliness, thirty-two; chilblains, twenty-nine; former traumatism of the leg or foot, twenty-one; varicose veins, twelve; rheumatic pains, four; renal disease, two, and diabetes, one. In alcoholics, sensory disturbances were more marked and persistent, ulcerations healed less rapidly, and alarming septic complications were more likely to occur.

**Specific Treatment and Prophylaxis of Oriental Sore.** by Gachet.—Intravenous injections of salvarsan or neosalvarsan were found to have definite curative value, causing the ulcer to heal permanently in three to five weeks. At times two, and occasionally three, injections at intervals of one or two weeks were required. The necessary dose did not exceed 0.01 gram of neosalvarsan to the kilogram of body weight. Although some authors have written of Oriental sore as a general infection with local manifestation, the author's observations showed that the infection is merely local. Interstitial injections of arsenical solutions produced a complete cure in the same period of time as intravenous medication. The least painful and toxic arsenical for this purpose proved to be hectine, used in the standard 0.1 or 0.2 gram to the c. c. solution. Two injections a week, each of 0.2 gram, were given in adults; in children the dose was 0.01 gram to a kilogram of body weight. Cases thus treated before the ulcerative stage terminated without scarring. In ulcerative cases, the morbid process was at once arrested and healing was more rapid and the scar more regular than where the treatment was not applied. In severe cases the treatment proved effectual in preventing disfigurement through loss of tissue in the nose, ears, and eyes. Not a single instance of transmission from one human being to another was observed by the author. Microscopic and clinical observations seemed to prove the transmitting agent to be a dog fly, *Hippobosca caennia*.

### PRESSE MEDICALE.

(April 20, 1914.)

**Use of Electricity in the Treatment of the Wounded.** by T. Nogier.—A description of an easily made and inexpensive rheostat, specially designed by the author for medical use, is given. Advice as to the choice of suitable conducting wires and electrodes is also presented. Concerning the various forms of current that may be clinically

used, the following rules are given for the practitioner's guidance. 1. The high amperage faradic current, with thick wired induction coil, should be prescribed only in cases of slight atrophy of muscles which are still responsive to stimulation. 2. Whenever the reaction of degeneration or marked atrophy exists, the faradic current should be avoided. 3. The high voltage faradic current, with thin wired induction coil, is indicated solely for the treatment of sensory disturbances. 4. The galvanic current is indicated in all cases of neuralgia, neuritis, muscular atrophy, nerve section, or paralysis. 5. In using electricity to relieve pain, the electrode placed near the extremity of the limb should be connected with the positive pole, and that placed at the back of the neck or in the lumbar region, with the negative. 6. Where pain exists the strength of the current should be increased and diminished very gradually. 7. Where, in a limb, one group of muscles has become paralyzed, great care should be taken not to stimulate the antagonists. 8. To avoid burns of the skin, especially at the negative pole, care should be taken to establish perfect contact between the electrodes and the skin. 9. The sinusoidal or industrial alternating current is effectual in relieving pain, and obviates burns, each pole being alternately positive and negative. 10. Nurses should never be allowed to administer electric treatment without precise instructions from the physician as to the kind of current to be used, the sites of application and polarity of the electrodes, the intensity of the current, the duration of the applications, and the number of sittings each week.

#### RIFORMA MEDICA.

Maclean, J. S.

**Meningococci in Nasal Cavity of Horses,** by L. Mazzetti.—Of 2,000 soldiers in camp, 800 were found to be carriers of meningococci. The sole source of contagion would seem to be the nasal mucous membrane whence the germs are disseminated by sneezing, coughing, spitting, even by talking. An attack of coryza greatly increases the number of cocci and therefore enhances the danger of infection. Discovery of the fact that cavalry soldiers were much more frequent carriers than infantry prompted the examination of the nasal cavities of their horses, with the result that a large number were found to be carriers of meningococci. It would seem to be demonstrated that human carriers may infect horses which in turn infect other horses as well as human beings.

**Cardiac Syphilis,** by F. Soprana and C. Piazza.—Cardiac asystole without apparent cause in a case with positive Wassermann is strongly indicative of syphilitic disease of the heart. Prognosis depends on the accuracy of diagnosis and period of advancement. The best treatment combines large doses of iodide of potassium with the use of salvarsan and mercury, taking care to avoid mercury when renal lesions are present.

**Protective Substances in Milk of Animals Immunized against Tuberculosis,** by L. Sivori.—Experiments on immunized cows show that antigens and antibodies are found in the milk, though not in such quantities as in the blood. These experiments

verified the findings of Figari and Ricci that antitoxic and agglutinating materials from one animal produced specific antibodies in the milk of other animals injected with them. Further, animals born of nonimmunized mothers, fed with the milk of immunized animals, showed antitoxins and agglutinins in their serum, thus proving absorption of such bodies from the gastrointestinal canal.

**Specific Antibodies in Cold Blooded Animals,** by L. Mazzetti.—Researches show that cold blooded animals lack receptors for proteins of warm blooded animals; in the process of immunization no hemolysins, agglutinins, precipitins or fixatory antibodies of the complement are formed.

**Removal of a Carcinoma of the Head of the Pancreas,** by C. Silvan.—In a man aged twenty-nine years an operation for complete biliary obstruction revealed the cause to be a neoplasm of the head of the pancreas which was considered inoperable. Relief was sought and obtained by a cholecystojejunostomy. After one year, the symptoms returned in a more severe form and a second operation was done, with the successful removal of a carcinomatous tumor the size of an orange from the head of the pancreas. There was complete disappearance of the icteroid symptoms and recovery was rapid. The rarity of successful operations for malignant disease of the pancreas makes this case noteworthy.

#### REVISTA DE MEDICINA Y CIRUGIA PRACTICAS.

Maclean, J. S.

**Pernicious Vomiting of Pregnancy from Retroversion,** by A. Aza and G. Macan.—Eclampsia and pernicious vomiting are two conditions whose pathogenesis gives rise to the most divergent hypotheses. If vomiting is caused by intoxication of the mother by products of fetal metabolism, it should progressively increase with the growth of the child, but it does not do so. Anaphylaxis is the modern theory advanced by Recasens. Vicious positions of the uterus have been accepted as a common cause of obstinate vomiting—especially retroversion. A case in point would seem to support this view. A woman two months pregnant suffered from vomiting which resisted all treatment until a retroversion was diagnosed and operated upon by the Alexander-Adams method, whereupon the vomiting ceased immediately and did not recur. It would seem that retrodisplacements of the uterus are serious in pregnancy and furthermore that purely local or mechanical causes may unquestionably produce pernicious vomiting.

#### SEMANA MEDICA.

**Vaccines and Protargol Paste in Gonorrhea,** by U. S. Loizaga.—The vaccine used is the haptinogen of Mendez and the paste is made of protargol 0.5 per cent. in gum tragacanth and water. This paste transforms open cavities into closed ones and may be applied to the eyes, urethra, vagina, cervix, joints and bone cavities, etc. It simplifies the action of the vaccines by occluding cavities where gonococci might hide themselves and multiply unaffected by the systemic action of the haptinogen. In urethritis an injection is made immediately after urination and the meatus closed with plaster.



BRITISH MEDICAL JOURNAL.

**Ureteral Stone.** by John H. Watson. After attempting the removal of the ureters on both the male and the female, the author proceeds to outline the method of analysis and examination of a case to prove the presence and location of a stone. Many errors are made by misinterpretation of the symptoms and by a failure to bring to one's assistance all diagnostic aids including radiography and the use of the cystoscope and ureteral catheter. Special stress is laid upon the diagnosis of stone in the pelvic portion of the ureter as this is most frequently incorrectly diagnosed. The symptoms are typically of long standing with a history of acute exacerbations of pain. There is often a sudden attack suggesting the impaction of a stone in the neck of the bladder with an inability to empty the bladder. This is due to reflex spasm. The characteristic pain is referred to the tip of the penis, the region of McBurney's point or around the anus. The conditions most frequently suggested by stone in the pelvic ureter are appendicitis and stone in the bladder and many cases have been subjected to operation for one of these. In these cases medical treatment by diuretics and the copious drinking of water has occasionally led to the passage of the stone, but if this fails surgery should be resorted to.

**Acute Gonorrrhea Treated by Electrolysis,** by Charles Russ.—Twenty-eight patients have been treated by this method, which consists, briefly, of having the patient retain his urine for a few hours. Then at the time of treatment about half of his urine is to be voided to wash out the urethra. A platinized catheter is then gently passed to the compressor urethra. This catheter should be perforated at short distances along its course and should be fitted with a stylet of platinum wire and have a rubber collar for closing the meatus. A metal plate covered with lint should then be applied to the perineum after being wetted with salt solution. A two per cent. solution of sodium iodide should be gently injected into the catheter. A current of two milliamperes should then be passed for about twenty-five minutes, the negative pole being connected with the perineal pad and the positive with the platinum wire in the catheter. After the first few treatments, the perforations in the catheter will be found filled with yellow mucopurulent material and similar masses will be found in the remainder of the urine when passed at the end of treatment. As treatment progresses these masses will become less and less numerous until finally they disappear completely, when treatment is finished. By this method it has been possible to cure acute cases in three or four weeks. It has the advantages of being a more certain method than any other; complications are seldom observed following it; and the threads and flakes disappear more rapidly after the discharge has been arrested than is ordinarily the case.

LANCET.

**The Bacterial Flora of Wounds in the Present War,** by Leonard S. Dudgeon, A. D. Gardner, and F. Bawtree.—A study of wounds after reaching the home hospitals was made and revealed that their flora differed little or not at all from those

encountered in civil practice where there had been soiling by stable dirt. The colon bacillus, one of the staphylococci, or a streptococcus was practically always present; twenty-one patients examined also harbored the tetanus bacillus or the *Bacillus aerogenes capsulatus*. One patient's wounds contained both. Nine of eleven patients whose wounds contained tetanus bacilli were prophylactically treated and remained free from the disease. The other two did not have such treatment and one of them manifested tetanus, the second remaining free from it. The importance of this study lay in the fact that it showed that the wounded man might be a carrier of either of these virulent anaerobes for two months or more without being suspected of harboring them. From the thirteen patients in whose wounds the gas bacillus was found, it was obvious that there must be some special conditions present for this organism to produce gas gangrene, for it was either rapidly eliminated from most of the wounds or merely acted as a pyogenic organism, or even as a mere saprophyte. It was found in some wounds as much as four weeks after the date of injury. The importance of the presence of either of the two anaerobic organisms in wounds is very great when it comes to the performance of surgical operations in such cases and in the question of the proper sterilization of instruments between operations.

BOSTON MEDICAL AND SURGICAL JOURNAL.

**An Anatomical and Mechanistic Conception of Disease,** by Joel E. Goldthwait.—This paper presents an anatomical and physiological study of man which indicates that the study of anatomy and physiology should be broadened so as to include not only the normal, which is rarely met with, but also other types, particularly those classed by Goldthwait as the carnivorous and herbivorous. These types differ so widely that it is not difficult to believe that there is a wide variation in the function of the different parts. The explanation of the varying effects of the same diet upon groups of individuals probably lies in this difference. On the same food one individual thrives and grows fat, another is distressed and remains thin. The fact that meat is harmful in gout is of interest when it is realized that the herbivorous type is the one subject to gout. Patients benefited by red meat and hot water are almost always of the carnivorous type. This seems to show that while all human beings have elements within them which make possible the digestion of different kinds of food, some foods are digested with greater ease than others, and this fact at times is of the greatest importance in the interpretation of symptoms and their treatment. A blood pressure that would be normal for one type might be dangerously high or low for the other. Thoracic and abdominal conditions need to be studied with reference to the anatomical type. Mental and nervous diseases seem to be affected; acute and functional troubles are usually seen in the carnivorous type, chronic and degenerative in the herbivorous. In short, it would seem from this paper as though almost every physiological and pathological condition is influenced by the type of the structure of the body. Attention is also called to what the writer thinks is the most sobering phase of the subject, that preventive medicine is now saving

children of the slender type, children who formerly added much to the mortality of infancy and childhood because of their low resistance; in this type growth without proper guidance produces a still weaker physique, with drooped figure and narrow chest. This together with the fact that this type is the most prolific indicates that the stock of the race will become less strong, and yet such a child, if guided and trained rightly, becomes the agile, quick moving, quick thinking type of individual. To obtain such a development means constant perseverance in the education and training, which should begin with the early years, with proper physical support. If the physician and the teacher recognize these facts and apply the natural principles for the proper development of this class, the result must be a stronger and finer race.

#### JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

*June 16, 1917.*

**Stomach Carcinoma; Its Medical Aspects,** by J. C. Bloodgood.—These notes are based on 184 cases observed in the laboratory of surgical pathology of the Johns Hopkins Hospital in the course of nearly twenty-five years. A table showing the duration of disease before operation presents especially the medical aspects. All of these patients had continuous symptoms for from one month to six years or more. It is very difficult to find out why they finally came for surgical help. Perhaps in many instances on account of the development of almost complete pyloric stenosis, though this, as a rule, is a relatively late effect. A few of the patients have sought help within a few months after relatively slight symptoms. These had all been seen by good physicians, and subjected to a rigid examination; and most of them had been observed in the past five years. Our adult population must be informed, with the endorsement of the highest authority, that epigastric discomfort aggravated by eating solid food is a sufficient warning; that such symptoms by no means mean cancer, or disease which may ultimately end in cancer, but that with these warnings they should seek, not treatment, but a thorough examination by a competent physician trained in the investigation of gastric diseases; and that restricted diet and some medicine will often give relief, but if the disease is cancer, or something which may ultimately become cancer, such relieving treatment will only increase the danger. A thorough examination is the essential thing. Such examinations consist of repeated gastric analyses and the investigation with the fluoroscope or röntgenograph.

**Chronic Duodenal Ulcer,** by W. J. Mayo.—The symptomatology of this affection is so well known that in the typical cases failure of diagnosis should not occur. The hunger pain and food relief, hyperacidity and hypersecretion, and, in the later stage, obstructive phenomena, leave little doubt as to the character of the lesion. Failure in differential diagnosis may be due to accompanying disease of the gallbladder, appendix, etc., which occurs in about ten per cent. of the cases. In Mayo's experience, actual hemorrhage takes place in somewhat less than twenty-five per cent., but if one is satisfied to ask the patient and accept doubtful evidence as to black stools, etc., this percentage can be increased to as

much as seventy. He has not found occult blood a reliable symptom, and does not attach a great deal of importance to it. The x ray is a very important and increasingly valuable means of diagnosis, and by it, in conjunction with the clinical history, a diagnosis can be made in approximately ninety-five per cent. of cases. One of the most curious phenomena connected with this affection is its intermittency, spontaneous remissions occurring from time to time; and a study of the history of the natural course of the disease makes the prospects of permanent cure by medical means questionable. Other things being equal, after failure of reasonable medical treatment, patients with unhealed chronic duodenal ulcer should be considered surgically. To evade operation is a risk not commensurate with the value received from operative interference. No class of cases gives better results from operation.

**The Prognosis in Auricular Fibrillation,** by H. E. B. Pardee.—We have a fair idea of the amount of restricted activity imposed by different lesions of the cardiac valves, but we are only lately coming to realize that an irregular heart does not seriously cripple the individual. Sinus arrhythmia we know may be disregarded and usually looked on as normal; extra systoles do not seem to lead to hypertrophy or cardiac failure, even when constantly present over long periods of time; but the continuous irregularity of auricular fibrillation has been considered a grave abnormality of function with poor prognosis. The inception of fibrillation comes on very suddenly, with the prompt appearance of symptoms of considerable severity. On attempting moderate exertion, the patient's heart rate increases, and dyspnea, palpitation, and precordial discomfort appears. Without treatment, the course is one of progressively increasing limitation of activity. The heart cannot maintain its efficiency with the shortened diastole resulting from the rapid ventricular rate; it tires more and more easily, and finally is completely unable to carry on a sufficient circulation. Under energetic treatment with digitalis, however, the cardiac failure is promptly corrected, and the reason why the continuous irregularity of auricular fibrillation has been looked on as causing a poor prognosis is because of the stopping of the treatment as soon as the patient recovers from an attack of acute cardiac failure. By continuing the digitalis in sufficient quantity to keep the heart slowed to about seventy beats a minute, a recurrence of the failure will be prevented. Seven illustrative cases are cited in which the patients have remained under treatment without cardiac symptoms for periods of from seven months to three years. Since these cases are all complicated by conditions of considerable gravity, and since the patients have performed considerable physical exertion so long as the heart was maintained at a slow rate, it is concluded that the irregularity, *per se*, adds little or nothing to the gravity of the prognosis.

#### MEDICAL RECORD.

*June 16, 1917.*

**Chronic Progressive Polyarthritides, or Arthritis deformans,** by S. W. Boorstein.—This is a polyarticular affection beginning either acutely or insidiously, generally involving in a symmetrical manner the distal joints of the fingers and extending to

progressive, but finally self limiting, leading, however, to marked deformities. It has no relation at all to traumatism and its treatment, consequently, should be avoided. The predominating etiological factor is distinctly an infection, either in the joint itself or at some distant point. Abnormal conditions of the gastrointestinal tract seem to be especially responsible as a predisposing factor and also for keeping up the ailment. Some cases appear to be complications or sequelæ of other infectious diseases, such as arthritis following influenza or scarlet fever. Prophylaxis in preventing any systemic infection, and keeping the digestion and intestinal tract in good condition, is essential; removal of chronic foci anywhere in the body is also imperative. When this disease is actually present, the place of infection should be sought for, and the territory cleared, if possible. General treatment, in the way of hygiene, good food, tonics, and building up of the patient, is necessary to success. Joints acutely affected should be kept at rest; but when active symptoms have subsided local treatment, in the form of active and passive hyperemia, hydrotherapy, massage, and active and passive exercise, should be administered regularly and with great care and patience, and be kept up for a long time. The occurrence of deformities should be prevented by steadying the joints in proper position at the time of acute infection. When deformities have already occurred they should be corrected. Patient and energetic work will bring about excellent results, even in the far advanced cases.

**Pituitary Gland in Gonorrheal Arthritis,** by M. S. Macy.—These cases were in dispensary patients, two women and a boy ten years old. Each case, at the time it was referred to the author, had been under autogenous vaccine treatment, as well as local antiseptic treatment for the infection of the genitourinary tract; but the arthritis of some months' standing, had been very slightly, if at all, benefited. The treatment adopted was attended with remarkable success. It consisted in ionizing into the affected joints, by the high frequency spark, of pituitary gland substance (in the form of tablets) triturated to a powder. Usually, one gram of the powder was employed at each treatment, but in one of the patients this was increased to two grams. The reason for the favorable action of pituitary gland in these cases is difficult to explain. The report is submitted with a full recognition of the fact that the cases are too few to be of conclusive evidence; but, as the results met with were so unusual and so prompt, it seemed worth while to present them in order that the method may be tested by other observers, and possibly some further definite and reliable data obtained and a reasonable theory evolved to explain the pituitary action.

**Radium. Therapeutics Otherwise than for Malignant Conditions,** by J. B. Bissell.—Six cases are cited showing that radium is available to relieve other than cancerous conditions. The first case was one of typical infection of the thumb, with an involvement of the metacarpophalangeal joint and osteitis of the bones entering into the joint. The x ray showed a badly disorganized joint and necrosis of both bones. As the result of the repeated application of radium tubes in the sinuses leading to the

joints and elsewhere, a soft, jellylike mass of broken down tissue, with a foul odor, discharging sinuses, and a painful and useless hand, was changed to a perfectly comfortable and useful organ, although somewhat scarred and stiffened. In the second case, one of infection of the foot due to a compound fracture in one of the toes, which continued after amputation, a complete cure was rapidly effected by the application of radium in the same way. In the third case, one of osteitis and necrosis of the second toe, in a diabetic patient, the result was equally satisfactory. The fourth case was one of profuse and obstinate hemorrhage from the stump of a cartilaginous and badly lacerated fibrous cervix uteri which had been removed seven years previously. After curettage, which proved inefficient, seventy-five mg. of radium, protected by lead, silver, rubber, and an adhesive plaster covering, was applied against the curetted point, and kept in place by packing for eighteen hours. Although six months have elapsed, there has been no return of the bleeding. In the fifth case, that of a patient with small abscesses in both axillæ following an operation for gallstones, the condition was successfully treated by the application of a radium capsule in the cavity of each abscess. In the sixth case, one of pernicious anemia resisting all other forms of treatment, the patient was cured by means of intravenous and intramuscular injections of radium solution. Attention is particularly called to the interesting effect of the application of radium in streptococcal bone infection, while the happy result of the use of radium solution in the case of pernicious anemia would seem to suggest new opportunities for treatment in this usually fatal disorder.

## JOURNAL OF CUTANEOUS DISEASES

May, 1915.

**Epidemic Alopecia in Small Areas in Schools, Regiments, etc.,** by John T. Bowen.—Epidemics occurred in this country in 1891 and 1897. The bald areas in many instances were irregular, angular, and small; in some cases there was a moth-eaten alopecia resembling that of syphilis. In 1910 Dreuw published an account of an epidemic of alopecia among the school children in Berlin. The children were from five to fourteen years of age. The patches were small, round, or angular, white or grayish white, not very sharply defined from the normal scalp; in some instances, black hair was found in the centre of the patch. In ten per cent. of the cases atrophic changes were noticed in the areas involved. Painstaking bacteriological studies failed to show any causative factor. In 1913, Colcott Fox described an epidemic affecting twenty-one children of one school. There were patches of alopecia which were small, but no atrophy. In 1914, H. Davis described an epidemic of alopecia in an orphanage affecting one hundred and seventy-four inmates. No evidence of ringworm fungus could be discovered. The author believes that the cases recorded in these epidemics differ from alopecia areata. They cannot be suspected of being cases of ringworm; frequent examinations by competent men failed to show any trace of fungus. He believes that the epidemics recorded by Davis, Fox, Dreuw, are essentially of the same nature as those he described in 1891.



**Mycosis fungoides Limited to One Foot**, by Francis Eugene Seneff. — In a woman aged forty-one years, the skin from the ankle to the sole was thickened, and of dark red color. Scattered throughout were numerous tumors of various size, rather soft to the touch and dark purple in color. Some of the growths were broken down, discharging profusely and covered with fungating growths. There were also numerous purplish infiltrated plaques. There were clinical evidences suggestive of syphilitic infection; these were confirmed by a Wassermann test. Inquiring into her history, the author learned that her foot condition was of six years' standing; it started at first with intense itching. In the beginning, the growths would come and go spontaneously. She was treated with x ray applied to the affected foot and was also given salvarsan intravenously, with the result that her foot was healed completely.

#### OPHTHALMIC RECORD

June, 1915

**Colloidal Theory of the Pathology of Glaucoma**, by John Alexander McCaw. — Experiments made on enucleated sheep's eyes show that an intense glaucoma can be induced without any circulation whatever; by the addition of a little acid these eyes were made to absorb enough water to cause them to burst. An increase of pressure may exist in the circulating fluids without any symptoms of glaucoma. Hence McCaw is led to believe that the cause of glaucoma may reside in the tissues of the eye itself, and that it becomes glaucomatous, not because more fluid is pressed into it, but because of changes through which it absorbs more water. The experiments showed further that this increased absorption of water depends upon the colloids in the eye, and it is inferred that an eye becomes glaucomatous through chemical changes within it which increase the affinity of the colloids for water. What these chemical changes are is unknown. Obliteration of the filtration angle he therefore thinks is a consequence rather than the cause of glaucoma.

#### JOURNAL OF TROPICAL MEDICINE AND HYGIENE

May 15, 1915

**Treatment of Kala azar**, by Aldo Castellani. — A case of kala azar is reported in which treatment similar to that previously applied by the author successfully in yaws was employed and yielded excellent results. The patient had a low, irregular fever and a greatly enlarged spleen, and was very weak. He received for two months, in alternate weeks, three doses daily of the following mixture: Tartar emetic, one grain; sodium salicylate, five to ten grains; potassium iodide, fifteen grains, and sodium bicarbonate, fifteen grains, in one ounce of water. In addition, the following solution was injected intravenously twice a week for nearly three months: Tartar emetic, thirty grains; Fowler's solution, 100 minims, and distilled water, 100 c. c. The dose of this each time was one or two c. c., diluted to four or five c. c. with sterile distilled water. For two months, in the terminal period of the treatment, the patient was also given, at intervals of about ten days, an intravenous injection of a two per cent. solution of tartar emetic, the dose

of the latter being each time 0.02 to 0.1 gram. The condition steadily improved, fever subsiding and the spleen becoming much smaller, until finally the patient, considering himself practically cured, ceased coming for treatment. Spleen puncture four months after the start of treatment showed a distinctly smaller number of parasites than had been found at first. The total period of treatment was about seven months. The results obtained are ascribed chiefly to the tartar emetic.

#### Proceedings of Societies.

##### AMERICAN GYNECOLOGICAL SOCIETY.

*Fortieth Annual Meeting, Held at White Sulphur Springs, West Virginia, May 18, 19, and 20, 1915.*

The President, Dr. THOMAS J. WATKINS, of Chicago, in the chair.

**What Is the Fate of the Ovaries Left in situ after Hysterectomy?**—Dr. HIRAM N. VINEBERG, of New York, concluded: 1. There was considerable uncertainty as to which tissue in the ovary was responsible for the production of the internal secretion. 2. While it was established that the follicles went through the various stages of development in the conserved ovary or ovaries after the uterus had been removed, it was not at all certain that the function of the internal secretion continued uninfluenced by the great changes in the blood supply, and by the traumatism to which the pelvic sympathetic nerves were subjected as a consequence of the operation. 3. It was still a disputed point as to what degree the climacteric syndrome was due to the removal of the ovaries, and to what degree of injury to the pelvic nerves incident to the operation. 4. Clinically, it had been found that the freedom from the climacteric syndrome in hysterectomized women, in whom the ovaries had been conserved, was only relative to that which obtained in the same class of women in whom the ovaries had been removed. A generous estimate would be twenty per cent. in favor of the former. 5. To obtain the benefits asserted by the advocates of conservation, the ovaries should be retained at all ages and not limited to those under forty years, as was done by most of them, inasmuch as it had been shown that of women who suffered most severely from the artificial menopause, forty-six per cent. were only forty-five years old and over. 6. Subsequent disease of the conserved ovary, such as cystic degeneration, malignant growth, inflammatory processes leading to adhesions, and pain calling for a second operation, did occur in some cases, the number no doubt being much larger than would be inferred from the literature. 7. In view of the foregoing conclusions, he was of the opinion that the doubtful clinical advantages accruing from retaining the ovaries in hysterectomy were more than counterbalanced by the risk to which the patient was subjected from subsequent disease and adhesions of the conserved ovaries. He would, therefore, not retain the ovaries in any case of hysterectomy unless he could leave enough of the lower segment of the uterus with its endometrium to insure menstruation; for in his experience the knowledge imparted to the

menstruation, but that ovary had not been removed had been left, significance or mental effect when she learned that she would no longer menstruate.

Dr. FRANK E. SIMPSON, of Philadelphia, said that the first instance of transplanted ovarian tissue was one that occurred of themselves, the line of work. The patient, a young woman, of considerable importance in the community, in the thirties, had a perforated appendix, with drainage for general peritonitis. The appendix was removed. Later there were adhesions about the annexa on both sides, which were treated. Some operations were done by New York surgeons. The young woman was a confirmed invalid. She suffered intensely at the menstrual periods. She, her father and mother insisted upon immediate removal of the uterus and annexa. He could not consent for almost a year. Every effort he was capable of was made to relieve the suffering by local and other measures. At the end of that time she suffered a breakdown in 1911 at its beginning. With the full understanding of the parents and the young woman, that this work was in the experimental stage, he consented to remove the pelvic structures. He did not transplant the ovary into the abdominal cavity, thinking it would cause serious trouble, and that disintegration of the ovarian tissue or infection might readily cause such serious damage as to require a second abdominal operation. So it occurred to him that to transplant it beneath the skin might be successful. He used the annexa, transplanted about one half of the ovary; it lived, and to-day was quite the size it was when transplanted. On a number of occasions he felt the ovary, and, he believed, the Graafian follicles also. In that young woman the functional result was good. Instead of being a confirmed invalid and lying in bed, she was about, was vigorous, and practically not harmed at all by the disagreeable phenomena of the precipitated menopause.

Dr. JOHN O. POLAK, of Brooklyn, had four unreported cases of transplantation of the ovary. In three of them the entire ovary was transplanted in a pocket in the prevesical space. Two of those had caused no trouble so far as the ovarian graft was concerned. This graft seemed to have had no effect on the symptoms of the menopause, that is, the woman suffering from convulsions and the other nervous phenomena. A third had become cystic, and he had seen that woman recently. She had a cyst about the size of a two months' fetus. She was the only woman of those three who had had relief from the symptoms of the menopause. His fourth case was not an implantation of the whole ovary, but a graft of the ovary into the cornu of the uterus at the point of excision of the tubes. This patient menstruated for nine months, and then menstruation ceased. She then developed all the symptoms of the postmenstrual with considerable severity, but gradually those had passed away.

Dr. J. WESLEY BOVEE, of Washington, D. C., said that the ovary floated freely in the peritoneal cavity, and they knew it was the history of an ovary that became incased by adhesions, and not necessarily by marked infection, that it began to undergo sclerocystic degeneration. When they transplanted those ovaries, they covered them entirely with tissue, and

what was to his mind a very reasonable result was that they underwent degeneration, and he did not believe that the results were good, or would be good so long as that plan was followed. When they resorted to transplantation of ovarian tissue, it must be done in such a way as to give freedom to such tissue.

Dr. HIRSH N. VINEBERG, of New York, had had two cases of autotransplantation of the ovary, in which he took a small wedge shaped piece of the ovary and inserted it into the lower abdominal wound, leaving it between the fat and the skin. In one of those cases the operation was done nine months ago, in the other about six months ago. There had been absolutely no difference in the healing of the wounds. So far as one could tell from frequent examinations, one could not tell that transplantation had been done.

Dr. JOHN J. CLARK, of Philadelphia, said there was no organ that had such a shifting circulation as that of the ovary and no organ whose circulation was so rich. In the little transplantation work he had done personally, he had endeavored to expose the cortex, to lay open the ovary, to pull it open as one would a kidney, and allow the vascular portion of the ovary to come into direct contact with the peritoneum, which he had utilized, and not the subcuticular tissue as Doctor Simpson had done; thus far, his experience had not been particularly satisfactory.

Dr. HERMAN J. BOLDT, of New York, said those who had had a large experience with conservative surgery of the annexa must have come to the same conclusion as those who had read the papers, yet, in view of the fact that there were undoubted instances where the symptoms of the menopause were at least ameliorated if a seemingly normal gland was conserved, either by ordinary conservatism or by transplantation, he personally felt he wanted to continue that line of work. On the other hand, he could only say that in instances where conservatism had been practised, he had had the same disagreeable features to contend with as others had. He recalled two instances where it became necessary for him to re-open the abdomen and to remove a cyst from the ovary which had been retained, and he could not recall any instance where the removal of cysts had been more difficult. However, as he had said, there were instances where the symptoms of the menopause were at least ameliorated and where they were entirely absent.

Dr. J. RIDDLE GOFFE, of New York, about twelve years ago, made his first adventure into that field of work. It was on a young woman whose tubes were absolutely destroyed by disease; she was anxious to have children. Her husband was equally anxious. With this idea of future offspring, he removed both tubes and one ovary; then he slit open widely the whole fundus of the uterus, being careful to preserve the mucosa of the salpinx in his obliterating operation, and to retain as far as possible the lymphatics and the arterial nutrition of the ovary. Without splitting the ovary, he turned it right around and hung it free in the uterine cavity. He kept track of the woman for about six months. She had a slight discharge of blood at the regular time of men-

stration once; then she escaped from observation, and he had not been able by correspondence or in any way to get any further information.

Dr. JOSEPH BREITAUER, of New York, thought that each case for ovarian transplantation ought to be individualized. To some women, of a nervous temperament or who were neurasthenic, the removal of the ovaries was a more serious matter than to other women who were not so constituted physically, and he thought it essential to individualize the cases and in this way come to some definite conclusion.

Dr. PHILANDER A. HARRIS, of Paterson, N. J., said it had been his rule in removing the uterus to leave an ovary or both ovaries, if possible. In short, he left all the tissues that were healthy. That might be right, or it might be wrong. He was rather encouraged when he heard Doctor Goffe speak of having placed a piece of ovary in the uterus, but the question arose in his mind whether, if the woman became pregnant, it would not cause a rupture of the uterus. He had not seen such a case himself.

**Nitrous Oxide in Labor.**—Dr. N. SPROAT HEANEY, of Chicago, stated that during the last ten years Dr. J. Clarence Webster at the Presbyterian Hospital had been largely substituting nitrous oxide gas and oxygen for ether in obstetrical work. Versions, forceps, Cæsarean sections, and various other obstetrical operations were performed under this anesthetic when it seemed better suited to the condition of the patient than ether. He also used it early for the conduct of normal labor in the second stage, allowing the patient a light anesthesia during pains, with a return to the normal between pains. Lynch, in August, 1913, began to use nitrous oxide gas and oxygen in labor and subsequently he began independently to use it. With a proper machine and a nasal inhaler, nitrous oxide might be given to the extent that the patient did not experience pain during labor, and yet maintained consciousness and, if need be, she could follow the directions of the attending physician. If oxygen was administered at the same time, this stage of analgesia was more easily maintained and the headaches sometimes complained of after pure nitrous oxide were much more infrequent. To insure absolute painlessness, the gas might be given to the surgical degree during the last few pains, or, if as infrequently happened, the birth began to advance too rapidly, ether might be mixed with the gas or substituted for it. The amount of gas necessary for the conduct of a case varied greatly with the type of machine used. The cost of the gas might be materially lessened in hospitals by the use of large cylinders. For outside work, an efficient portable apparatus which with cylinders would fit in a suit case was variously made by several manufacturers. Nitrous oxide and oxygen analgesia might be given just as efficiently at home as in a hospital. An expert anesthetist was not necessary. From his observation and that of the members of the Presbyterian Hospital staff, they were united in the belief that in nitrous oxide and oxygen analgesia, they had not only an efficient means of controlling suffering in labor, but also a safe means, free from all the well known and valid objections advanced against other means of securing painless labor.

Dr. JOHN O. POLAK, of Brooklyn, asked if it was possible to continue nitrous oxide gas from the very beginning of labor as an analgesic method, and about what would be the approximate cost of conducting a twelve to twenty-four hour first stage with it, and how much personal attention the obstetrician would have to give in the management of the case?

Dr. WILLIS E. FORD, of Utica, wanted to know if there was any cyanosis in the children, or if there was more cyanosis from the use of gas than from ether?

Dr. LOUIS FRANK, of Louisville, had used nitrous oxide as the anesthetic of choice in his surgical work for almost three years. In this work there had been included three cases of Cæsarean section in which nitrous oxide and oxygen was given as the anesthetic. He thought the administration of nitrous oxide and oxygen for analgesic purposes required the services of an expert. He had considered it the most dangerous of all anesthetics in unskilled hands, while in skilled hands it was the safest. The cost of the gas was lessened materially where large tanks were used and where the gas was manufactured in the hospital.

Dr. HIRAM N. VINEBERG, of New York, had, in one or two instances, attempted to do a plastic operation under the administration of nitrous oxide and oxygen, and the blood was so black that the field of operation was obscured. They had to stop. He did not know whether it was improperly administered or not; they had to resort to ether.

Doctor HEANEY's opinion was that during the latter part of the first stage and second stage they could give gas for sixty cents an hour. The amount of oxygen varied with each patient. It depended how quickly the woman passed into cyanosis and how much oxygen one should give. The less the amount of gas given, the better. With the nose piece the cyanosis in the infant was less marked. It was hard to determine what the effect of any method was, provided that the baby did not require artificial respiration. If it was blue, it cried immediately. It was very gratifying in Cæsarean sections to have the baby cry at once. They could then dismiss the child from their minds and attend to the mother, a thing which they were not able to do always under ether anesthesia, when doing Cæsarean section.

**The Placental Stage of Labor; Retained and Adherent Placenta.**—Dr. JOHN O. POLAK, of Brooklyn, drew the following conclusions: 1. The placenta would separate spontaneously if the normal mechanism was allowed to obtain. 2. Any manipulation of the uterus before the clinical evidences of separation were apparent, would disturb this normal mechanism. 3. Post partum hemorrhage was best guarded against by the observance of the physiological processes, and partial detachment, the result of manipulation, predisposed to bleeding. 4. The normal mechanism of placental delivery was that described by Schultze. 5. The Duncan mechanism occurred only in low implantations of the placenta or where manipulation had been untimely and vigorous. 6. The placenta might be retained in the uterus for hours or days without danger to the patient, provided that it was attached or completely detached, which insured that the bleeding would be negligible. 7. Asepsis was dependent upon the penetration of



the uterus by the hand or instrument to infected the vagina, and not upon the retention of the placenta. 8. "Manual extraction is admissible only in partial separation with hemorrhage." 9. In retention of the placenta without hemorrhage, the cord should be cut off close to the cervix and the case watched until the time of separation is apparent, when the placenta might be expressed by Crede while the patient was under surgical anesthesia. 10. Invasion of the uterus via the vagina was fraught with danger from infection, and on exploration, should the placenta not be found presenting at the internal os, intrapelvic delivery should be abandoned and delivery accomplished through sterile avenues by suprapubic extraperitoneal hysterotomy. 11. When the adhesion was so great that its removal entailed the digging out of the placenta piecemeal, excision of the placental site or hysterectomy should be the choice.

Dr. WALTER P. MANTON, of Detroit, a number of years ago took up this subject at the Woman's Hospital, and by careful examination of uteri and of the placenta later on, found that in several hundred consecutive cases the implantation was a good deal lower than it was put down in the textbooks to be. The implantation was apt to be lateral rather than frontal or parietal, therefore, he did not believe that the Schultze method of delivery of the placenta was the normal one, but that the Duncan method was.

Dr. GEORGE TUCKER HARRISON, of Charlottesville, Va., agreed with Doctor Manton that the Duncan method should be employed in cases in which the placenta was detached. As soon as the child was born, he thought it was wrong to exercise compression.

Dr. PHILANDER A. HARRIS, of Paterson, N. J., said that the placenta with the cord hanging from it was allowed to remain by him experimentally, and it was found it was all absorbed. They kept the patient in the hospital for weeks and weeks, and after absorption the uterus returned to its normal condition, showing that Nature after all was a very good doctor.

(To be continued.)

## Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*Mothercraft.* By SARAH COMSTOCK. Illustrated. New York: Heath, International Library Company, 1915. Pp. xiv-214. (Price, \$1.)

This foolish and garrulous book comes from Chicago. As an introduction to the literature of those who are called "ladies of letters," it is a masterpiece. Why is it that the modern vogue for children makes people lecture us in this intolerant manner? Why is it that our so-called professors tell us that there are great things about their teaching, if only we could learn, and bore us with provincial science (that is from which we come out no healthier and wiser, if anything, but considerably poorer)? Why do they not consult the best authorities? Why, in short, is this country and especially Chicago, visited by so many Chadlands of medicine? For the author writes in true Chadland style: "The annoying nausea which accompanies this condition is relieved by eating a little plain food. . . . The mother should be a class

of milk between meals, or frequent light meals; and by a calm mental attitude." Crackers, milk, and "a calm mental attitude," signalize the three most prominent varieties of braying by hygienic asses, each of which has appeared of late intent on outdoing the others in hee-hawing. Such writers indulge in rubbish about His Majesty, the baby, and with sickening iteration dwell on prenatal care, the Chicago school, etc., and, with other fanatics with confused and ill balanced minds, make a debasing kind of propaganda of an exceedingly serious, useful, and difficult science. In this book the real masters of hygiene are not once mentioned. Fortunately a few of our admirable health officials are praised and quoted. The writer has some sort of standard to set up, but the book is largely the work of one who declares that the salvation of children depends on getting them cared for by modern chaos instead of by scientific system. The book, we are told, is based on "unimpeachable authority." The authorities are not the great ones of the time, but preachers and fanatics who train "expert" mothers.

*Handbook of Pharmacology.* By CHARLES WILSON GREENE, A. B., A. M., Ph. D., Professor of Physiology and Pharmacology, University of Missouri; Member American Association of Anatomists, American Physiological Society, Society of Pharmacology and Experimental Therapeutics; Fellow of the American Association for the Advancement of Science; Associate of the American Medical Association, etc. With Seventy Illustrations, Including Many New and in Colors. New York: William Wood & Co., 1914. Pp. xiv-396. (Price, \$3.50.)

Only a really careful student and teacher could write this book. It is accurate, and severely follows the subject of which it treats. Hence practical information for the beginner takes a good deal of space, and the pharmacological craft is reviewed both on the laboratory and the utilitarian side. When doctors differ as to the effect of drugs the author cites the best authority, without detracting from a pleasing independence of thought. Perhaps, on this account, the book is a somewhat drier exposition of pharmacology than usual. In its plan it reminds us of Professor Dixon's careful work. Both authors take a similar view of their subject, beginning with the nature and action of drugs, methods of application, absorption, and changes in the body. The various drugs are grouped together in a manner which does credit to the author's powers of arrangement. It is satisfactory, for instance, to have a chapter on such a subject as isotonic solutions, instead of describing them in different divisions and subdivisions. In this way an exasperating trick of some writers is avoided. This trick, which is as painful and perplexing to the editors as to the student or reader, is the habit of scattering references—barren memoranda for the most part—in different portions of a work, so that it is necessary to consult the index often and turn over many pages of fragmentary notes. We note that the author treats of the digitalis group, the sapotoxin group, etc., without, however, abusing too much the art of generalization. He manages not to overdo this fallacy of many German writers. The chapter on the pituitary and hypophysis is a brief but clear and careful distinction between the parts of the gland. As the literature of pharmacology, and the number of books on pharmacology, is becoming very large, it is a practical question to ask: Is this new one a useful addition to the stock? We think it is, and we recommend it.

## Interclinical Notes.

The Psychology of the Market Place, by Theodore H. Price, is an article in the *Outlook* for June 23d that should interest our friends, although its comprehension does not involve the theories of either Freud or Sidis. There is sympathetic editorial comment on the gift of the Mayo Foundation to the State University of Minnesota. There is more about John Muir in the open air, and the entertaining and valuable reminiscences of the venerable editor are continued.

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We started slightly when, reading Fannie Hurst's story, White Goods, in the July *Metropolitan*, we came upon the

epithet "boogher" applied by the villain to the hero. At our memory is not at fault, this contraction of Bulgarian has come to have a peculiarly restricted meaning, rendering it scarcely suitable to a family periodical.

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When we read in the *Sun* for June 27th that it has been suggested to the London *Times* that the English government offer a prize of \$100,000 for the best method of killing German, Austrian, and Turkish combatants in large numbers and in a short time; when we note the new methods of the Germans with gas and flame; when we recall the indifference of the public to the admonitions of hygienists and diplomats of public health; when we find people paying real money for a periodical which ridicules prophylaxis; when we read the ludicrous assertions of patent medicine manufacturers and know that fortunes have been made by such assertions; then we begin to believe that the last words attributed to poor Charles Frohman were no mere epigram, but a summing up of experience: Death is the most beautiful adventure in life. It is an adventure many are anxious to undertake, apparently.

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Rum has pushed its way into popular fiction. The Serpent, by Barry Benefield, in the *July Century*, is based on one of those uncontrollable thirsts that sometimes pursue a college boy into afterlife. The department, in *Lighter Vein*, the removal of which we regretted last month, is back in July with appropriate contents. T. Lothrop Stoddard shows that Holland is entitled to no little sympathy in the big war. The majority of us will read with sighs of sympathetic understanding Virginia Tracy's essay on the Handicap of Beauty.

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Peter Shea contributes to the *July Century* a remarkable study of the artistic temperament. We do not know what he means by calling the cigarette the singer's abomination, for every professional male singer smokes them; also some female singers. We are grateful for poetry from Alfred Noyes, *The River of Stars*. The pictures are beautifully reproduced, but some of them are those alleged artistic photographs done by throwing the lens out of focus, and Mr. Flagg's picture to illustrate Towne's poem, *Beauty*, looks like a Roman senator from the back row of a road production of *Julius Caesar*. Redemption is left to Lester Hornby, Oliver Herford, Walter Hale, and P. V. E. Ivory.

## Official News.

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending June 23, 1915:*

**Bahrenburg**, L. P. H., Surgeon. Granted seven days' leave of absence from June 21, 1915, under paragraph 193, Service Regulations. **Brooks**, John E., Acting Assistant Surgeon. Granted six days' leave of absence from June 21, 1915. **Fox**, Carroll, Surgeon. Granted two days' leave of absence, June 18-19, 1915. **Glover**, M. W., Surgeon. Granted one month's leave of absence from June 16, 1915. **Harries**, Rudolph H., Food Analyst. Directed to proceed to Spartanburg, S. C., for duty in investigations of pellagra. **Hommon**, H. B., Sanitary Chemist. Directed to proceed to Cincinnati, Ohio, for duty in connection with investigations of industrial waste. **Pettus**, W. J., Surgeon. Granted two months' leave of absence from July 19, 1915.

#### Boards Convened.

Boards of medical officers convened to meet Monday, June 21, 1915, for the physical examination of officers of the United States Coast Guard for promotion, as follows: Marine Hospital, Detroit, Mich. Detail for the board: Senior Surgeon H. W. Austin, chairman; Surgeon C. H. Gardner, recorder. Marine Hospital, Stapleton, N. Y. Detail for the board: Senior Surgeon G. W. Stoner, chairman; Passed Assistant Surgeon C. P. Knight, recorder. Marine Hospital, Baltimore, Md. Detail for the board: Surgeon C. W. Vogel, chairman;

Assistant Surgeon P. M. Stewart, recorder. Marine Hospital, Savannah, Ga. Detail for the board: Passed Assistant Surgeon J. R. Ridlon, chairman; Acting Assistant Surgeon A. B. Cleborne, recorder.

Boards of medical officers convened to meet Monday, June 28, 1915, for the physical examination of candidates for appointment to cadetships in the United States Coast Guard, as follows: Bureau, Washington, D. C. Detail for the board: Assistant Surgeon General W. G. Stimpson, chairman; Passed Assistant Surgeon E. A. Sweet, recorder. Marine Hospital, Stapleton, N. Y. Detail for the board: Senior Surgeon George W. Stoner, chairman; Passed Assistant Surgeon C. P. Knight, recorder. Marine Hospital, San Francisco, Cal. Detail for the board: Surgeon R. M. Woodward, chairman; Assistant Surgeon W. M. Jones, recorder. Marine Hospital, Chicago, Ill. Detail for the board: Surgeon J. O. Cobb, chairman; Assistant Surgeon C. L. Williams, recorder. Marine Hospital, Chelsea, Mass. Detail for the board: Surgeon B. W. Brown, chairman; Acting Assistant Surgeon H. B. C. Reimer, recorder. Marine Hospital, Baltimore, Md. Detail for the board: Surgeon C. W. Vogel, chairman; Assistant Surgeon P. M. Stewart, recorder. 410 Chestnut Street, Philadelphia. Detail for the board: Surgeon H. McG. Robertson, chairman; Acting Assistant Surgeon R. F. Gerlach, recorder. Marine Hospital, Savannah, Ga. Detail for the board: Passed Assistant Surgeon J. R. Ridlon, chairman; Acting Assistant Surgeon A. B. Cleborne, recorder. Custom House, Norfolk, Va. Detail for the board: Assistant Surgeon L. L. Williams, Jr., chairman; Acting Assistant Surgeon R. W. Browne, recorder.

### United States Army Intelligence:

*Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the week ending June 19, 1915:*

**Ashburn**, Percy M., Major, Medical Corps. Granted two months' leave of absence to take effect upon his arrival in the United States. **Balch**, Franklin G., First Lieutenant, Medical Reserve Corps. Resignation of his commission in the medical reserve corps has been accepted by the President, to take effect June 11, 1915. **Blodgett**, Harry H., First Lieutenant, Medical Corps. Relieved from duty with the Second Division and ordered to proceed to Honolulu, H. T., on the September 5, 1915, transport. **Crabtree**, George H., Major, Medical Corps. Now at San Francisco, Cal., is relieved from duty at Douglass, Ariz., and from further station at Fort Riley, Kansas, to take effect upon expiration of his present leave of absence, and will then report in person to the commanding general, Western Department, for duty at the headquarters of that department; relieved from duty at headquarters, Western Department, to take effect July 1, 1915, and will then proceed to Fort Lawton, Washington, and report in person to the commanding officer of that post for duty and by letter to the commanding general, Western Department. **Cummings**, Royal E., First Lieutenant, Medical Corps. Granted one month's leave of absence to take effect July 2, 1915. **Cutliffe**, William O., United States Army Contract Surgeon. Granted one month's leave of absence, to take effect on or about July 1, 1915. **Davis**, George G., First Lieutenant, Medical Reserve Corps. Resignation of his commission in the medical reserve corps has been accepted by the President, to take effect on June 11, 1915. **Duval**, Douglas F., Major, Medical Corps. Granted three months' leave of absence, to take effect about June 15, 1915. **Edger**, Benjamin L., Major, Medical Corps. Leave of absence granted about June 15, 1915, upon being relieved at Fort Lawton, Washington, and to terminate August 4, 1915. **Faulkner**, L. W., First Lieutenant, Medical Reserve Corps. Ordered to active duty in the service of the United States on account of an existing emergency, to take effect July 1, 1915, and will report in person to the commanding officer, Fort Niagara, New York, for duty during the absence of Captain Royal Reynolds, Medical Corps. **Fielden**, John S. C., Jr., First Lieutenant, Medical Corps. Granted two months and four days' leave of absence, to take effect on or about June 26, 1915; resignation of his commission as an officer of the army has been accepted by the President, to take effect Septem-

## Births, Marriages, and Deaths.

## Married.

**Anderton—Kingsland.**—In New York, on Thursday, June 24th, Dr. Walter P. Anderton and Miss Ethel W. Kingsland. **Andrews—Downs.**—In Revere, Mass., on Tuesday, June 23d, Dr. Frederick F. Andrews and Miss Mary F. Downs. **Ellis—Kohler.**—In Yoe, Pa., on Thursday, June 17th, Dr. Robert Lee Ellis, of Greenville, S. C., and Miss Mamie Alverta Kohler. **Giovanetti—Driscoll.**—In West Medford, Mass., on Thursday, June 17th, Dr. Humbert A. Giovanetti, of Belle Isle, N. F., and Dr. Kathryn Driscoll. **Goodman—Downey.**—In Hammond, Ind., on Saturday, June 12th, Dr. Leo A. Goodman, of Orlinque, Ind., and Miss Mary Downey. **Hutzelmann—Glassmeyer.**—In Hamilton, Ohio, on Wednesday, June 16th, Dr. Jacob C. Hutzelmann, of Port Union, Ohio, and Miss Marie D. Glassmeyer. **Lavelle—Dwyer.**—In Long Island City, N. Y., on Wednesday, June 16th, Dr. William J. Lavelle and Miss Katherine Dwyer. **Massey—Gerhart.**—In Reading, Pa., on Saturday, June 19th, Dr. Franklin F. Massey, of Wernersville, Pa., and Miss Herminia May Gerhart.

## Died.

**Bean.**—In Medford, Mass., on Sunday, June 20th, Dr. J. Warren Bean, aged sixty years. **Bradford.**—In Philadelphia, on Friday, June 25th, Dr. T. Hewson Bradford, aged sixty-seven years. **Cleaves.**—In Medford, Mass., on Saturday, June 19th, Dr. James E. Cleaves, aged sixty-one years. **Cooperrider.**—In Columbus, Ohio, on Tuesday, June 15th, Dr. Charles A. Cooperrider, aged fifty-three years. **Cosby.**—In Slaughterville, Ky., on Tuesday, June 15th, Dr. William C. Cosby, aged fifty years. **Dorsey.**—In Indianapolis, Ind., on Thursday, June 17th, Dr. Francis O. Dorsey, aged forty-six years. **Evans.**—In Los Angeles, Cal., on Monday, June 14th, Dr. Charles W. Evans, aged fifty-three years. **Fithian.**—In Paris, Ky., on Saturday, June 12th, Dr. Frank Fithian, aged fifty years. **Frayne.**—In Scranton, Pa., on Thursday, June 17th, Dr. John A. Frayne, aged twenty-nine years. **Friedrich.**—In Washington, D. C., on Tuesday, June 15th, Dr. Leon L. Friedrich, aged fifty-eight years. **Frissell.**—In Dalton, Mass., on Sunday, June 20th, Dr. Sarah Frissell, aged seventy-four years. **Gray.**—In Greenwich, N. Y., on Saturday, June 19th, Dr. Henry Gray, aged seventy-three years. **Gregg.**—In St. Cloud, Fla., on Monday, June 21st, Dr. William H. Gregg, aged eighty-four years. **Hall.**—In Kansas City, Mo., on Friday, June 11th, Dr. William G. Hall, formerly of St. Joseph, Mo., aged eighty-four years. **Hancock.**—In Salisbury, Mass., on Friday, June 18th, Dr. Albert W. Hancock, aged thirty-eight years. **Hastings.**—In Providentown, Mass., on Friday, June 11th, Dr. John M. Hastings. **Hayes.**—In Woodmont, Conn., on Monday, June 14th, Dr. J. Dermott Hayes, aged forty-six years. **Jones.**—In Baltimore, Md., on Wednesday, June 16th, Dr. E. H. Jones, aged thirty-eight years. **Langdon.**—In Englewood Cliffs, N. J., on Thursday, June 17th, Dr. Robert M. Langdon, aged fifty-five years. **Long.**—In Indianapolis, Ind., on Friday, June 18th, Dr. Robert William Long, aged seventy-one years. **McKenna.**—In New York, on Friday, June 4th, Dr. Matthew J. McKenna. **Meine.**—In Germania, Pa., on Monday, June 7th, Dr. Charles A. Meine, aged eighty-five years. **Ramsay.**—In Philadelphia, on Friday, June 18th, Dr. Robert N. Ramsay, aged fifty-eight years. **Richter.**—In Bridgeport, Conn., on Tuesday, June 22d, Dr. Augustus F. Richter, aged sixty-four years. **Santee.**—In Philadelphia, on Saturday, June 19th, Dr. Eugene Santee. **Shannon.**—In Murfreesboro, Tenn., on Wednesday, June 16th, Dr. Thomas G. Shannon, aged eighty-three years. **Swigart.**—In New York, on Sunday, June 27th, Dr. Robert E. Swigart, aged forty-five years. **Weiss.**—In Lebanon, Pa., on Friday, June 18th, Dr. Samuel Weiss, aged seventy years. **Weisse.**—In New York, on Tuesday, June 22d, Dr. Faneuil Dunkin Weiss, aged seventy-two years. **Wolfe.**—In Succasunna, N. J., on Monday, June 14th, Dr. Theodore F. Wolfe, aged seventy-two years. **Woodbury.**—In St. Petersburg, Fla., on Tuesday, June 8th, Dr. Benjamin C. Woodbury, aged seventy-nine years.

**Gregory.**—Thomas C., Captain, Medical Corps. Arrived at the Philippine Islands, June 1st, 1915. **Harden.**—Robert Dr. R., First Lieutenant, Medical Reserve Corps. Relieved from duty at the Army Medical School, Washington, D. C., on July 1st, 1915. **Harris.**—Halbert P., First Lieutenant, Medical Corps. Directed to proceed to Fort Dade, Florida, for duty with that organization en route to San Francisco, and to proceed on the transport sailing for Honolulu, H. T., on August 5, 1915. **Keefe.**—Frank R., Lieutenant Colonel, Medical Corps. Granted one month and fifteen days' leave of absence, to take effect about June 15, 1915. **Penrose.**—Thomas W., First Lieutenant, Medical Reserve Corps. Ordered to proceed to Harlingen, Texas, for temporary duty. **Prentiss.**—Elliott C., First Lieutenant, Medical Reserve Corps. Resignation of his commission in medical reserve corps has been accepted by the President, to take effect June 11, 1915. **Ragan.**—Charles A., Major, Medical Corps. So much of special orders as relates to him is amended so as to direct him to proceed at the proper time to Fort Washington, Maryland, and report for duty with the Seventeenth Company, Coast Artillery Corps, en route to San Francisco, and to proceed to Honolulu, H. T., on the transport to sail from San Francisco, on or about August 5, 1915. **Scott.**—Raymond E., First Lieutenant, Medical Reserve Corps. Relieved from duty at the Army Medical School, Washington, D. C., to take effect July 6, 1915, and will then proceed to Swiftwater, Pa., for the purpose of studying the methods of preparing serums, etc., at the Sloc Laboratories at that place, for the purpose of the expedition of this period, will proceed to Fort Sam Houston, Texas, and report in person to the commanding general, Southern Department. **Smith.**—Stephen H., First Lieutenant, Medical Corps. Granted two months and fifteen days' leave of absence, to take effect about June 16, 1915. **Tefft.**—Lloyd E., First Lieutenant, Medical Reserve Corps. Relieved from duty at the Army Medical School, Washington, D. C., to take effect on July 1, 1915, and will then report in person to the commanding officer, Walter Reed General Hospital, Washington, D. C., for temporary duty at that hospital. **Wall.**—Francis M., First Lieutenant, Medical Reserve Corps. Relieved from duty at Fort Columbia, Washington, and is ordered to proceed with the Thirty-third Company, Coast Artillery, for duty with that organization en route to San Francisco, and will after completion of this duty, report at Fort Clark, Texas, for duty at that post. **Warriner.**—B. B., First Lieutenant, Medical Corps. Granted one month and ten days' leave of absence upon being relieved from duty at Fort Huachuca, Arizona. **Weidner.**—E. T. D., First Lieutenant, Medical Corps. Granted two months and fifteen days' leave of absence, to take effect on June 15, 1915. **Wilson.**—James A., Captain, Medical Corps. Leave of absence extended one month. **Yemans.**—Herbert W., First Lieutenant, Medical Reserve Corps. After arrival in the United States, and upon the expiration of such leave of absence as has been, or may be granted to him, will proceed to Alcatraz, Cal., and report in person to the commandant, Pacific Branch United States Disciplinary Barracks, for

The following named officers are relieved from duty at their posts and ordered to proceed to the Philippine Islands: Major John L. Shepard, Medical Corps; First Lieutenant John M. Pratt, Medical Corps; Major David Baker, Medical Corps; First Lieutenant Ernest C. McCulloch, Medical Corps; Major Clarence J. Manly, Medical Corps; Captain John M. Willis, Medical Corps.

Each of the following named officers of the Medical Corps will proceed at the proper time to West Point, New York, and report in person to the superintendent, United States Military Academy, for temporary duty as an instructor in the department of military hygiene upon completion thereof will return to his proper station: Captain Joseph F. Siler, Captain Philip W. Huntington, Captain Arthur N. Tasker, Captain Charles W. Haver-



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#### SENILITY, PREMATURE SENILITY, AND LONGEVITY.

BY HENRY M. FRIEDMAN, M. D., LL. M.,

New York.

Acting Assistant Surgeon, United States Public Health Service.

Quite in contrast with the many specific phases of life, the divers problems that embrace the question of old age are very general indeed; they are medical, economic, and social. The decline and the decay incident to old age are causative of many hardships, and make that period of life such a dreaded one. Yet it is the attainment of old age, or to be more exact, of older age, but with more usefulness and with less adversity, that is the vital problem of the time. Old age is antecedent to that inevitable process or event—death, although not all living things are mortal. "Death is not the universal accompaniment of life. In many of the lower animals death does not occur, so far as we at present know, as a necessary and natural result of life. Death with them is purely accidental, the result of some external cause" (1).

*Biological and embryological considerations.* In the higher animals and in man life, age and natural death are purely matters of cell differentiation. The higher the plane of the animal, the more marked is the cell differentiation or specialization. Cell differentiation affects the morality of the cell and of the organism through the expenditure of energy and the consequent loss of vitality entailed in this process. Once a degree of differentiation has obtained, no backward step to the previous state of generalization, that is, regeneration or rejuvenation, is possible. The higher the ascent of the cell in the plane of cell differentiation, the lower is the power of rejuvenation. In the lower organisms rejuvenation is quite marked and increases as the plane of life is lower. The earth worm or the water polyp can generate a new head or new polyps, as the case may be. In the higher animals the comparatively slight power of regeneration depends upon the degree of the individual cell's differentiation. Connective tissue, muscle, nerve fibre and epithelial cells are the least differentiated and have, therefore, the greatest power of regeneration. Nerve cells have the least power, because carrying on work of a very high order, they are of necessity more differentiated or specialized. Nerve fibres, on the other hand, are merely conductors, carrying on

rather menial work. Nerve fibres and epithelial cells have probably the greatest power of regeneration.

Likewise the more highly differentiated the cell, the more rapid is its development, the earlier its decline, and the sooner its death. Precocity, whether in a separate cell or in the human being as a whole, imports early maturity, and is not desirable because the early ripening and the early differentiation mean a rapid life with premature aging or decay, and an early death. "Senescence is an increased differentiation of the protoplasm, while rejuvenation is an increase in the nuclear material. The increase of the nuclear material is at the expense of the protoplasm. The increase of nuclear material allows fission and the formation of new cells" (1). The degree of cell differentiation is greatest as the power of cell fission or mitosis is least; the power of regeneration is in direct proportion to the power of cell fission. In the young, nearly all cells show active mitotic changes. The more mature a tissue becomes, the less active are the mitotic changes in the component cells. The mitotic power or index of a group of cells is computed from the number of cells in a thousand found in the act of cell division. The index is highest at birth and grows less with maturity and age. *The greater the cell differentiation, the smaller the mitotic index.*

With maturity—with the decrease of the mitotic index—the number of tissues into whose composition the cell can enter becomes restricted. The cells in the original germinal layers have before them the possibility of entering into the structure of any tissue. As the cells differentiate, the germinal layers take on more structural character, and leave the field for entrance of the cells into different tissue formations more restricted, since during development the number of tissues yet unformed or undifferentiated becomes less and less; and once a cell has assumed a personality it must continue to follow it up and cannot diverge from it. This is the law of *genetic restriction*. The younger the cells, the greater their multiplying power or mitotic index, and the greater are the tissue possibilities from which they can choose. For this reason rapidly growing morbid tumors are formed from young cells of high mitotic index, whose genetic restriction has not progressed high enough to inhibit range and rapidity of growth. Before genetic restriction young cells may become one tissue or another. Injuries necessitating cell regeneration with young cells are, therefore, often the seats of morbid growths. The young and undifferentiated cells

forming malignant amorphous tumors, and growing in tissues alien to them, develop rapidly, probably because they are deprived of the "senile" restrictions to overgrowth that they would have in their own cells. The presence of young cells in most of the way places or where older and more differentiated cells would be expected, hardly exists, suggestion of, or foreshadow a morbid growth. *Young cells like young children—afflictive to their own kind.*

As a rule, a cell or an organism lives long enough to reproduce its kind, otherwise the species would become extinct. Indeed, in certain of the lower forms of life death occurs immediately after ovulation; and it was the common belief that procreation determined the span of life. The length of life depends, however, solely upon the rate of cytomorphosis—upon the rate of cell growth, change, and maturity; the lower the rate, the longer the life. The end of the development of a cycle of cells spells their death. The rate of cell differentiation determines the rate or rapidity of senescence; and quite paradoxically the rate is highest in the young, and slowest in the young. Yet every process is slowed in age. *The young grow older rapidly; the old grow older slowly.* Old age is the period of slowest decline. "The rate of growth depends upon the degree of senescence. The tendency to senescence is at the maximum in the very young, and the rate of senescence diminishes with age" (1).

The rapidity of development in the young is especially well illustrated in the rapidity of their mental development, and by its slowing as they mature. Mental development goes on with diminishing speed—most in the baby, less in the child, least in the adult, and none in the aged.

*Causation of senility.* Physiologically, senility is a drying or desiccation process, continuous from birth to death. At birth the superabundance of fluid and gelatinous material militates against proper vital organization and operation. *Organization everywhere demands solidarity.* In senility there is too much solid and too little fluid for easy function and motion. The proper balance occurs only in the prime of life, at which time the best and the most coordinated work is performed (2). Beside this theory on the causation of senility, there are a number of others, chief among which are Metchnikoff's, Lorand's, and Montgomery's.

Metchnikoff believes that the senile changes are autotoxic, from intestinal putrefaction and absorption of bacteria and bacterial products; and that if bacterial activity and putrefactive changes can be inhibited, life will be prolonged and old age deferred. He advocates the ingestion of lactic acid bacilli to retard the growth of the intestinal flora, and the upkeep of the intestinal toilet by lavage. Intoxication of some kind is a factor in the atheromatous changes accompanying senility. The intoxication from the virus of syphilis, and even of the congenital form, causes the markedly aged appearance of the victims (3).

According to Lorand, old age is due almost entirely to the atrophy and degeneration of tissue and function of the ductless glands—the thyroid, the adrenals, the pituitary body, the testes, and the ovaries—but especially of the thyroid gland. The aged appearance of the myxedematous and the cre-

tinoids is well known, and the similarity between many of the symptoms of myxedema and premature senility has often received comment. Moreover, the administration of thyroid extract aids the elimination of uric acid, which latter seems to be a factor in general atheroma (4).

That "the limit of life is a matter of excretion" is almost obvious. There can be no continuation of life unless there is ample provision for the elimination of toxic or waste products. The normal permeability is lost in the sclerotic changes of the tissues, especially of the tissues concerned in elimination—and in a manner all tissues are more or less tissues of elimination. The special organs of elimination cannot act to their full capacity nor even to the limit of vital necessity, because of the replacement in senility of parenchyma by fibrous or fatty tissue. The retained waste products act to increase the sclerotic changes and produce a vicious circle—irritation, intoxication, and atheroma. "The degeneration of age first produces an insufficiency of the organs of elimination and then degeneration of all the organs" (5).

*Physical manifestations.* Because the inherent tendency of the human cell to differentiate is a normal physiological process, the senile changes cannot truly be considered disease entities. The physiological processes, however, are defined by changes that are inimical to the welfare of the organism, so far as activity is concerned—especially when measured by the highest activity of which the body was capable; there is diminution of activity of the physiological, physical, and mental processes. Senility is a normal process with abnormal manifestations. "There can be no derangement of function without a correspondent lesion of tissue." Senility is atrophy. "In senile atrophy the same condition is always present; the atrophy of the higher and more specialized cells and their replacement by hypertrophied connective tissue" (3). Though there is a general replacement of parenchyma by connective tissue, the latter is increased even beyond the point of mere replacement; and the increase still more severely hampers the remaining parenchyma. The connective tissue soon gives way to fatty degeneration, which accounts for the primary corpulence of the aged—soon, however, followed by senile emaciation and general decrepitude. The bones are harder, less spongy, and more brittle. The natural pressure on these atrophied bones causes gross bone deformities. The skin is thinner, less elastic, and more transparent. The muscles are of smaller volume. The heart is enlarged. But this is compensatory, for with the stiffening and the narrowing of the lumina of the bloodvessels greater force is required to drive the blood through—and the blood pressure is accordingly increased. Arteriosclerosis is a general feature of senility, but especially of presenility.

Senile debility is the result of the gradual advance of the senile changes; there is the characteristic bent frame, tottering limbs, coarse tremor of the head, trembling hands, characteristic gait and attitude. The muscles are extremely wasted, skin remarkably thin and transparent. The changes in the bones, ligaments, and tendons are of an extreme degree. There is lessened innervation throughout

the body (6). Some tissues show more marked changes than others, which has led to their characterization as different diseases. Senile marasmus—where the emaciation was particularly severe; senile osteomalacia—where the bone atrophy was causative of bone deformities; senile atrophy of the brain—where the nervous and mental elements were particularly affected; senile astylosis and senile changes in the blood—the former referable to the severe cardiac changes occurring in atheroma, and the latter to the severe secondary anemia so common in senile debility.

Temperature is, peculiarly, not affected in the aged. While the lessened respiratory and metabolic conditions reduce temperature, the lessened loss of heat from the lungs and skin quite overbalances it (7).

**Mental manifestations.** The physical changes in senility are, after all, gross and very apparent. They are of comparatively little moment, especially in the higher walks of life, where physical efficiency is of less import than mental, except where the physical impairment is so severe as to be incapacitating. The most desirable condition is to have both the mental and physical conditions at par. It has been frequently asserted, however, and just as frequently denied, that where the body is large, the mind is small. The range of muscular development is limited, of mental development infinite. The most subtle, insidious, but rather indefinite changes take place in the mind. These changes embrace the widest latitude. The virility of the mind should in every individual far outlive that of the body, yet if there has been no mental development during the developmental period of life, when physical development declines, there is nothing left. "For not his arms only (were dead), but rather himself was dead; since he never had anything valuable in him but the strength of his back and limbs, and if they were gone the whole man was gone with them" (8). As a rule, however, a good constitution, not merely brute strength, accompanies a good brain.

Old age dulls the sense of conscience. Vanity, avarice, undue ambition, petulance, irascibility, and irritability are on the increase. There may be peevishness, parsimony, misanthropy, dictatorial, exacting and even sensual dispositions. The aged are cold and curiously conservative and unreasonable; there is lessened ability to stand temptation and disappointment. They may become passionate and morose. Sentiments of beauty, sublimity, and passion are dulled in age. "Physiological senility means no reproductive power, greatly lessened affection power, diminished power of attention and memory, diminished power and desire to energize mentally and physically, lowered imagination and enthusiasm, lessened adaptability to change, greater slowness of mental action, slower and less vigorous speech as well as ideation. Cellular action and nerve currents are slower, and there is more resistance along the nerve fibres" (9).

"The best average barometer of mental failure is memory in all its varieties, and all admit that memory begins early to decline. But the decline of memory in old age is only an advance guard of an invading army that is sooner or later to devastate

the brain" (10). The failure of memory is particularly of the names of places, persons, and events of recent origin. Remote events are vividly recalled. This specific failure of memory can be remedied somewhat by cognizance of the defect and by association with more easily remembered contents (2). Moreover, there is an increasing difficulty in grasping new thoughts and assimilating new ideas. This is advanced in explanation of the refusal of such eminent men as Agassiz and Virchow to accept the theory of evolution. *The old have no faith in the young.*

There is quite an unnatural tendency to overeat in old age in spite of the maxim that one ought to "descend out of life as he ascended into it, even unto a child's diet" (14). The first sign that food must be reduced is the increase in blood pressure. For old people the preponderance of farinaceous food is better, for while meat is flesh building, the former is fat forming and heat giving—which is so desirable in old age. *Life is a question of warmth.* The mental significance of overeating in the aged has been explained on the ground that, with the forced decrease in the mental and physical activities, and with the diminution of visual and auditory acuity, there are no other pleasures left in life but the gastronomic.

The young crave for action. When restrained they are uncomfortable and unhappy. In the aged the craving for rest and quietude is of organic origin, which not being satisfied, causes physical discomfort (11). "The very quietude of the mind in the senile allows an orderly and systematic arrangement and storing of knowledge already therein. The bustling activity of mind as well as of body will not brook such arrangement" (12).

Fortunately the mental and moral tendencies are not universally impaired in the aged. The fault is rather of the man than of the age. When only the lower ideals were exercised in earlier life—when there had been no moral training or moral ideas, then do these traits assert themselves with increasing force in old age. These tendencies have a particularly pathological significance only when they are the antitheses of earlier traits. A properly trained and exercised viewpoint will withstand the changes in senility. The moral decline in the aged is not a positive decline into the vulgar, necessarily. It may be merely passive—a lack of "moral enthusiasm." The decline need never be universal; it may be in only one or more of the enumerated traits.

There is no definite year at which physiological senility with its train of mental and physical symptoms begins. It need not begin till after sixty, sixty-five, and with proper living not till seventy or seventy-five years (13). Age is never chronological except in a legal sense, and merely indicates the length of time an individual has been in being; it gives no clue to physical, physiological, or mental ages. These depend upon individual tendencies possibly hereditary in nature, upon the mode of living, and upon environmental conditions—climate, disease, traumatism, excesses, and intemperance. The beginning of senile changes differs, in each individual. "Old age is a vascular problem, and has



being well expressed in the axiom that a man is as old as his arteries."

The remaining features of old age are that one is freed from the demands of former youthful passions, emotions, and sentiments—if, indeed, such freedom is worth while. The old have, besides, the relative advantage of immunity to certain diseases, such as the eruptive fevers, typhoid, and phthisis; the old tissues do not seem to be good media for these disease agencies. On the other hand, they are very prone to pneumonic infections and erysipelas, which carry away most of the aged.

*Premature senility.* It is not possible to say at what year senile changes and manifestations are premature. In determining the prenatrity the chronological age is important, since with the same symptoms a man of seventy years would be physiologically senile, while a man of forty, forty-five, or younger would be pathologically senile. In a general way the symptoms of presenility are identical with those of mature senility. An individual below fifty years of age, with hardened arteries, increased blood pressure, hypertrophied heart, accentuated second aortic sound, arcus senilis corneæ, albumin and hyaline casts in the urine, premature baldness, and gray hair, can be called prematurely senile, especially with a history of a strenuous life either from disease, intemperance, or excesses. Premature senility may appear even as early as the thirtieth year, but not frequently.

The general instability of the prematurely senile, mental as well as physical, is reflected in the pulse tracings taken under varying conditions and during different parts of the day. "A wide variation is presented as the mental equilibrium becomes disturbed by the change in blood tension. The elevation in the first line and the character of the tidal wave line will vary with the hyperemia of the brain, and the associated cardiac muscular instability; or, if the vascular tension is continued, there will be found an appearance presenting a slanting up stroke and a long receding stroke, interrupted by numerous indentations, which is so characteristic of general paresis" (11), (23).

The arteriovascular changes, especially the liability to sudden changes in the calibre of the vessels, give rise to many symptoms characteristic of other and rather more specific organic conditions. There may be severe migraine symptoms, cramps, and convulsive movements of the extremities—even during sleep, transient hemiopia, paresthesias, vertigo, and surface vasomotor disturbances.

The mental changes are varied and sometimes very profound. Usually they differ in no wise from the mental symptoms in advanced senility. Exertion is avoided. There are lapses of memory and evidences of a lack of personal care, not associated with people at such an early age. "Under the slightest emotional strain they are flushed and irascible, or lose patience and have an inability to throw off care. There is hypochondria, which is personal introspection accompanying limited mental power and brain fog" (11). The nervous and mental disturbances are almost entirely vascular disturbances in the brain consequent on the generalized cardiovascular changes.

*Causes of premature senility.* The patho-

logical changes in premature senility, unlike normal or physiological senility, have rather definite though general causes—largely mundane. Abuse of the body in one way or another—either voluntary, as through intemperances or excesses, or involuntary though preventable, as through disease and social adversity. Hippocrates's aphorism, "Use but do not abuse," is the best prophylactic. There is a natural though unhealthy tendency to force early decline by overtaxing the body and the nervous system. It is strenuous life in work, even in play—in everything. It is the pace that kills, and kills early. It is overwork necessary in the keeping up of appearances beyond the actual capabilities, and to do which men are continually straining, worrying, and using up reserve strength until with nervous depression and depletion they become exhausted.

Intoxication with alcohol, and syphilis are probably the most potent individual causes of premature decline. Alcohol and syphilis are specific fore-runners of arteriosclerosis. Overeating is perhaps a greater intemperance than alcohol. Large meat consumption especially increases the tax on the organs of elimination (4). Most people eat about twice as much as they need. *The high cost of living is the high cost of overeating.* The dietitian and his tables of food, values are established fixtures in modern economy and should be more often consulted. They can pretty accurately determine the nourishing and heat or caloric values of the various foods and the quantities required. On the other hand, the economic aspects of the dietitian's menu are at times carried too far, especially in institutions for the care of incompetents. Enough food should be given over and above caloric necessity to allow of "seepage"—enough to satisfy to some degree the cravings of the appetite until at least it has been educated up to the dietetic table. Individual differences in a class must be allowed for in caloric method.

Stress, worry, the keen competition and commotion of urban life with its rapid currents, encourage early decay. They foster a desire to put in a certain number of years of very hard uninterrupted work, with the idea of enjoying rest and ease later in life with the fruits of their labors. Unfortunately, when the time comes for rest, there is too little vitality left. Work under high pressure pervades every endeavor. The simple life is a thing of contempt, of incompetence, and of waste. It may be, that with the tremendous progress of civilization, one must work at a high speed and at a high pressure to accomplish anything in a comparatively short life. Modern efficiency ideas and high pressure methods are synonymous. Their aims are for results—for products and for commodities. The effect on the producers is not yet given primary consideration. Every vestige of care afforded the product or the producer has in view merely the quantity and the quality of the finished product. The question is how much can an individual produce in a given time, and not how long can he produce? Real human efficiency—collective efficiency—would be better served by making use of all material, not merely the most perfect, to the limit of endurance.

The ill effects of high pressure methods can in a manner be nullified by prolonging the vacation periods of rest. The longer the vacation, the better the work—and the more of it, and for a longer time. The vacation period should be a period of change, not merely a period of rest. *Change is the great rejuvenator.* It allows the fatigue products accumulated in one system to be removed, while another system which has been sluggish, is exercised. For indoor workers even the most strenuous sports are restful and beneficial. The long vacation is never a waste. It is the short one, or the absent one, that is a waste—of life (15). Even in childhood there is a modern tendency to force things—education—maturity—everything. "It is forced maturity that shortens life" (16).

The modern notion seems to be the relegation of the older men to the shade of "innocuous desuetude," in order to give younger and possibly more progressive men a chance to forge ahead. Older men are finding it harder to retain employment, and almost impossible to obtain it, in spite of the undoubted advantages of years of experience. Earlier retirements in almost every branch of human endeavor are becoming common. Modern training gives a larger scope, longer vision, and more headway than many years of slowly acquired experience.

*The proper sphere of the aged.* Many equally well informed men have taken opposite views on the proper sphere of the aged. Osler takes the view that "taking the sum of human achievement in action, in science, in art, in literature, subtract the work of men over forty, and while we should miss great treasures, even priceless treasures, we would be practically where we are today. It is difficult to name a great and far reaching conquest of the mind which has not been given to the world by a man on whose back the sun was still shining. The effective, moving, vitalizing work of the world is done between the ages of twenty-five and forty." This is a consideration only of the present average length of life, and no doubt with its lengthening, with the deferring of old age, the period of maximum efficiency will be extended beyond his forty year limit.

When it is appreciated that there are not more than perhaps 500 really great men in the history of the world, one can understand what a very small percentage have managed to break through the shell of mediocrity. Galton estimates that seventy per cent. of their work was completed before forty-five, and eighty per cent. before fifty years of age. Dorland found in an analysis of 400 celebrities, that the average age of commencement of their activities was twenty-four years. In musicians it commences as early as seventeen, in workers at twenty-two, in thinkers at twenty-four, in novelists at twenty-five, and in satirists at thirty-two years. Satire is an art that requires a large fund of experience and introspection for such a viewpoint. As a great general average, work commences at twenty-four and at fifty years the greatest work has been accomplished. The great general average for years of activity in all endeavors is forty (17). There have been many great works accomplished by a few really great old men. They were great—and exceptionally great—because they accomplished at an advanced

age. But the great mass of mankind, the man-average, unfortunately does not.

In order to enjoy life after forty, it is said that one must have attained some degree of success. Nothing makes the contemplation of old age so discouraging as to reflect upon past years of mere existence and no accomplishment. The organic changes which go on in the nervous system, diminish the pliability and the permeability of that system, and preclude, in most people, the undertaking of new work and the accomplishment of new successes. There comes a time when it becomes exceedingly difficult to glide into any new or accustomed form of activity. It may be possible to continue in the things in which one has attained a certain degree of expertness, in a routine and automatic manner, but when an attempt is made to overstep these limits, it is found that one is held up by a certain "mental fixity" and a "sense of permanent mental fatigue" (1).

*Medicolegal aspects.* In will cases it is often a cause of contention whether the mental deterioration was sufficient to rob an aged testator of the essential mental reservations necessary in making a will—that is, his ability to understand the nature of the transaction at hand, the general extent of his property, and the persons of the beneficiaries. These three elements must be present to validate a will. The eccentricities on which incapacity in the aged testator is desired to be proved are not sufficiently profound to deprive the deceased of his right to testament. In a broad sense, however, the mental symptoms of advanced senility differ from senile dementia only in degree. Exertion of undue influence, sufficient to deprive the testator of his independent will, and thus to invalidate the testament, is possible. Yet until the mental changes in the aged are better understood, or until the laws with respect to the descent of property are changed, it is perhaps not just to inquire too deeply into the mental capacity of the senile merely because they are senile. The right to leave property after death, unlike the right to own it during life, is not an absolute right, and the State can at any time revoke that right.

*The future of the aged.* Those of the old who are not distinctly or prematurely senile have a place in the niche of life. They can act as libraries of knowledge and experience, as councillors and advisors—if they have had the experience. They should excel in strength of reason, cool judgment, mature counsel, and broad discretion. The term *senate* is derived from the Latin *senes*—the old men: the Roman senators held their exalted positions for their age and the consequent qualities. Yet one may be as much past the age of discretion as before it. The conservative tendencies of this period are valuable as checks to the exuberant radicalism of youth. Merely having lived a great many years does not of itself imply experience. Life must have been spent with that end in view. Pure reverence for the aged, no matter what their previous lives have been, is a survival of barbarism.

Dependent aged are a burden in every community, or on the children whom they handicap with the onus of their support. The feeling of burden-

sadness of the aged is reflected in the increase of the suicide incidence in the later years. With the speed of modern progress the number who fail to keep pace and lay in their store promises to increase. In dependency, the life of the aged is always sad, and in the matter of their death they are often compelled to take the initiative themselves. The remedy is a social one—care by the State, old age pensions, annuities, etc. Legislation in those directions is making rapid progress.

*Longevity.* The limit of age—of human life—has been placed between seventy and ninety years. The best known and perhaps the most authentic long lived was Thomas Parr, who died in 1635 at the age of 152 years, and there is even an account of a person living to the incredible age of 370 (18). With few exceptions man is the longest lived animal (19). The limit to life has been placed at six or seven times the time for maturity—fourteen years, or as five times the period of maturity—twenty years. The maturity theory is erroneous. In animals the period of maturity does not bear this relation to the known average length of life. The increase of the longevity of the species, man, should be aimed at in order to increase the individual longevity and the period of usefulness and virility.

"Everything grows old," they say, "except vanity, which never grows old." The more perfect the organization, the earlier the aging—and the sooner the end. *The perfect, more surely than the good, die young.* "Every stage of human life except the last is marked by certain definite limits: Old age has no precise and determinate boundary" (8). While it would seem that the termination of advanced life is the inevitable consequence of time, it is nevertheless a fact that the immediate cause of death is generally some well marked disease. Disease and not time defines life. The mortality among the aged is less than among the young and the more vigorous: the latter are naturally more exposed to the casualties of life. "An old man, even of a bad constitution, who bears a regular and sober life, is surer of a long one, than the young man of the best constitution who leads a disorderly life" (8). Extravagance with life must everywhere be discouraged. "Man does not die; he kills himself." Syphilis, alcohol, the degenerative diseases, and worry are the great shorteners of life, and they are on the increase. "Every man past forty is either a fool, a physician, or a divine, for the better sort of people lavishly and unconcernedly throw away their lives."

Brain workers live longer than muscle workers; those who make use of both live longer than either; and the greater brain workers live longer than the lesser ones. Clergymen are the longest lived (20). The longevity of brain workers is not, however, Nature's reward for the use of its most sensitive and highly differentiated organ. It is a matter of comfort, comparative luxury, good food, freedom from the physical vicissitudes and dangers of life, and especially freedom from the sordid worries of keeping body and soul together. Brain workers are the masters who direct the performers of the coarser and more dangerous work. Yet the wear and tear and the expenditure of energy in brain workers are often very severe and devitalizing. Life insurance companies realize the progres-

sive shortening of life as one goes down in the scale of education, when they refuse to accept illiterates as bad risks. The lower the scale of mental development and education, the greater the personal hazards of life. The instances of longevity among many pure muscle workers can be explained on the grounds of heredity and the survival of the fittest.

The influence of race on longevity is not known. The Jews have a reputation for long life. The Balkan peoples, the Scandinavian and Northern European races have a like reputation. The Southern Europeans are comparatively short lived. Racial longevity must be almost entirely a question of mode of living and environment in all its phases (15).

Women are longer lived than men, in spite of the morbidity of childbearing. Actual freedom from the vicissitudes of life, as well as a sort of hereditary freedom from them, may be determining factors in their longevity.

Overweights have a greater mortality than underweights; few of the markedly overweight ever have an opportunity of becoming senile. Underweights, except those from extreme degrees of emaciation as a result of undernourishment or disease, are little affected in the matter of underweight. Indeed many of the smallest mites live longest, but it may be because they are not called upon for any very strenuous occupations (21).

Celibates seem to age and decay sooner than the more courageous married individuals. The greater freedom from voluntarily acquired infection, from temptation for intemperances and excesses, and especially the more regular mode of life, would seem to be contributing influences to longer life. The regularity of life means also sexual life, and while female celibates cannot so much be associated with the temptations of life, the lack of normal sexual life may affect them in a manner the nature of which is not understood.

Religious life favors longevity because it breeds an optimism, ease, and contentment that help one to meet the adversities of life with more courage and endurance. Religion produces a mental and physical ease and calm. "Extreme sobriety, no worry, body and mind quite calm"—are the secrets of long life (31).

Heredity is a factor not to be overlooked or passed over lightly in senility and longevity. Certain families or strains are known to have a predisposition to rapid decay and short lives. Insurance companies often refuse them insurance, or only at advanced premium rates. On the other hand, even long standing disease, alcohol, and excesses do not have an effect to shorten the lives of the long lived strains. Longevity is something "intrinsic to the constitution." "Karl Pearson found that of children born of mothers who died before the age of thirty-nine, sixty-eight per cent. died before twenty-one; while of children born of parents reaching the ages of seventy, less than thirty per cent. died before twenty-one" (12). The short lived by heredity can anticipate the predisposition in their own lives by studying their ancestry with the view of finding out the specific causes, if any, for the abbreviation of their lives. Life has been prolonged by modern medical and sanitary methods, and heredity, natural



selection, and the theory of the survival of the fittest are now amenable to human influence. People who would ordinarily succumb to disease and adversity are now "selected" to survive extinction. This is Haeckel's "medical selection"—in contradistinction to natural selection. Whether this form of selection is desirable for integrity of the race is a problem for the eugenicist.

"Death is a process, not an event in age. A man may begin to die ten or fifteen years before the mortal coil is shuffled off. Men die as trees, slowly and frequently at the top first" (4). "Death is maturity, they die when the clock runs out" (22). Some people, like a bicycle, will keep erect as long as they are in motion; when they stop, they fall—they die. So many people after lives of extreme pressure collapse like caisson workers when the pressure is suddenly removed. *The first vacation is often fatal.* They may have lived many more years had they remained in harness. After all it is perhaps better to die in harness—literally in one's boots.

Last scene of all,

That ends this strange eventful history,  
Is second childishness and mere oblivion,  
Sans teeth, sans eyes, sans taste, sans everything.

#### BIBLIOGRAPHY:

1. MINOT, CHARLES S.: *The Problem of Age Growth and Death*, 1908.
2. CALDWELL, CHARLES: *Thoughts on the Effects of Age*, 1846.
3. METCHNIKOFF, ELIE: *The Prolongation of Life*, 1907.
4. LAND, ARNOLD: *Old Age Deferred*, 1911.
5. KILGUS, CHARLES G.: *The Delay of Old Age and the Alleviation of Senility*, *Journal A. M. A.*, July 15, 1905.
6. NASCHER, I. L.: *Senile Debility*, *Medical Record*, Jan. 21, 1911.
7. CHARCOT, JEAN MARTIN: *Clinical Lectures on Diseases of Old Age*, 1885.
8. MAREDD, TULLIUS, CICERO: *Cato Major*, 9.
9. CLOUTMAN, LECTURE, *on Mental Diseases*.
10. BEARD, GEORGE MILLER: *Legal Responsibilities of Old Age*, 1874.
11. HAMILTON, NANCY McLENE: *The Senescent Indications of Dissimilarity*, *Medical Record*, Dec. 28, 1901.
12. FRIEDMAN, HENRY M.: *Problems of Life*, *Medical Record*, Nov. 7, 1914.
13. CORNARO, L.: *Health and Long Life* (1719), 1912.
14. MEYNE, GEORGE: *An Essay on Health and Long Life, and Health Maxims*, 1725.
15. FRIEDMAN, HENRY M.: *Muscular Development*, *Journal A. M. A.*, March 9, 1912.
16. NASCHER, I. L.: *Longevity*, *Medical Record*, New York Medical Journal, April 12, 1909.
17. DORLAND, W. A., NEWMAN: *The Age of Mental Vitality*, 1908.
18. EASTON, JAMES: *Health and Longevity*, 1823.
19. LANKESTER, E. RAY: *On Comparative Longevity in Man and in the Lower Animals*, 1870.
20. BEARD, GEORGE MILLER: *The Longevity of Brain Workers*, 1875.
21. SYMONDS, BRANDELL: *The Influence of Overweight and Underweight on Vitality*, *Medical Record*, Sept. 5, 1908.
22. THOMPSON, WILLIAM G.: *Underweight and Overweight in Man*, *Medical Record*, Feb. 15, 1913.
23. SCHMIEGELD, A.: *Contribution to the Study of Blood Pressure in Parestis*, *New York Medical Journal*, Aug. 28, 1909.

351 EAST FIFTIETH STREET.

## VACCINE THERAPY IN DISEASES OF THE NOSE, THROAT, AND EAR.\*

BY GEORGE MORRISON COATES, A. B., M. D.,  
Philadelphia.

It is not possible, nor yet desirable, to undertake the discussion of all the ear, nose, and throat conditions in which vaccine treatment has been tried with good or indifferent results, but I wish to mention some of the more common uses of this form of therapy and the cases where we may expect to succeed; and also briefly some of those where we may not. I shall not attempt to go over the bibliography of the subject nor into the biochemical reactions. Furthermore, in this discussion, I must refer to three different types of vaccines; the autogenous, prepared from the patient's own organisms at the

time of the disease; laboratory stock, prepared in our own hospital or private laboratories from good, actively virulent strains of the common forms of organisms and kept for emergencies and for use pending the preparation of an autogenous vaccine; and, third, commercial stock vaccines, either of a single type of organism (usually made polyvalent) or of mixtures of different organisms to suit different cases—a shotgun mixture if you like.

Other things being equal, an autogenous vaccine should give the best results, as it is made from, and to counteract, the organisms in the given case, and therefore should be the right one if the culture has been properly taken. The disadvantage is the time it takes to prepare, usually from five to seven days, the cost, and the fact that it must be skillfully made by an expert. If not so made it is valueless, and this fact accounts largely for failures in securing results.

*Vaccine therapy of the nose.* The use of vaccines for prophylactic immunization against acute rhinitis, or common acute colds, has come into quite general use and is often very effective. From the number of different organisms causing these attacks, it is manifestly proper and necessary here to use a mixed vaccine, and from the nature of the case, it must also be a commercial stock. The duration of immunity, when well established, varies from four months to a year or more, and this treatment is of particular value in that class of cases having a succession of colds lasting throughout the winter, either complicated or not. The organisms most frequently found in these cases are the different varieties of the staphylococci, streptococci, pneumococci, Micrococcus catarrhalis, and, when the tendency is to extend to the trachea and bronchi, Friedländer's bacillus. For immunization, then, a commercial mixture of these, made by a reliable firm, is selected and one half the regular dose, usually 0.5 c. c., injected. Three days later three quarters of the dose is given and again in three or four days, the whole dose. I will mention the average doses for the different organisms and the technic of injection at the close of the paper. This should insure the ordinary person against an attack for some months, but in very susceptible individuals, the entire course may have to be repeated. To cite my own case, I was immunized during an acute cold twelve months ago, and have not been troubled since, although I was accustomed to have one or two colds a year. Our dispensary clerk at the Pennsylvania Hospital, coming into frequent and close contact with hundreds of people daily in a rather stuffy room, formerly had a succession of colds. Immunization in April kept him free from infection till October, when he was reimmunized and has been well since. Many such instances are available.

The treatment of an acute rhinitis, once started, is precisely the same as for prophylaxis, except that it is pushed a little more vigorously and continued till the trouble has been conquered. When this has occurred, your patient should be free from danger of subsequent infection for a time. Following the first dose or two, and this is true of all the diseases to be considered, there will most probably be some exacerbation of the patient's condition with in-

\*Read, by invitation, before the South East Branch of the Philadelphia County Medical Society, February 5, 1915, and before the American Association of Immunologists, Washington, D. C., May 19, 1915.

creased discharge, which should soon clear up. I do not mean to say that all cases will react favorably, but many will, and the procedure is well worth a trial.

Chronic rhinitis is, to a certain extent, also influenced by bacterins, but here the treatment must be extended and the patient carefully watched lest he become overtreated. Close observation of the clinical signs will usually keep one in the proper path, but if the patient, after a time, gets worse instead of better, stop treatment, which sometimes will produce a slight improvement. Of course, any causative factor of the rhinitis, such as irritation from a spur or ridge, hypertrophy of any of the intranasal structures, insufficient air space from these causes or from a deviated or thickened septum, must be corrected surgically before improvement can be expected from any form of treatment, and vaccines are in no sense exceptions.

My experience with suppurations of the nasal accessory sinuses has led me to the conclusion that, until adequate drainage has been established for the infected sinus, vaccine therapy will not give permanent relief. Of course, it is almost axiomatic that there must be some interference with the patency of the natural ostium before a sinus becomes infected. As long as normal drainage and ventilation are present the infective agent stands little chance with the mucosa of the cavity into which it has entered. Therefore in either acute or chronic sinusitis, our first aim must be to free the normal outlet in order to evacuate the contained pus and to let in the necessary air. In chronic sinusitis it is usually necessary to do more, namely to make a larger artificial opening. Granting then that this has been done in one way or another, we are in a position to expect some aid from vaccines. In acute cases the results will be good for the most part, and it is advisable to use a stock vaccine in order to get quick results, at least until an autogenous one can be obtained. If the organism can be determined and isolated, a vaccine made from a similar organism is, of course, indicated, but if it cannot be, then a mixed vaccine must be employed. Under these conditions the course of an acute inflammation or suppuration of any of the sinuses may be very greatly shortened, but the diagnosis of sinusitis must be correct, otherwise disappointment will ensue. It will not do to give vaccines for every acute headache that seems to be of nasal origin; the diagnosis must be established.

Chronic suppurations of the sinuses always follow uncurd or repeated acute attacks, and often are latent except when the patient catches cold, which tendency toward cold catching is greatly aggravated by the latent sinusitis. It is therefore evident that if we can raise the immunity of the individual to the point where he will catch no more colds or acute infections, we shall practically cure the sinusitis. This is possible only in this recurrent type of chronic sinusitis, where, during the interval between attacks, the normal ostium is amply large enough for drainage and ventilation. In the other or constant type, where we have an empyema filling the sinus to distention at all times, except at rare intervals, and where there is an almost constant overflow, squeezed out by the pressure within, with a thick-

ened, pyogenic membrane, and frequently polypoid degeneration, vaccines will fail utterly to produce any result without surgical interference. But given the necessary surgery, free opening and removal of tissue that has undergone such pathological change as to make regeneration hopeless, the careful administration of a proper autogenous, or sometimes even a stock vaccine will do much to accelerate a cure. Chronic sinus cases are obstinate things to deal with at times, however, and some failures will result, even with this combination of methods. Usually, however, the pain is relieved, although the discharge may not cease altogether. A case in point is:

CASE I. A woman, aged fifty-eight years, who last winter had an obstinate maxillary sinusitis and to whom I gave vaccines while washing out the sinus every other day, and both without result. She also had a frontal suppuration on the same side, draining fairly well, but unimproved by treatment. After making a wide opening into the antrum beneath the inferior turbinate and enlarging the nasofrontal duct, not only did the pain cease at once, but the discharge almost as rapidly, although the frontal, where the drainage was less free, was the last to yield. Here the use of the vaccines had undoubtedly prepared the field, so to speak, for the operation.

As an example of the action of vaccine when given after the establishment of drainage, I will mention the following case:

CASE II. A woman, aged sixty-four years, suffering from pansinusitis of the right side, had had severe headaches daily for over a year, with excessive discharge, foul at times. All sinuses were involved, but the collection in the antrum seemed the worst and was certainly the most foul. Resection of the middle turbinate to free the drainage from the ostium and irrigation of the antrum failed materially to improve the condition. An intranasal operation on the antrum through the inferior meatus, with the establishment of free drainage and ventilation, and curettage of the lining mucosa, cured the antrum suppuration in a few days, but the headaches persisted, only slightly improved and with a copious discharge. A mixed commercial vaccine was administered three weeks after the operation, with the result that after the second dose (four days from the beginning of the vaccine treatment) the headaches ceased and the discharge diminished to an insignificant amount. She is still under treatment.

Now in both these cases the improvement obtained from the use of the vaccines came only after free drainage was established, and I could give a number of case histories showing the futility of the use of vaccines without drainage.

One of the minor troubles that the rhinologist has to deal with is recurrent furunculosis about the *alæ nasi* and close to the alar cartilages where it is quite painful. The furuncles are usually caused by one of the staphylococcus group, probably the *albus* most frequently, and they yield in a most satisfactory manner to the vaccine treatment. As it is often desirable to start treatment at once, for the sake of the patient's comfort, I usually begin with a commercial or home laboratory stock suspension of staphylococcus *albus* and *aureus* and, if not entirely successful, make up an autogenous one later. The advantage of this is that ordinarily the case is cured by the stock vaccine about the time that the autogenous preparation would be ready. A recent case, useful as an illustration, is as follows:

CASE III. A business man, aged forty years, had had a succession of furuncles about the end of the nose for a year past and was concerned because the tip of the nose was becoming red, bulbous, and enlarged from the constant irritation. He had been under general treatment for considerable portions of this time. He also had a

chronic obstructive rhinitis, and a perforated septum from an old operation performed some years ago by a "beauty doctor." Three injections of stock suspension (commercial) of staphylococcus (polyvalent) put an end to the boils, reduced the size of the nasal tip, and caused considerable improvement of the rhinitis. I have not seen him during the last five months but he sent a message a short time since that he had been entirely well from the date of the last injection.

What I have said here applies with equal force to furunculosis (cellulitis circumscripta or diffusa) of the external auditory canal, and brilliant results are often obtained in treating long-standing cases of this infection, which is a very real one to the patient.

Atrophic rhinitis, the bane of the rhinologist, has, of course, come in for its share of the experimental work done, and Cobb and Nagle, of Boston, have reported gratifying results. The pioneer work in this line was, however, done by Skillern and Holmes, of Philadelphia, and published about 1906. Commercial mixed vaccines have been tried by many rhinologists with reports of some improvements and a few apparent cures, but this work has not been particularly encouraging, the patient usually relapsing into his original condition soon after the cessation of treatment.

In hay fever, also, vaccines have been tried and some cures reported, but we well know that in this affection, any new method of treatment records some cures before it is finally abandoned, probably owing to the neurotic and psychological elements therein. Of course, if the catarrhal conditions accompanying all cases of hyperesthetic rhinitis can be relieved by bacterins, the course of the disease may be much less annoying. So much for the bacterin treatment—and I use the term bacterin advisedly. The true immunization against hay fever, rose cold, etc., is being worked out by Oppenheimer and Gottlieb,<sup>1</sup> of New York, who have recently reported most encouraging results from the use of extracts of pollens of different plants, carefully prepared, and the susceptibility of the individual tested by skin reactions for the different pollens. So far, however, these pollen extracts are not on the market and the work and expense of preparing them are enormous. The outlook is, however, more hopeful than it has been in many years.

The treatment of tuberculosis of the larynx and pharynx, as well as of the nose, with tuberculin, comes properly under the title of this paper but belongs more particularly to the internist who has charge of the patient's pulmonary and general condition, and I will not dwell on it further than to say it is often a great aid in treating these obstinate ulcerations and infiltrations. If the patient's general health can be improved, much may be done for the lesions of the upper respiratory tract.

*The treatment of diseases of the ear by bacterins*, considered in the early days of this form of therapy as most unfavorable, has, nevertheless, yielded surprisingly good results, although there are some sceptics in regard to it. Considering the close interrelationship between nasal and aural infections, it is only reasonable to suppose, just as the case is in accessory sinus disease, that if we can immunize our ear patients against repeated nose and throat infections, we are in a very much better position to treat

the ear disease, whether it be acute or chronic, catarrhal or suppurative. Practically all middle ear diseases have their origin in the nose and throat, thence through the Eustachian tube to the middle ear. Hence, if we can abate the catarrhal condition of the nose and epipharynx by the use of vaccines, we can feel some degree of assurance that the benefit will extend to the tube and tympanum. This is perfectly true of the acute cases, but then we can usually take care of these by other means and in about the same time. For acute cases which fail to respond to ordinary measures and tend toward the subacute and chronic groups, the use of vaccines will usually straighten the case out in short order. Once in the group of chronic catarrhal deaf ears, astonishing results cannot be looked for because of the long duration of the process, the changes in the tissues, adhesions, etc. In discussing the curative value of vaccine treatment in aural conditions, we must not forget that many acute cases will improve with little or no treatment, also a large majority of the remainder, if carefully looked after in the usual manner. Therefore, to determine the value of any form of treatment, it is necessary to show in a large series of cases, that the time of convalescence has been materially shortened. This was shown conclusively by Weston and Kolmer at our Philadelphia Hospital for Contagious Diseases in 1910-11 when, by autogenous vaccines in cases of scarlatinal otitis media suppurativa they were able to increase the proportion of dry ears obtained in thirty days or less from about seven per cent. to over twenty-two per cent. I am quite convinced that this method materially shortens the duration of the disease and, if used generally, the average number of days' duration would be much lower.

The first case in which I ever used vaccines was an acute middle ear suppuration in a child of five years, with considerable fever and mastoid tenderness which persisted in spite of repeated free incisions of the membrana tympani. After three weeks a mastoid operation seemed imminent, but was refused, whereupon I administered an autogenous vaccine, and after the second dose my case was promptly cured, and stayed cured. I have had many such cases.

Marked success with vaccines in chronic suppurative otitis media was first obtained by Nagle, of Boston, who reported some seventy cases of long duration, in all but a very few of which dry ears were obtained by the use of autogenous vaccines of her own preparation. Many other observers have reported good results. Last year at the Pennsylvania Hospital, my assistant, Dr. L. F. Mulford, and I ran through a series of cases of running ears, just as they came to the dispensary and without any other treatment, using a well known mixed commercial vaccine. Some of these cases were acute or subacute, but by far the greater number were old chronics. Out of the sixty-three cases so treated, in fifty-seven the discharge had ceased when last seen and this was from six months to six weeks after the treatment was terminated. I am about to look up this list again for the end results and shall publish the series in detail. This winter my assistant, Dr. M. S. Frisner, has made autogenous vaccines for twenty-eight cases at the Pennsylvania and

<sup>1</sup>NEW YORK MEDICAL JOURNAL, February 6, 1913.



Polyclinic Hospitals and so far we have obtained six cures in about half. Some have disappointed and the treatment is not yet known, and some came for treatment too irregularly for the maximum benefit, although they have been improved in some instances.

Nagle has called attention to the fact that vaccinated patients usually improve greatly in general health and put on weight. This I have frequently observed to be true. She also adds that in mixed infections, injections of staphylococci alone will sometimes raise the patient's resistance, not only toward the staphylococcus, but also toward other organisms, and cures may thus be obtained.

I cannot overemphasize the importance of having a potent vaccine. If the autogenous vaccine does not work, it may have been oversterilized and its value thus destroyed, or it may not have been made from the causative organism. In any case a fresh one should be prepared at once and as often as necessary until results are obtained.

Now just a word as to technique: Paint the arm with tincture of iodine or scrub with alcohol and inject subcutaneously what seems to be the proper dose. Observe the reactions following in order to determine the next dose. Generally speaking, it is best to get some little local reaction and to keep on increasing the dose on the third or fourth day so as to keep just within this point. Of course the dose employed depends on the age and size of the patient and the type of organism used. Roughly we put into one c. c. the following number of the respective bacteria and use one half of this for the initial dose in an adult: Staphylococci 200 to 900 million, streptococci 50 to 100 million, pneumococci 80 to 100 million, pseudodiphtheria 100 million or over, Micrococcus catarrhalis 100 to 200 million, Bacillus pyocyaneus 100 to 200 million. Successful vaccine therapy is not so easy as it may seem. It does not consist in buying a bottle of mixed vaccines and giving hypodermics according to the directions on the label. Some good results may be observed, but there will be many sad failures. Close study must be made of the individual case and the reactions to determine all but the first dose. There is no hard and fast rule for the first dose; one must learn by experience.

1736 PINE STREET.

#### ABDOMINAL TUBERCULOSIS.\*

By ANTHONY BASSLER, M. D.,

NEW YORK.  
Hospitals, Etc.

As a policy of clinical medicine, one suspects tuberculosis of the lungs, and usually is surprised when it is met with in the abdomen; still, it is a stern reality when it occurs. To cover the less traveled ground, I will not consider tuberculosis of the genitourinary tract nor that of the pelvis. These are amply presented in the literature by men who are specializing in these fields of work.

**Lymphatic glands.** In cases of pulmonary tuberculosis the iliac chain of lymph glands may be

markedly enlarged. I have seen two such cases, one in which an inguinal gland broke down, the pus from which proved the diagnosis. Usually they require no special treatment. The glands in the inguinal region by infection from the genitals, lower extremities, or pelvis may become primarily infected, although, usually, tuberculosis is found elsewhere in the body. One of the cases I saw some years ago required the removal of most of the glands on the left side, which case, in its result, showed the danger of removing too many of these glands because of the production of postoperative elephantiasis.

**Stomach.** It is rather interesting to recall that with the large number of cases of pulmonary tuberculosis and the number of tubercle bacilli that are swallowed, more cases of gastric tuberculosis do not occur. Many reasons for this rarity have been advanced, in which the destruction of bacteria by the gastric juice and absence of a pyloric lesion are not completely satisfactory. In my experience the absence of gastric juice is a common finding in late pulmonary tuberculosis, and if the first were true, more instances of gastric tuberculosis should be noted. In the stomach, tuberculosis manifests itself in five ways: (a) the ulcer, sometimes single and more times multiple; (b) miliary tuberculosis; (c) solitary tubercles; (d) tumorlike masses, usually in the pyloric region and closely resembling carcinoma; (e) tuberculous cicatricial pyloric stenosis from more or less healed lesions or contraction of perigastric bands due to them. The course of these cases is essentially chronic, and one has considerable difficulty in diagnosing. When ulceration predominates the case may look like one of the ordinary forms of gastric ulcer, or if masses are present, essentially like carcinoma, from which condition it is almost impossible to differentiate. Of course, if pyloric stenosis exists, operation is indicated anyway, and then we usually are surprised that it is tuberculous and not simple or malignant. I have seen two cases of gastric tuberculosis. Both were accompanied by slight elevation of temperature, loss of weight and strength, the chest symptoms of pulmonary tuberculosis, and positive tuberculin tests. They were operated in because of the prominence of the gastric symptoms, both being relieved by a gastroenterostomy, but both eventually ended fatally through tuberculosis. I am inclined to feel that beyond the general treatment of tuberculosis and the relieving of such mechanical conditions as might exist in the stomach, but little more could be done. Because of the seriousness of gastric tuberculosis, it has seemed advisable to me to use tuberculin in any future case I may have to do with.

**Intestines.** Intestinal tuberculosis may be primary or secondary to disease of the lungs, and rarely it is secondary to a tuberculous peritoneum. The primary form is found most frequently in children, in whom an irregular diarrhea, slight fever, colicky pains, and occasional hemorrhage, emaciation, involvement of the lungs, and tubercle bacilli in the stools are the important symptoms.

Secondary tuberculosis of the intestines is quite common in pulmonary tuberculosis. In more than one half of all cases of lung tuberculosis some portion of the intestine is involved. The commonest

site is the lower end of the ileum, but it also occurs in the upper part of the small intestine and in the colon. Leaving out of consideration the hyperplastic form and considering the ulcerative type, the symptoms are those of intestinal ulceration in general, namely, diarrhea, increased amounts of mucus in the stools, more or less blood, local tenderness, pus, shreds of tissue, emaciation with perhaps perforation. It has been reported that tubercle bacilli recovered from the feces are oftener derived from the intestinal wall than swallowed from the lungs. My experience disproves this, because it is common to recover tubercle bacilli in the stools of phthisis cases which post mortem show no tuberculous ulceration in the intestine.

The treatment is essentially that of other forms of ulceration of the bowel. From a considerable experience I am inclined to feel that the regulation forms of surgery are of but little value; the main features are those of the medical treatment of tuberculosis in general, and the use of such diet and medication as will effectively control diarrhea, pain, etc.

*Appendix and ileocecal region.* Among 3,770 autopsies, tuberculous lesions of the appendix were noted in forty-four cases, thirty-nine of which showed ulceration extending from the mucosa to a varying depth in the wall of the organ (Kelly and Hurdon). A few cases had perforated with the formation of periappendicular abscesses. Affecting this region, as elsewhere in the abdomen, the infection may be primary or secondary, in which extension from the cecum, or from a distant organ, usually the lungs, should be mentioned. In the majority of cases the affection is part of an ileocecal tuberculous process, but it may not be possible to decide in which organ the infection started. The process is always of the ulcerative or caseous type, or the so called hyperplastic tuberculosis. The first is usually a part of a generalized tuberculosis, the second localized in the cecal region.

In the ulcerative type the peritoneal surface of the appendix usually shows nothing to distinguish it from a simple, chronic, or subacute inflammation. Thus it is that if a search for an injection of the serosa or very light and veil-like adhesions is not made, it might be overlooked unless the organ is examined microscopically. The mucous membrane, however, usually displays ulceration which has the characteristic caseous appearance. When infection with secondary organisms takes place with a purulent process, the tuberculous process may be obscured unless carefully searched for.

Of the hyperplastic type many cases have been reported, and I have seen three myself. Usually the cecum is involved, and in those of mine this was so. Up to the present, but one case of primary infection of this type is on record, the one reported by Crowder. In this form, unlike the former, the mucous membrane was not affected, the process starting at the membrana propria. Generally, the chief process is seen in the submucosa and circular muscular coats, which are greatly thickened by a cellular fibrous tissue and cell infiltration. The striking feature of this form of intestinal tuberculosis is the immense thickening of the bowel wall, in one of my cases it having reached four cm. Because of

this it is not always easy to state on digital and macroscopic examination to which it is due—true neoplasm or tuberculosis. Where the mass is rather diffusely spread and merges gradually into normal tissue, tuberculosis may be suspected. Microscopic examination, of course, is conclusive in denoting the type of growth.

In an instance of tuberculosis involving mostly the right lower quadrant of the abdomen, the symptoms of the tuberculous ulcerative type are those of ordinary forms of appendicitis, while that of the hyperplastic are those of true neoplasm of the cecal region. The ileocecal region being a favorite site for localization of intestinal tubercles, the presence of a mass here, particularly in a tuberculous subject,

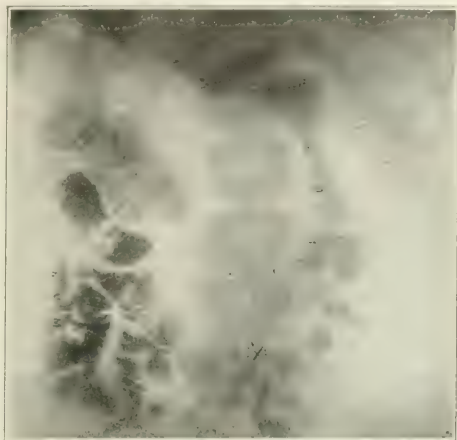


FIG. 1.—Stomach and liver, showing a large tuberculous mass on the surface of the liver, anchoring the stomach, and its connection with the liver. The mass is of the size of a fist, and the patient could not ingest more than two or three mouthfuls of food without feeling distended and having to vomit for relief. The stomach was so small and high that the entire length of the duodenum was visible. The anchoring was due to a tuberculous mass between it and the under surface of the liver. Note deep shadow between stomach and liver.

should make one suspicious. Considering this form, because the ulcerative cannot be differentiated from ordinary appendicitis, the symptoms of the hyperplastic form may be enumerated as follows: Obstruction, pains in the right abdomen, dyspepsia, anorexia, nausea, irregular diarrhea alternately with constipation, and slight fever. The stools may show mucus and occasionally blood. The most characteristic symptoms are those of a gradually advancing obstruction, in a patient with recurrent appendicitis pain attacks, losing weight and strength, and having a tumor in the right iliac fossa. Usually this tumor is not nodular, corresponds to the shape of the bowel, and is not tender to a noticeable degree. Tubercle bacilli may or may not be recovered from the stools of such patients.

Recently considerable has been written on the subject of characteristic x ray findings in ileocecal tuberculosis in the way that the cecum is usually clear of bismuth. Two of my cases showed this plainly, but in the third the cecum filled to its capacity (which was narrowed) and held the bismuth. I

think that the plan of outlining the human to note the irregularity would be more valuable than the manner method that suggested. Of course, when obstruction is present this could be noted instead, but when the average patient is still up and around, the jaundice is not sufficiently strong obstructed for x ray examination to be of much value. The clinical history and examination of most cases usually suggests the diagnosis without the necessity of an x ray examination, and when definite enough obstruction of the bowel exists, this is all the more true. It may be mentioned, lastly, that this region may be infected from a tuberculous tube or ovary on that side, although usually in tuberculosis of the female pelvis, the uterus, tubes, and ovaries coalesce in a mass, sparing the gut walls above.

The treatment of appendicular and ileocecal tuberculosis is surgical, the appendix form by excision, but from my own limited experience I am against excision and in favor of anastomosis in ileocecal tuberculosis. I believe that if enough statistics could be collected, this would be proved to be the wisest surgery in a general way. These patients stand excision badly and are rarely cured by it.

*Liver and bile ducts.* Since the liver substance and the bile ducts are usually infected at the same time, it would seem wiser to divide liver tuberculosis into miliary tuberculosis, a part of acute generalized tuberculosis or that due to infection from the intestine, and local tuberculosis involving and not involving the ducts.

Miliary tubercles are found in the liver in tuberculosis as a result of the tubercle bacilli reaching the liver by the hepatic artery, or passing to it by way of the portal vein from tuberculous ulcers in the intestine. These processes are always situated inside the lobules and thus form a contrast to local and chronic tuberculosis of the liver, which occupies the portal spaces. In addition to the infective foci, the liver is fatty, increased in weight, with considerable venous engorgement from terminal failure of the right side of the heart.

There are no definite symptoms which can be relied upon to indicate the presence of miliary tubercles in the liver. Jaundice is present in a few of the cases and a friction rub may exist. Local tuberculosis of the liver is present in about eight per cent. of all cases. It is noted in the portal spaces where the granulation tissue caseates, softens down, and eventually breaks into the bile ducts from without inward. An interesting feature here is that jaundice is constantly absent. Occasionally attacks of pain are described, and there may be ascites, but the rule is a rather indefinite attention to the liver and one more directly to the symptoms of the intestine which is ulcerated.

Caseous tuberculous masses may exist in the liver, these giving essentially no symptoms. I saw one case of two large sized tuberculous abscesses which erupted into the subphrenic space. The majority of the tuberculous abscesses are very small and multiple, involving the bile ducts. From a pathological point of view it is probable that primary tuberculosis of the liver never occurs.

*Gallbladder.* Very few cases of tuberculous cholecystitis have been recorded. Two distinct

forms are described, the chronic ulcerative in which gallstones are usually present, and the acute with necrosis of the mucous membrane. Except in a case of pulmonary tuberculosis that develops gallbladder symptoms, I do not see how diagnosis is possible, and even in these cases the vast majority of the pathological conditions met with in the gallbladder are nontuberculous in nature.

*Pancreas.* Tuberculosis of the pancreas occurs as a rule in connection with tuberculosis of other organs, the infection being carried by way of the bloodvessels. The tubercles usually lie within the lobules and rapidly undergo caseation. In acute miliary tuberculosis, of course, the entire organ may be studded. The symptoms are those of pain in the epigastrium, vomiting, local tenderness, and at times jaundice. A palpable tumor just above the umbilicus may be felt when the organ is extensively diseased, and the recovery of much fat, muscle fibres, and cell nuclei from the stools may help to suggest an involvement of the pancreas. The diagnosis is very suppositional, however, and but little is known about the wisest form of treatment.

*Peritoneum.* König from post mortem examinations concludes that tuberculous deposits are found in about five per cent. of all autopsies, and it is probable that in eighteen per cent. of all cases of phthisis, more or less tuberculous involvement of the peritoneum is present. Statistics taken from operations are said to show that tuberculous peritonitis occurs twice as frequently in women as in men. Autopsy findings indicate that it is more common in males. In my own experience in thirty-seven cases that had gone to operation, the sexes were about evenly divided. The tubercle bacillus reaches the peritoneum from a primary focus usually by the blood or lymphatics, or it may be involved directly. In women one must always consider a tuberculous salpingitis as an infecting source. Five of my cases proved to be of this kind. The most common sites of local infection are the pelvic peritoneum, the appendix region, the under surface of the diaphragm, and hernial sacs. In general miliary tuberculosis there is a widespread dissemination of the tuberculous deposits on the visceral and parietal peritoneum. In conjunction with the deposits in the peritoneum, there occurs a serous exudation. In acute cases this is often hemorrhagic, the serous exudate being great or small according to the acuteness and degree of the lymphatic obstruction.

In chronic peritonitis the changes that occur must be considered as anatomical evolutions in the life history of tuberculous granulation. The tubercles are solid, sometimes pigmented, and there is a fibrinous inflammation. Sometimes these masses break down with the formation of soft cheesy collections. There is anchorage of the viscera, sometimes with considerable displacement and welding of opposing peritoneal surfaces, with perhaps the formation of pockets, which are dry or distended with fluid.

The most prominent symptoms are obscure abdominal pain, digestive disturbance, anorexia, diarrhea or constipation, irregular fever, and progressive loss of weight. In not a few of my cases, however, the patients were of robust health, and



the abdominal symptoms insignificant. In three, the condition was not known to be present and the onset of symptoms was sudden and violent, like those of ileus or appendicitis. Two were instances of acute miliary tuberculosis with a course closely simulating typhoid fever. While elevation of temperature and pulse would be expected in the acute and subacute forms, in the chronic a subnormal temperature is often noted. In the very acute cases the pains may be violent; in the ascitic and complex forms there may be only discomfort, abdominal heaviness, and indistinct lumbar and sacral pains.

The general appearance of the patient is usually suggestive. The entire skin may be pigmented, probably from pressure on the suprarenals without there being actual involvement of these organs. In the very acute cases ecchymotic and petechial spots may be seen. In the forms accompanied by infusion the abdomen is distended, usually symmetrically so in the more acute cases, and irregularly when there is sacculation or localized infection. The veins of the abdomen may be conspicuous, the umbilicus is pouting, and when suppurative it is said to be pathognomonic, although I have seen cases of Meckel's diverticulum in which this was present. When partial intestinal occlusion takes place, the lower extremities become edematous.

On palpation the belly is smooth and elastic, the resistance generally being greater on the left side. Circumscribed collections of fluid may be noted with irregular ill defined masses. When but little fluid is present, a massing of the intestine in dense bundles is not uncommon, and in one of my cases there was a distinct tumor mass as large as a lemon due to a caseous mesenteric gland. Tenderness is not a common feature, and often considerable pressure is necessary to bring it out. A point of interest is that the pain is elicited more frequently on release of the pressure than upon making it. Gurgling sensations due to intestinal stenosis are common, particularly in the chronic form. Another point of interest is that in the acute and subacute varieties the fluid is shifting, corresponding to the flanks in the prone position, whereas in the more chronic forms it is immobile, and this to me is a characteristic, distinguishing phenomenon.

In general miliary tuberculosis operation is contraindicated. In the acute localized form, medical measures should be employed first, and in an occasional case of the dry fibrinous peritoneum, because of the difficulties in successful operation, medical means may be employed. In most cases, however, operation is indicated, this consisting when feasible, of the removal of localized masses, such as in the pelvis, releasing the fluid and freely exposing the peritoneum to the air. In each of my cases of pelvic peritonitis in which this was done complete recovery occurred, although more or less general peritoneal tuberculosis existed at the same time. In each of them, except two, there was one or more discharging sinuses, sometimes accompanied by the breaking out and emptying of large abscess sacs, these taking place in the incision wound. In a few of the subacute and in most of the chronic cases, the free exposure of the peritoneum to air, with removal of the fluid, was a dis-

tinct help to the patient. Altogether, I feel that if a localized mass of tuberculous infection can be removed with a thorough exposure of the interior of the abdomen, the outcome from operation well justifies it, but in the very acute or in the chronic forms, where there is a massing of so much tissue, the result is hardly worth the effort. In the chronic cases, although some improvement may come from an operation, eventually they end fatally without enough interruption in the course of the disease to make operation enthusiastically to be desired.

**Spleen.** Secondary tuberculosis of the spleen is not uncommon, the primary form being extremely rare. It is most frequently met with between the ages of twenty and forty years, and the symptoms may run an acute or a chronic course. In an acute case the symptoms are those of an acute systemic infection, and in the chronic ones the onset is characterized by pain or tumor or both in the splenic region. The blood is said to be normal in thirty-five per cent. of cases, anemic in forty-two, and polycythemic in twenty-three. I have seen two cases of marked splenic tuberculosis (both painful) operated in, and both ending fatally. In one the abdomen was dry and in the other a marked ascites existed. The history of the latter case was quite typical and rather describes the condition:

**CASE.** A prominent politician of New York (P. F. McG.), aged sixty years, was sent to me, March 28, 1913, by Dr. Charles Chetwood, for diagnosis. There was nothing of importance in the family history. Thirteen or fourteen years before I saw him, he had passed blood in his urine. He was examined and treated by Doctor Chetwood for tuberculosis of the bladder, after which he was apparently well. About two years before I saw him, there started a pain in the upper left side of his abdomen, which increased in intensity. During these two years, when he went to the country and remained in the fresh air, he felt better. Eating a heavy meal increased his distress. For some few months a shortness of breath developed and he could not continue with his work. The pain continued, became worse on taking a deep breath, on movement, and when he lay on the right side. One of the striking features of the pain was the increase on movement. He had lost but ten pounds in weight; his appetite was good, and his bowel movements were regular. Examination of stool was negative, but some bacilli were recovered from the urine. The blood showed a color index of 0.7, hemoglobin, 82 per cent.; red cells, 5,200,000; white cells, 7,000; polynuclears, 75 per cent.; large and small lymphocytes, 16 per cent.; myelocytes, 6 per cent., and eosinophiles, 3 per cent. His abdomen was half full of fluid, and in the upper left side was a large mass which, when pressed upon anteriorly, bulged the left flank. The base of his left lung was somewhat dull, and my belief was that probably he had a tuberculous spleen, although I could not understand the presence and numbers of myelocytes. At operation, the diagnosis was confirmed, the spleen being studded with miliary tubercles. He died three days afterward. It is probable that his spleen became infected from the left kidney.

It must be plain that if there is a focus of tuberculosis elsewhere in the body from which the tubercle bacilli might enter the blood stream, they would find in the spleen a place of diminished resistance. Thus, as Douglas and Eisenbray suggest, the development of the condition in the spleen could result in the polycythemia. It is now suggested that in the cases where other tuberculosis foci are not demonstrable, and there is no polycythemia, operation may effect a cure, but that when two tuberculous conditions exist, or polycythemia is present, operation can be of no value.

$$M_{\text{eff}}^{\text{1D}} = M_{\text{eff}}^{\text{3D}} \left( \frac{1}{1 + \frac{1}{2} \frac{M_{\text{eff}}^{\text{3D}}}{M_{\text{eff}}^{\text{1D}}}} \right) \quad (1)$$

It is at the present time considered an open question whether or not the high frequency current of Goudin is available at all in cancer, and tendency is to regard it as a source of danger, in that it is not

Cutting operations are the next and last method for brief outline. Palliative drainage of the bladder

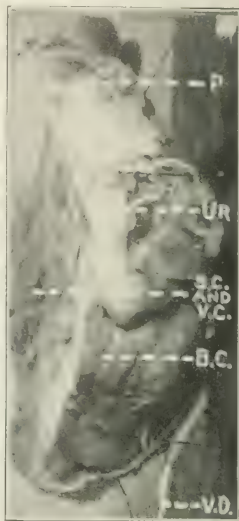


Fig. 6.—Interior aspect of author's case of extensive carcinoma of the bladder. This is the same specimen as that in Fig. 5 and its reference letters are the same. The urethra and vesical sphincter are not in view.

through a suprapubic cystotomy has already been dismissed in its appropriate part of the subject of treatment. Partial resection of the bladder, with or without the transplantation of one or both ureters



FIG. 7.—Author's case of tumor of the kidney before operation. A, View from the left quarter which indicates the prominence of the mass toward the front and the left side and its limits from the ribs above to the ilium below; B is view from the front substantiating the former picture.

into the remaining portion of the viscus, thus creating a new bladder of much reduced size, is a method of first choice when at all applicable. It is obvious that the most favorable condition for this step is a cancer situated in the superior zones—under the writer's nomenclature in the urachal and retropericardic quadrants—of small size and without clinical involvement of either or both ureters. Such a neoplasm could be radically removed by simply cutting off the upper half of the bladder, followed by suture of the remainder into a complete new bladder. There is only one disadvantage in this new bladder and that is its small size, which necessitates evacuating the urine at least twice as frequently as normal. Unfortunately, however, the majority of these new growths of the bladder spring from the floor in the posterior two zones—the ureterotrigonal and subperitoneal quadrants, as already emphasized. Such a growth, if laterally placed, requires the transplantation of the affected ureter if not extensive, or both ureters if extensive. If it is centrally placed, then both ureters must be severed and reimplanted into the new bladder, which will in a broad sense be represented by the superior half of the viscus. The foregoing brief data apply to primary growths in particular, and may be also considered in secondary growths with the added factor of suitable management of the organ from which the cancer sprang, which almost trebles the difficulties. Complete ablation of the bladder preceded by diversion of the urinary stream is the most radical step in operation on cancer of the bladder. It is a procedure of extreme severity and should be undertaken with no

little reserve, as its immediate mortality is high. As a rule the diversion of the ureters into the loin or into the bowel is the first step of two distinct details. This is particularly true of the loin operation by which both kidneys are exposed in the usual manner, the ureters isolated, divided, and brought to the surface in the lower end of the incision or through oblique, blunt puncture of the muscles of the abdominal wall just below the lower end of the incision. When the latter plan may be followed, it seems to keep the ureters better protected against accidental infection from the skin and other sources. Various appliances for receiving the urine have become more and more successful in keeping the patient dry and comfortable. More lately it has been recommended to drain these kidneys directly from their pelves. Transplantation into the bowel may be done as part of the ablation itself, but is almost invariably followed by ascending ureteropyelitis and by colitis, for the obvious reasons that the organisms of the intestines are little resisted by the ureter and that the mucosa of the intestine was not developed for the reception and storage of urine, which, mixed with the feces, decomposes within the bowel.

Ablation of the bladder, like that of any other organ, for cancer must proceed along the same plan, for example, that followed in cancer of the breast, in which the skin muscles and lymphatics are widely and consistently removed. The difficulties of parallel work on the bladder is suggested by Quain's<sup>4</sup> description of its lymphatics. "The lymphatics of the bladder are few and small, and their course and termination are not sufficiently known. From a plexus over the base and the adjoining part of the

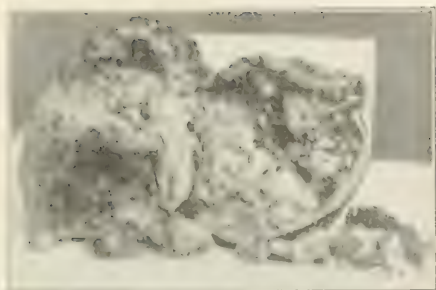


FIG. 8.—Same case of tumor of the kidney before operation. A and B were taken as nearly as possible in the same relation as those of Fig. 7, A and B.

abdominal surface of the organ, a trunk passes on each side to enter a gland below the external iliac vein (Mascagni, Sappey); and other vessels derived

<sup>4</sup>Quain's *Elements of Anatomy*, tenth edition, page 551.





...the surface from a small trunk which traverses a gland lying against the obliterated hypogastric artery on its way to the internal iliac glands (Mascagni). The lymphatics of the prostate also ascend to glands below the external iliac vessels. The lymphatics of the vesicula seminalis and of the ampullary portion of the vas deferens are numerous, and enter one or two glands placed near the base of the former body (Sappey). Manifestly then the dissection of the lymphatics of the bladder in a degree at all equal to that employed in the breast, for example, will be deep and difficult. And it is doubted by many whether on this account the end results of the operation justify the means, which include removal of the viscus with the prostate in the male and with the entire urethra in the female.

A comparison has been made between the intraperitoneal and the extraperitoneal routes of exposing the bladder and its annexa. The judgment is practically final that for extensive operations the intraperitoneal avenue is by all means the best. Modern technic has taught us how to protect the general peritoneal cavity from infection, how to drain the pockets of an ordinary deep field such as one encounters in bladder work, and the fact that urine in the peritoneal cavity which is suitably drained away is not as dangerous as was once supposed. Last, but not least, intraperitoneal exposure permits examination of the liver, lymph nodes, peritoneum, and the annexa of the uterus and prostate for the earliest possible signs of extension.

The aftercare of all cases without total removal of the bladder is the point at which the general sur-



geon is apt to miss the mark compared with the urological surgeon. It must be remembered that obstinate cystitis is a predominating feature in these cases and must be treated with the utmost skill by internal medication and by local irrigation as soon as the healing process makes it wisely possible. Only the greatest gentleness and persistence will win the struggle along these lines. Similarly, a week or two of preliminary treatment of the same general character including rest in bed will add to the immediate success of the operation.

A word about the accidents of electrical treatment is in order, as these must be borne in mind. Undue energy of current, excessive depth and area of application and great length of wire projecting beyond the insulation may lead to perforation or rupture of the bladder. Closure of the ureters by cicatrix may excite pyelitis and similar sequels. For these reasons, therefore, in addition to the limitation previously admitted concerning this treatment, it can hardly be regarded as an unmixed blessing and

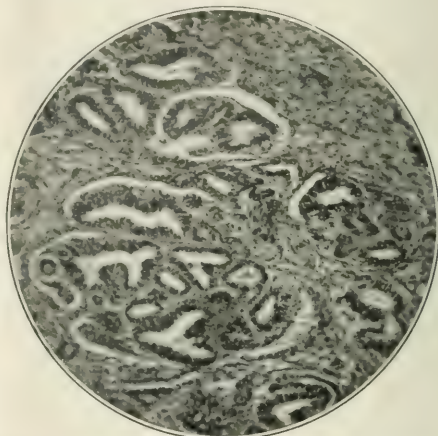


FIG. 11. Photomicrograph of tumor of kidney removed from child shown in Figs. 7 and 8, A and B.

should be employed only by conservative experienced specialists.

The contraindications of the various methods of treatment have been implied under each, but it is well to state them more or less directly. A growth of the bladder which is suspected of cancerous nature by its hardness, number, ulceration, and cystitis, or which is proved such by a specimen secured, contraindicates any of the milder methods—the high frequency current of Oudin, the x ray, the current of d'Arsonval and radium. A primary cancer which involves much of the bladder floor or roof so as to leave behind insufficient portion of the organ for a new bladder, and a primary cancer of the third degree which has extended through and through the bladder into surrounding tissues and organs and a primary cancer which is multiple and widely distributed over the wall, all contraindicate radical removal. Again, a secondary cancer which has the same general disposition as the foregoing three ele-

ments assigned to primary growths, likewise forbids radical interference.

The foregoing brief review of the subject of cancer of the bladder is sufficiently definite for the purposes of this paper,

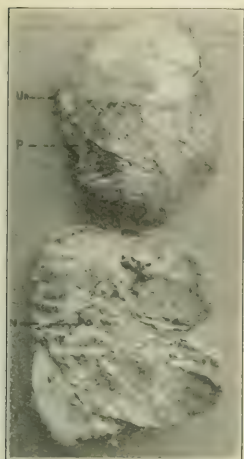


FIG. 12. Internal aspect of author's case of hypernephroma, showing extensive lobulation of the growth, total destruction of the normal kidney arrangement, almost complete compression of the pelvis (P) and central necrosis of the growth (N). The ureter (Ur) is much thickened.

lung. Taken as a class, cancers of the bladder are among the least favorable that surgery encounters. While radium and the x ray may offer a means of benefiting such returns of the disease, their promise is not sufficiently realized to offset the pathetic outcome seen in all these cases. Malignant growths of the kidney alone concern this contribution. The important varieties are according to source glandular, connective tissue, and mixed, and these according to usual pathological denominations are respectively sarcoma, carcinoma (with its subvarieties malignant adenoma and adenocarcinoma) and hypernephroma. The most interesting of these and, perhaps, the most typical of all cancerous degeneration in the kidney is hypernephroma, which represents about seventy-five per cent. of all such renal disease. But a few words concerning the others are necessary.

Carcinoma as a primary disease is rare and has the same general pathology as in any other organ of the body, and the same statement may be made in covering the pathogenesis of the subgroups, adenocarcinoma and malignant adenoma. The last form of tumor may have all the characteristics of benign adenoma, except its destructive and metastatic tendencies.

Sarcoma appears in its well known forms, which are too familiar to demand here the minutiae of pathology, and include the spindle cell, round cell, fibrous and lipous sarcomata. In origin they appear chiefly in the capsule, less commonly in the hilus and at either pole, and possess usually a gray color and soft, nodular or diffuse consistence. Sarcoma occurs at all ages, but is more apt to be the tumor of

early life than carcinoma, and in this respect rather corresponds to hypernephroma.

Hypernephroma is perhaps the most common kidney tumor, occurs at any age, but more usually during the fifth decade and in males rather than in females. It is generally acknowledged that to Grawitz<sup>2</sup> belongs the credit of the first adequate description of these peculiar new growths. The tumors are subcapsular and usually of the upper pole of the kidney, either single or multiple, and commonly themselves encapsulated. According to their formation they are soft, hard, cystic, and mixed, and according to the amount of fatty and fibrous tissue, vascularity, and hemorrhage, they are yellow, gray, red, or even black. Microscopically, they are remarkably like the normal adrenal gland. Watson and Cunningham<sup>3</sup> state that Grawitz explained the adrenal origin of these growths as follows: "1. The position of the growth under the capsule, where, as is well known, adrenal 'rests' are frequently found; 2, the characteristic infiltration of the cells of the tumor, which is a feature of the adult adrenal cortical cell; 3, the presence of a capsule; 4, the relation of the cells to the stroma of the tumor, which recalls in a marked manner the appearance of the arrangement of the cells in the fascicular portion of the normal adrenal cortex, particularly with reference to the arrangement of the cells in columns and rows; 5, the fact that metastases of kidney hypernephroma exactly resemble metastases of a similar tumor originating in the adrenal gland." Metastasis of hypernephroma is invariable and inevitable and occurs through the blood stream rather than the lymph stream. The steps in the process are extension into the renal vein and then the vena cava, followed by thrombosis and embolism without escape of any part whatever and with most frequent invasion of bone and lung. Very few of these patients live long.

Embryonal tumors of the kidney are apt to be malignant, but are not to be regarded as cancer, in a paper of this kind. Embraced under this heading are dermoid tumors, rhabdomyoma, teratoma, and mixed tumors, whose mere mention is sufficient for present purposes.

The symptoms of cancer of the kidney are sub-



FIG. 13. This is the same specimen as Fig. 12, but presents the outer surface and shows the prominence of the lobules of the growth. The absence of adhesions is at once apparent. P, pelvis; Ur, ureter.

<sup>2</sup>Grawitz, *Virchows Archiv*, xxvi, page 30, 1883.

<sup>3</sup>Watson and Cunningham, *Gonorrhoidea*, *Previews*, 2, page 280.

jective and objective and proceed from the growth itself, absorptive conditions, pressure, metastases, and laboratory examination. As a class, all malignant disease of the kidney has much the same symptoms in kind, but rather various in degree—more severe in carcinoma and sarcoma than in hypernephroma, whose rather slow course permits better observation and description of its progress. The three cardinal symptoms proceeding from the growth itself are tumor, pain, and hematuria, of which any may be the first in time of appearance and in prominence. Small tumors may give no symptoms at all for a long period of time, and thus correspond with cancers of other organs. The tumor is not uncommonly the first symptom to appear and is not infrequently discovered by accident such as pressure of clothing, unusual exercise, or during physical examination of the abdomen as a whole rather than of the kidney zones in particular. If the kidney is suspected of neoplasm, physical examination is aided by full evacuation of the bowels and then by placing the patient in several positions—in the lateral position, which relaxes the muscles well, in the dorsal position, which may make the muscles rigid, and in the standing, the stooping or the knee chest position, which may bring the mass forward or downward. Inspection is of little value, except when the tumor is very large as is shown in the two photographs of the author's case in a child before operation. Palpation naturally fails in small tumors, easily reaches the large ones, and suggests the moderate examples, rather due to the fact that the upper pole of the kidney is apt to be involved somewhat more frequently than the lower pole or the

and hepatic flexure on the right side, descending and splenic flexure on the left side. A full bowel interferes with the examination and an empty one aids in it, while gas naturally present or artificially produced permits of more ready distinction between the colon and the tumor.

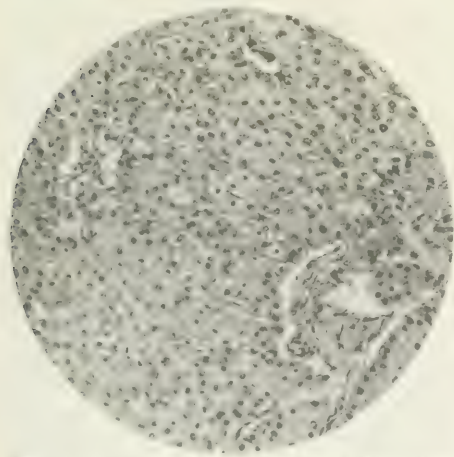
The small intestines may be caused to gravitate away from the tumor by placing the patient on the opposite side. In the case of the author previously noted in this communication, the descending colon had been displaced toward the child's left side so that it was thought by some of those present at the examination that the small intestines had been crowded beyond the tumor to that side. The x ray is of value in these tumors in showing the changes in the density of the normal kidney shadow in small tumors and in portraying the mass as a whole in the larger developments and in indicating deposits of dense tissue scattered throughout the mass. On the whole, however, it should be regarded as corroborative rather than strictly diagnostic. It is to be remembered that in all these examinations, thin subjects are much more favorable than the obese in reaching a conclusion.

The form of the tumor may follow the outline of the kidney itself or vary irregularly, especially as the case advances, so that mere form cannot be in any way regarded as indicative of the source of the tumor. Its surface may be smooth or nodular in whole or parts, and its density may be firm as a whole somewhat like the normal uterus, or soft and cystic at various points or larger portions. The nodular parts are apt to be hard and frequently indicate the most advanced points of degeneration into cancer. The mass, as already indicated, may be too small for definite diagnosis by external examination, also so large as to be obviously present and a source of deformity; this is more apt to be the case in children.

Pain is another cardinal, but not constant symptom. In character it is an indefinite heaviness, discomfort, and pressure gradually augmenting to real suffering, which may cause death from shock in rare instances. Its cause is the progress of the disease through the substance of the organ and the presence and pressure of the tumor or its metastases upon the annexa, or the transit of blood clots along the ureter into the bladder. Its location is, therefore,



FIG. 15.—This is the same patient as shown in Figs. 7 and 8. A and B, taken about six months after operation and a very few days before the death from recurrence in the thorax and abdomen, apparently as a generalized peritoneal involvement. The engorged veins over the abdomen are fairly well shown and the edema of the entire left lower extremity is prominent, likewise the pathetic emaciation.



whole organ until the case is far advanced. A full bowel will very much interfere with palpation and seemingly make a small tumor appear large. Percussion would hardly reveal any but a well advanced deposit in the kidney, but is of service in outlining such a growth and its relations with other contents of the abdomen, particularly the colon—ascending



in the general kidney and its ureter zone and its reference is the same as that of other renal colics, but occasionally the chest is the point of maximum reference. It may occur without any provocation or upon slight motion or other disturbance, or it may be constant by day and by night. Attacks of bleeding into the mass are almost always followed by pain, by more or less increase in the size of the tumor, and by free and clotted blood in the urine associated with urinary colic.

Blood in the urine is the third cardinal symptom and is not infrequently associated with pyuria during the blood free intervals. Watson and Cunningham<sup>7</sup> state the interesting fact that: "In thirty-five per cent. of the cases it is distinctly stated that hematuria did not occur throughout the whole course of the disease." On the other hand, it may be the earliest, the most prominent, and persistent symptom, leading to great emaciation and anemia. Its cause is obviously passive congestion of the venous elements of the kidney, by pressure or active erosion, such as is seen in the later period of any cancer. Slow, scanty bleeding is apt to be without symptoms, while the more active and copious hemorrhages exceed the capacity of the ureter to carry the blood down to the bladder, lead it to clot in the pelvis or the ureter, and thus to set up intense renal colic.

Pus in the urine is not uncommonly an associate of the blood, particularly during the period when the latter is absent to the naked eye and scanty to the microscope. It is due to the pyelitis and the nephritis, which the mass sooner or later induces by pressure and superficial necrosis and by the tendency of invasion of the kidney by *Bacillus coli* whenever the organ is seriously damaged from any cause. The terms, hematuria and pyuria, are here used in the same sense as that employed in recent contributions by the writer<sup>8</sup> to mean blood or pus in the urine in sufficient quantity to constitute a factor macroscopically and microscopically, and not to mean the few scattering cells of either or both normally seen.

The specimen shown in Figs. 12 and 13 is from a case of hypernephroma removed by the author. The patient was in good health when last seen about one year later without signs of recurrence. His symptoms were tumor, sense of weight, two very slight attacks of hematuria, and no emaciation as subjective symptoms; and as objective symptoms very moderate pyuria and almost no function on the affected side, which was the left. The gross specimen is shown in Figs. 12 and 13, respectively the inside and outside of the kidney. The invasion of the kidney substance is apparent in the numerous nodules of the growth, which protrude on the surface of the organ. The patient was so fat, however, that only the fact and not the features of the tumor could be felt. The case is interesting because it illustrates that the kidney may be destroyed as to function almost entirely, and yet have little or no bleeding and a pyuria which only a ureteral catheterization will determine. The photomicrograph of the specimen is shown in Fig. 14.

Cystoscopy, ureteral catheterization, and the x ray are all essential details of the objective diagnosis, and it is hardly necessary to describe their application, for the purposes of this paper. It should be

noted, however, that at one sitting, all three should be applied in the interests of avoiding disturbance of the patient, risk of infection, and the like. Such an investigation will often show that the affected kidney is the source of urine deficient in quantity and in urea, and more or less abundant in albumin, pus, blood, casts, and detritus and irresponsive to the usual functional tests, and that the x ray shadows directly correspond with the position of the catheters in both the supine and sitting postures.

The absorptive symptoms are a cachexia which may be the earliest sign and throughout the disease, prominent and important or not appear till late, and a febrile movement which commonly corresponds with the terminal periods when necrosis of the tumor is progressive. Anemia and emaciation belong in this group of symptoms in advanced cases. The pressure symptoms are venous in their origin as a rule and more rarely lymphatic and may embrace any of the large trunks over the abdomen, loins, and lower extremities—in the nature of things usually below and not above the level of the tumor. The



FIG. 15. Radiograph showing relapse of the tumor in the chest of the child presented in Figs. 7 and 8, A and B. The radiograph of the abdomen was not successful at all and this one of the chest is by no means perfectly satisfactory.

author's case taken of the child just before death illustrates such venous engorgement. The metastatic symptoms are very late and usually denote invasion of such organs as the bones and lungs most commonly and the stomach and liver more rarely. The laboratory symptoms or findings have already been sufficiently described. The foregoing notes of the clinical facts of cancer of the kidney are ample for the purposes of the general practitioner, and a few words on the diagnosis, prognosis, and treatment will be required.

The diagnosis of cancer of the kidney rests on the symptoms already noted, of which many and even all may be present, as a complete picture, or a few in irregular association, as a difficult problem. These symptoms are tumor, pain, hematuria, pyuria, and the findings of cystoscopy, ureteral catheterization, laboratory analyses, and the x ray. Cachexia, fever, anemia and emaciation, venous engorgement, disseminated foci of secondary deposit and the like, prove the advanced and inoperable cases.

The prognosis of cancer of the kidney is more un-

<sup>7</sup>Watson and Cunningham, *Gynecological*, December, 11, page 202.  
<sup>8</sup>W. C. Pedersen, Hematuria, New York Medical Journal, May 2, 1913; and Pus in the Urine, *Ibid.*, December 13, 1913.

operation than that of cancer in many of the other organs. It is not possible to state authoritatively or finally why this should be so, but the fact receives widespread clinical recognition.

Palliative measures in cancer of the kidney are concerned solely in controlling the pain of the patient with morphine and in maintaining his strength by every possible means. Such cases are usually of brief duration, as patients who are beyond the reach of operation have but a few weeks or months of life remaining. The radical measures can hardly be called curative on account of the fact that the vast majority of these cancers return either in the field of operation or in distant organs at variable periods of time, in common experience rather short than long. Removal of the kidney with its bloodvessels, lymphvessels, and ureter as far from itself as possible and with its surrounding fatty bed, is indicated. The incision should be free so as to avoid manipulation of the cancer for reasons now accepted as final—the danger of expressing into the blood stream or lymph stream products of the cancer which lead to metastases. Berg has recently developed and described an operation for hypernephroma having the principles of transverse incision into the peritoneal cavity, isolation of its contents with gauze pads, dissection of the peritoneal coat from the kidney and its pedicle, ligation of the latter close to the great vessels and of the ureter low down, and finally dissection of the pedicle and kidney and their fatty bed free from the abdominal wall from within outward, so that the kidney is not disturbed until nearly all the other dissection is completed. This operation seems to avoid the chance of spreading the disease through the various channels. If the operator prefers, any of the other standard means of nephrectomy may be followed.

After the diseased kidney is removed, its normal fellow almost invariably is in a state of congestion or even nephritis, which requires the most careful aftertreatment in nursing, diet, and medication for rather a long period of time, in order to afford the best immediate and remote opportunity of recovery.

With these brief and sketchy outlines of this vast subject, it is hoped that at least the chief points have been covered in a manner of value to the general practitioner.

45 WEST NINTH STREET.

### UTERINE CANCER.\*

#### *Symptoms and Diagnosis.*

By SVENNING DAHL, M. D.,

Chicago.

The frequency of cancer is increasing; some observers assert that it is four to five times as common as it was fifty years ago. Welch states, in his analysis of 31,000 cases, that 29.5 per cent. were uterine.

Primary cancer of the uterus may develop either in the cervix or in the body. In about ninety-eight per cent. of cases the disease begins in the cervix. Secondary cancer of the uterus is so rare, that ref-

erence will not be made in this paper to metastatic invasion from other organs.

Cancer of the cervix appears either as a squamous cell carcinoma of the vaginal portion which is covered by stratified squamous epithelium, or as adenocarcinoma of the cervical canal, which together with its glands is lined by simple columnar epithelium. The vaginal portion is more frequently involved than the cervical canal, i. e., squamous cell carcinoma is more frequent than adenocarcinoma. It is most common about the menopause, but may occur as early as seventeen and as late as seventy-five years.

In regard to the influence of pregnancies, it is rare to find a nullipara suffering from cancer of the cervix, in marked contrast to cancer of the body of the uterus. In fifty cases of cervical cancer observed by Kelly only one woman was a nullipara. It seems that the trauma incident to parturition and miscarriages, with its scars and more or less irritating discharges kept up for years, predisposes to cervical cancer.

While the symptoms vary only slightly with the variety of cancer, they vary a great deal at the different stages of the disease. Thus, it is evident that the general appearance will be materially influenced by the point of onset of the growth. For example, if the carcinoma originates in the neighborhood of the internal os, it may grow for a long time before a digital examination leads to its discovery, whereas, if it starts near the external os or on the portio vaginalis, early recognition is more probable.

In the first stage the symptoms are rather indefinite and this is unfortunate, as it is only during this stage, when it is still a local disease, that surgical interference promises favorable results. During this initial stage of hardness and induration of the cervix, and when there is still no loss of tissue or ulceration, there is often very little to arouse suspicion in the mind of the patient, or even of her physician, since the general condition appears excellent and there is little if any vaginal discharge. When a bloody discharge does occur in women who have not reached the menopause, it is often interpreted as a prolongation of the period, and in those past the climacteric it is ascribed to a return of the menstrual flow. This bloody discharge, the first symptom in cervical cancer noticed by the patient, varies greatly in frequency, in some cases occurring every few weeks, in others at intervals of several months. If a woman speaks of a bloody discharge after coitus or on lifting heavy weights, we should always suspect cancer and make the necessary vaginal examination, and if we find the cervix unduly hardened, a wedge shaped section should be removed in the proper way for microscopical examination.

Vaginal examination in the first stage may show a slightly enlarged indurated glazed looking cervix, with a few fine fingerlike processes projecting from the surface. The examining finger is usually covered with blood when withdrawn, because of the slight injury to the delicate structure of the fine fingerlike outgrowths. In the squamous cell carcinoma, which is the most frequent form, since the large capillaries are practically devoid of surrounding stroma, and have merely a few layers of friable

squamous epithelium to form their external support, the slightest disturbance or touch is naturally sufficient to break off the tops of these processes and start bleeding. In adenocarcinoma of the cervical canal there is no bleeding in the first stage because there is a well developed stroma. In the first stage, the vaginal mucosa is still normal. The broad ligament is not thickened and the uterus is freely movable, unless firmly fixed on account of a previous independent inflammatory process.

There is no pain during the first stage. As now the malady progresses there is a gradual breaking down of the older portions of the growth, consequently the bleedings become more frequent and larger in quantity, and may in this second stage, start without provocation as well as after coitus and extra exertion.

In the intervals between the hemorrhages, we notice the vaginal discharge, at first thin and watery, later with a penetrating offensive odor, causing itching or scalding of the external genitals. Only in rare instances is this discharge without odor and nonirritating. This vaginal flow is due to the disintegration of the carcinomatous tissue. During this stage there is no pain in many cases, but in others the patient complains of a dull gnawing pain in the pelvis and the back. Some patients look the picture of health, others appear anemic, lose rapidly in weight, feel languid, lose appetite, and become costive.

Vaginal examination will demonstrate a moderate disintegration of the cervix. The cauliflower growths or fingerlike processes in the first stage have broken down and disappeared. The floor of the eaten out area is very hard, but small pieces of tissue can readily be brought away with the finger. The margins of the growth are raised and hard, and the induration can often be felt extending out to the vaginal vault and in one or both broad ligaments, whereby the mobility of the uterus is limited. The diagnosis is easy.

If the malady is allowed to advance, the patient's strength begins to fail. The cachectic appearance, so characteristic of malignant disease, appears, and she becomes constipated with more or less painful defecation. The hemorrhages are likely to be more frequent and more abundant. This discharge is profuse and very offensive, having a smell that is so characteristic that it can hardly be mistaken for anything else.

Pain is now becoming severe, cramplike or knife-like in the lower abdomen, and dragging or radiating in the back and along the rectum. Involvement of the bladder is often initiated with hematuria. When the ureter becomes involved, we often have dilatation of the whole ureter with hydronephrosis. A carcinomatous ureter may break down, giving rise to a ureterovaginal fistula.

Occasionally, on exploring the vaginal vault, the examining finger will break through the carcinomatous tissue and enter a cavity from which pus and gas escape. This is due to a pyometra caused by the obliteration of the cervical canal or closure of the internal os. By vaginal examination in the third stage, we find that the cervix has disappeared and the vagina surrounding the ulcerated area is nodular, or if the mucosa is intact, the underlying

tissue is indurated. In other cases the entire vaginal vault is much increased in size, and is lined by necrotic and friable carcinomatous tissue, and the urine may be seen trickling down into the vagina through a vesicovaginal fistula.

In these advanced cases it is not necessary to make a bimanual examination to arrive at a diagnosis, nor is such an examination advisable, as the slightest tension may be sufficient to establish an opening between the necrotic cavity and Douglas's cul-de-sac.

Toward the end, defecation becomes more and more painful and sometimes a rectovaginal fistula forms, allowing the feces to pass out into the vagina. By this time the patient's strength has been greatly reduced. Food is no longer retained. The lancinating pains in the lower abdomen prevent sleep. Fever supervenes owing to absorption of septic material, edema of the lower extremities and sometimes bedsores occur. Death is generally caused by some intercurrent affection such as pneumonia or extensive renal disease.

As cervical cancer in its second and third stage presents no difficulties whatever, the differential diagnosis need only concern its first stage. A good many conditions of the cervix may be mistaken for carcinoma, some of which present clinical similarities, others, while differing clinically, show certain more or less definite points of resemblance on histological examination.

In nulliparae we occasionally meet with an abnormal extension downward of the mucosa of the cervical canal, giving rise to a reddened and sharply defined zone surrounding the external os, which may be taken for beginning cancer. On touching such a surface, it gives a slightly granular sensation, but is not firm as in cancer, nor does it show any tendency to bleed. Careful study of the section removed for microscopical examination makes it clear that the condition is due to the fact that the cervical mucosa extends beyond the external os. The surface is covered by one layer of the characteristic high cylindrical epithelium with the nuclei uniform in size and perfectly regular, and without tendency on the part of the cells to invade the stroma.

The examination of multiparae often shows a unilateral or a bilateral laceration of the cervix, the os being dilated and the cervical endometrium everted, which resembles early cancer. This mucosa is bright red in color and presents a lobulated appearance, shows little or no tendency to bleed, nor is it indurated nor the surface broken anywhere. On approximation of the lacerated edges, the everted mucosa disappears. If there is still doubt, the histological examination shows practically normal cervical endometrium, which at times, however, shows some hypertrophy, the folds having become abnormally long whereby they appear as little knob-like papillae. In other cases, some of the mucosa has been lifted from its underlying stroma, thereby forming cervical mucous polypi.

Erosion of the cervix is a term still very loosely used, being applied to almost any red cervix. Thus eversion of the cervical mucosa and its abnormal extension downward, mentioned above, are sometimes called erosion. Erosion signifies a loss of substance. In cases in which the cervical mucosa is



everted or extended farther downward than normal, and in cases of red catarrhal patches on the portio vaginalis, as we find in certain inflammatory conditions of the cervix, which tend to irritate the tips of the folds to lose their epithelial covering and become the seat of a moderate inflammation. Such eroded patches sometimes bleed on being pressed by the finger nail, but never freely.

If the cervix is steadied with a volsellum forceps, and an attempt is made to scoop out a piece of the tissue with a curette, little or none can be obtained, whereas in cancer a definite portion may usually be removed. If there is still doubt, the tissue is easily differentiated microscopically.

Simple ulceration of the cervix in prolapsus uteri is still easier to differentiate from cancer. The cervix is at times hypertrophied and its epithelial covering horny from exposure to the air and on account of friction caused by the clothes. These ulcers have a punched out appearance; their margins are not elevated and the surrounding tissue shows very little or no inflammatory reaction. The floor is pink in color and presents the typical picture of a granulating surface. There is not the slightest sign of induration and no tendency to bleeding. Cancer can be excluded with certainty by simple clinical examination.

In hypertrophy of the cervix, histological examination shows a marked thickening of the squamous epithelium of the portio vaginalis, together with elongation and branching of the papillae, but there is no extension into its depths. The even surface, the absence of an excess of chromatin, together with the uniformity in size of the epithelial cells, exclude the possibility of malignant growth.

When the cervix is enlarged, hard, and nodulated, from the presence of Nabothian follicles, there may be a close simulation of beginning cancer, particularly when the Nabothian follicles are associated with superficial catarrhal patches, hemorrhage, and leucorrhœa. However, it is here impossible to dig pieces of the cervical tissue away with the finger, as would be the case in cancer. Puncture will reveal the cystic character of the nodules, and the cysts are shown by the microscope to be lined by a single layer of epithelium.

Cervical mucous polypi frequently give rise to hemorrhages, and when they project from the cervix, may bleed slightly on manipulation and hence be mistaken for an early adenocarcinoma of the cervix. However, a careful examination will show that they spring from a point within the external os and that the cervical lips are intact. Should the diagnosis be in doubt, a piece of the tissue should be removed for microscopical examination.

Ulcerated or sloughing fibroid polypi, also called submucous myomata, occupying the cervical canal, stretching, and protruding from it, may easily be mistaken for advanced cancer, because of the hemorrhage, tissue necrosis, and foul discharge. Careful examination will, however, reveal the polypoid character of the mass, while portions removed for microscopical investigation will show no carcinoma-tous tissue.

Interstitial cervical myomata are at times associated with myomata in other parts of the uterus, and consequently are sometimes accompanied by fre-

quent hemorrhages. Bimanual examination will usually be sufficient to exclude cancer, because the cervical mucosa, although tense, will be everywhere intact and smooth, and will not show the slightest tendency to bleed from manipulation.

Condylomata of the cervix may also be mistaken for cancer of the squamous variety. They are, however, very rare, and histological examination will at once clear the diagnosis.

Syphilitic ulcerations of the cervix may occur in three forms: As the primary chancre, as broken down papules, and as gumma. The initial chancre is usually a solitary, shallow ulcer with induration, but does not bleed easily and forms but little discharge. On microscopical examination no resemblance to cancer is found.

The ulcers from broken down papules in the second stage of syphilis are slightly elevated above the level of the cervix and covered with whitish or yellowish necrotic tissue. They are multiple. Non-ulcerated papules are found in the vagina, and other evidences of secondary syphilis are found at other places of the body.

Gummata of the vaginal portion of the cervix are very rare. The ulcers resulting from them are elliptical, sharply defined, and usually covered with a yellowish puriform deposit; they may simulate cancer closely, especially when there is much breaking down of tissue. The history of the case, the serpiginous margins of the ulcers, the prompt yielding to antisymphilitic treatment, will clinch the diagnosis; but if any doubt still exists, the microscope will exclude cancer.

Tuberculous ulceration of the cervix is rare, but when present, may readily be mistaken for cancer. As this condition usually is a local manifestation of a general tuberculous process, the clinical picture will aid one materially; but for a positive diagnosis it is requisite to remove a small piece of the wall of the ulcer for microscopical examination.

Sarcoma of the cervix is very rare. It was first described by Spiegelberg in 1879, and in 1894 Dr. Whitridge Williams (*Am. Jour. of Obstet.*) gave a résumé of a number of cases collected by him from the literature. It occurs before twenty years of age or after the menopause; only three cases had occurred between these periods. There are two varieties of sarcoma of the cervix: a rapidly growing soft growth, forming polypoid or grapelike masses easily detached, and the slow growing forms, which gradually produce enlargement, hardening, and fixation of the uterus. No diagnosis can be positive here except by microscopical examination.

Carcinoma corporis uteri occurs in less than two per cent. of cases of uterine cancer. On an average it has a slower rate of growth than cervical cancer. It is usually primary, rarely secondary to cancer in some distant organs as the mammae or ovaries. Direct extension to the uterus may take place from ovarian or intestinal cancer, as observed twice by myself. On an average cancer of the body comes on at a later period than either cancer of the portio vaginalis or cervix, occurring most frequently after the menopause.

While cancer of the cervix, in some cases almost from the beginning, and in others at some later time during its course, is recognizable *in situ*,

with the naked eye, cancer of the body rarely extends to the external os and we have therefore to rely mainly upon the microscope for the diagnosis. Lymphatic extension of cancer of the body is not found until the advanced stages. And it is for this reason that the prognosis is more favorable in operation for cancer of the body than in operation for cervical cancer. This fact should be a stimulus for careful work along these lines.

It is not within the scope of this paper to describe the various appearances of the cancer of the body of the uterus; still, we should bear in mind that it may be, and often is associated with myoma or sarcoma, and that the physical findings vary accordingly. Carcinoma, sarcoma, and myoma have also been found together in one uterus.

In the symptomatology of cancer of the body of the uterus, there are several variations. Unfortunately no symptom nor group of symptoms is pathognomonic. Some patients come to us looking the picture of health, even though the disease is far advanced. Others may be thin, haggard, and sallow when the growth is still in the early stages.

The very first symptom may be free uterine hemorrhage; more frequently, however, a slight watery discharge, tinged with blood, is the first symptom noticed. Occasionally this discharge is purulent; sometimes, whether watery or purulent, it causes irritation of the external genitals and has a penetrating odor. By recalling to mind the gross appearance of the growth, and remembering the nature of the subsequent degenerative changes, we readily perceive the reason for the discharge. Under healthy conditions a slight leucorrhea is common, but in adenocarcinoma we have an increase in the number of bloodvessels with very delicate walls, more delicate than those of the normal mucosa, whereby is facilitated the escape, not alone of the blood serum and of the leucocytes, but also diapedesis of the red blood corpuscles, rendering the flow purulent and blood tinged. Again, normal epithelium is supposed to secrete a certain quantity of fluid; in adenocarcinoma the epithelium is greatly increased in amount. Since degenerative changes soon follow, small particles of necrotic tissue are apt to be included in the flow, rendering the odor offensive.

Hemorrhages are not so frequent in cancer of the body as in cancer of the cervix, because the blood supply, although abundant, is not so rich as in the cervical growths, and again the diseased tissue is better protected from injury, being inclosed on all sides by the uterine wall.

While in cervical cancer, pregnancies and miscarriages with their incidental injuries to the cervix seem to be predisposing factors, cancer of the body is found comparatively often in nulliparæ.

Pain is a variable symptom in cancer of the body. In the early stage of the disease the patients may have an ill defined tired languid feeling; others have no pain as long as there is no hindrance to the discharge, but when the flow ceases they complain of uneasiness in the region of the uterus, evidently due to a damming up of the flow. In the late stages there may be sharp shooting pains down the legs, constant or intermittent, owing to pressure of the sacral plexus. In some cases there is no pain until shortly before death.

Bimanual examination will not, in the early period of the disease, reveal any changes. Later, the body is enlarged, varying in different cases, and in still more advanced cases the uterus becomes fixed, and irregular extensions outside may be palpable. The parametrium is invaded at a relatively later period than in carcinoma of the cervix. A positive diagnosis can be made only by examining the scrapings microscopically.

All conditions causing uterine hemorrhages, foul discharge, etc., may more or less simulate cancer of the body of the uterus, such as endometritis, placental remains, myomata, uterine polypi, large venous sinuses in the uterine mucosa causing free hemorrhage, glandular hypertrophy of the uterine mucosa, sarcoma of the body of the uterus, and tuberculosis of endometrium. As the differential diagnosis in these cases always will rest on the microscopical findings of the scrapings, I omit their discussion in detail.

I ought not to finish these somewhat fragmentary remarks on uterine cancer, without emphasizing the importance and necessity of an early diagnosis, because early surgical interference while the disease is still local offers the only successful treatment. Therefore let us remember not to neglect any menstrual departure from the normal, however trivial it may at first sight appear. Let the patient accurately describe her symptoms. And above all let us insist in the most determined manner on a local examination. Let us sternly cast aside that too great modesty, or that tendency to treat small symptoms as trivial, and at once take alarm and carefully investigate every case in which there is brought to our notice an abnormality in menstruation, or a vaginal discharge of any kind, however trifling.

2029 PURCE AVENUE.

## A SIMPLE AND EFFICIENT HEAD BANDAGE.

By GEORGE O. JARVIS, M. D.,  
Ashland, Oregon.

In mastoid work one of the chief difficulties is the question of adjusting a bandage which will be comfortable, efficient and will not slip. I have devised a bandage, illustrated in the accompanying figures, which meets the objections to most head bandages. In addition, it is easy to make and simple to apply. The essential is a piece of gauze cut into a square about a yard in the diagonal.

As will be seen in Fig. 1, the square of gauze is now cut along a diagonal for about two thirds of the distance from one corner to the opposite corner. In Fig. 2, we see the bandage placed around the neck ready for application. The tails of the bandage are slipped in front and behind the neck



FIG. 1. Square of gauze cut diagonally.

and a firm single knot is made on the side so that the ends of the bandage shall completely surround the neck (Fig. 3).

The uncut part of the bandage is drawn up over the side of the head where the injury is located. After the dressings are in place the two ends are brought



FIG. 3.—The ends of the bandage are brought up over the side of the head.

over the vertex and tied to the third uncut end in a firm knot. Fig. 4 is a view of the bandage in place from the well side and Fig. 5 from the injured side. It is sometimes necessary to put a pin in the bandage at the point, X, Fig. 5, to make the bandage hug the head smoothly.

The bandage should not be tied around the neck tightly, only a loose knot being made at the side (Fig. 3), as it is uncomfortable if tied too tightly, and the last knot in which the three ends are brought together tightens the whole bandage and insures against displacement.

It was originally devised to hold the dressings on a mastoid case in which one of the large veins of the posterior fossa of the skull had been injured, and on which it was, consequently, necessary to



FIG. 5.—Showing bandage in place over the mastoid wound at ends brought up to the side.

make a certain amount of pressure. It has since been found a useful bandage in other forms of head injury and head surgery.

For a double mastoid, use two bandages similar to the foregoing.

## ELEPHANT HYDROCELE.

By A. H. PEACOCK, M. D.,  
Seattle, Wash.

This case is rather interesting on account of its unusual size and the complete burying of the penis.

CASE. Alec M. was admitted to the Seattle City Hospital on February 24, 1915. He gave his age as twenty-eight years; born in Austria, single, laborer. He said that he had always enjoyed good health up to two years ago when he contracted a gonococcus infection. A swelling began to develop in the right side of the scrotum and continued ever since, reaching large proportions six months ago. During the past year, his weight increased rapidly. He had no sharp pain but discomfort and inconvenience in carrying around such a scrotum; the right inguinal ring was so distended he thought he was ruptured. Physical examination revealed no lesions outside of the genitals. His height was six feet, weight 260 pounds.

The scrotum was markedly enlarged, with thickened skin. The right side gave fluctuation and extended well up into the inguinal canal. The penis was completely out of sight and could only be found by locating first the foreskin, which came down over the glans penis like an eyelid.

An operation was performed by Dr. F. L. Ashton. A long incision was made down through the tunica, evacuating



FIG. 1.—Showing general appearance.



FIG. 2. The cleft is the foreskin.

the fluid. The sac was dissected out and trimmed, and the edges were sewed to control hemorrhage. A drain was inserted and interrupted sutures were made in the skin.

After healing, the scrotum was still much larger than the average, but the patient was more comfortable.

964 EMPIRE BUILDING.

## INCREASED RESPONSIBILITY FOR PRIVATE PHYSICIANS.\*

*A New Plan of Cooperation,*

By L. I. HARRIS, M. D.,  
New York.

Chief, Division of Industrial Hygiene, Bureau of Preventable Diseases, Department of Health.

Every economic, materialistic, and coldly logical argument seems to show with unanswerable force that communities expect far too much, for little or nothing, from the hard driven physician; yet somehow, the fine traditions that cling about the practice of medicine, and the powerful moral obligation under which the physician inescapably rests, have dedicated him to service in behalf of the public weal and tend to refute even the strongest presuppositions of a merely logical and economic kind.

\*Read before the New York Academy of Medicine, February 14, 1915.



The failure or inability of physicians always to give adequate health service has caused communities to delegate the function of health guardianship, which properly belongs to the physician, to specially appointed and authorized agents. Powerfully organized, progressive, and enlightened as health departments may be, in the final analysis they derive their greatest effectiveness from the support which they receive from the great body of practising physicians, each of whom can exercise his individual influence in a way that will greatly augment their usefulness.

To put the matter differently, each physician who is properly responsive to his moral obligation to the community, constitutes in himself a supplementary or rather a complementary department of health, whose actions are made most effective when they conform to the body of the law and practice which crystallize under the guidance of an able commissioner of health. Granting that this is properly the function of the private physician toward the community, his cooperation with the department of health in the supervision of contagious diseases seems a necessary corollary.

The practitioner has for many years complained that the department's supervision hampers him in his relations with his patients, and makes the latter resentful of the physicians' compliance with departmental regulations and laws. With the sharp competition in practice, the physician who desires to conform to the law, complains that he suffers because, in consequence of such compliance, he is given up by patients in favor of physicians whose regard for the law is never keen, and frequently is a minus quantity.

On the other hand, the department's extensive and costly plans of organization for supervisory purposes is frequently but a vicarious exercise of the physician's functions. Its *raison d'être* is largely the failure on the part of the general practitioner to participate in public health work in accordance with the traditional conception of the altruistic relationship of the physician to the community's welfare. Of course, this is idealistic, and it remains to be seen whether physicians in New York, as a class, are sufficiently imbued with a desire to serve the public altruistically, and whether they are favorably enough disposed toward the department of health to offer much cooperation. At all events, with a pronounced tendency in the direction of enlarging the powers of private physicians, and the benefits which, it may be shown, would accrue to them from their cooperation, a trial of the procedures described below is worthy of consideration. Parenthetically, let it be stated here that any proposed plan of cooperation between physicians and the department, can, at its beginning, allow the former the exercise of but a limited authority. Circumscribed as this may be at the outset, the spirit of mutual good will thus engendered should serve to introduce a new era into public health service (always assuming that this vision of a concert of the two forces in question is realizable), and the delegated sanitary authority of physicians may then be extended as rapidly as practicable. To this end it would be well to admit to a sort of associate membership in public service reputable physicians whose records are above criticism.

An invitation to the profession along the following lines would be in accord with the spirit of this plan and would perhaps help ascertain its feasibility:

DEAR DOCTOR—It has been repeatedly affirmed by practising physicians of this city, that the activities of the Department of Health of the City of New York in the supervision of cases of infectious disease have caused them annoyance, disturbed the harmony in their relations with their patients, and have, in certain instances, deprived them of the right to exercise that personal supervision over their cases which they held to be properly theirs. Without entering into an examination of the merits and validity of these charges, the department of health now desires to concede to the private physician as large a share as practicable in the supervision of contagious cases, if it can be definitely ascertained whether physicians, as a class, desire to assume a part in such a cooperative scheme of public health guardianship and are ready for it.

The department of health, therefore, cordially invites your friendly assistance and cooperation in the supervision of infectious disease cases. If this proffer to assume such prerogatives in the supervision of infectious cases as have perforce devolved on the department is acceptable to you, will you kindly so signify, and pledge the department your active support in this field of public health service by signing the enclosed card?

In the hope that we may welcome you as an "Associate in the Public Health Service" of the city, I am,

Very truly yours,  
Commissioner.

The essentials of the proposed program offered for the consideration of physicians which would accompany this invitation would be briefly as follows:

The Department of Health of the City of New York must of necessity maintain as heretofore, its statistical records of morbidity and mortality from infectious diseases; their value has year by year been increasingly manifest. The reporting of cases of tuberculosis, major contagious diseases, typhoid fever, and venereal diseases, would therefore, as before, be required of all physicians, the latter receiving an acknowledgment of such reports from the department.

In scarlet fever, the initial visit of the nurse, as well as all subsequent visits, would be eliminated, the physician being held responsible for the prompt forwarding of a history of the case on the blank form provided for the purpose. This would provide also for a statement of all the facts needful for public health protection, such as the presence of other school children in the family, and the development of secondary cases. Upon the physician would devolve the responsibility for the instruction of the family in the requirements of quarantine and isolation. When the physician deemed the case ready for termination, he would request that a department representative make a final visit to the case and determine whether or not it were ready for release from quarantine, and such departmental representative would issue school certificates. These final visits by department representatives would continue until such time as these procedures had vindicated their value.

A similar procedure would be authorized in diphtheria. A representative of the department would call on the patient only upon the express solicitation of the physician to take cultures; otherwise no visits by a nurse would be necessary, the case being automatically terminated by two negative cultures.

Patients ill with measles would be under the complete supervision of the private physician from the beginning to the end, as would also patients ill with typhoid fever, except where the physician requested supervision by the department, because of the patient's financial condition or for some other reason of a similar nature. Evidence that the patient was not a carrier would probably be required before authorizing the termination of the case.

In all these diseases, the department should, however, be able to count upon the physician to furnish all data needed for statistical and general supervisory purposes, and to act as the intermediary between it and the patient.

In connection with the foregoing, two other points should be called to the attention of physicians:

1. A letter of the officers of the district hospital and an invitation to physicians to avail themselves of these services.

2. A statement that if physicians failed to furnish desired history, a district nurse would call to obtain the facts.

If a plan such as that here crudely outlined proved feasible, it would mark a great advance in the administration of public health and would be beneficial to physicians and patients alike. These suggestions have been taken under advisement by the chief administrative officers of the Department of Health of the City of New York, and are being carefully considered as the basis of action in the near future. Attractive as the plan appears, the department of health is not yet ready to stamp it with its approval, or to put it into operation. Doubtless the commissioner of health would be influenced by frank expressions of the opinion of thoughtful members of the profession who have at heart the interests both of their colleagues and of the community.

CENTRE AND WALKER STREETS.

## EL GEBIR, THE VISIONARY.

By I. L. NASCHER, M.D.,  
New York.

El Gebir dreamt. And as he lay, the days and months and years passed before him with the speed of the lightning, to join the ever unraveling reel of time, while behind him stretched the unrecalled past, its end lost in the night of antiquity. Time and space ran riot in El Gebir's brain and he saw the hundreds of Kuphah's<sup>1</sup> minarets, a thousand miles away, before the window of his cell in ancient Ishbiliah.<sup>2</sup> With the dreamer's vision he pierced the walls that surrounded El Monsour's capital, saw the massive towers of his palace on the hill and the broad dome of the school by the river, he saw the mosques and dwellings emptying their populace, which rushed to the palace square to hear the caliph's latest firman. A moment later he sees himself at the head of his beloved Ravendites forcing the gate of the school, sees the venerable teachers hasten to the caliph to explain how powerless they were to withstand the assaults of the unbelievers, sees their heads rolling in the public square, the bloody footfalls of Abdallah's executioners.

And now he sees his disciples fasten his motto, "Patience, Prudence, Perseverance," over the gates and doors, soon to be torn down and trampled upon by the horde of Moslems who obeyed the caliph's orders.

The scene changes. He does not recognize the place nor the river, but he recognizes Abdallah el Monsour, who is overseeing the work of thousands of Moslems, laying out streets and roads, building palaces, mosques, and dwellings. Long years had passed since the caliph had laid out this Medinat el Salem, this City of Peace,<sup>3</sup> as his capital, to punish

the Kuffe sympathizers of the young Ravendite leader, and El Gebir now saw it for the first time in his dream. Another change of scene and El Gebir is hurrying with a handful of followers across the Syrian desert, across the sands of Egypt and Sahara until he reaches the Pillars of Hercules, while far to the rear is a column of Abdallah's troops who have pursued him from the Euphrates to the end of the world. His renown was great and the name, Jaffir el Gebir, sufficed to secure him passage across the strait, to be received with open arms by Abderrahman, surnamed the Wise, the Ommiad ruler and caliph of Cordova. All this he sees in the twinkling of an eye and he sees the years go by, sees himself the head of the great school of Ishbiliah, with his motto, "Patience, Prudence, Perseverance," painted over the gates and engraved in the hearts and minds of his pupils. And now he sets the scientific world aflame by propounding the creed which for a thousand years would be the articles of faith of all true alchemists. "There exists a substance, solid in form and red in color, called The Philosopher's Stone, The Grand Elixir, The Red Tincture, *Magister Magisterium*, which, when it is placed in very small doses on melted liquid silver, mercury, lead, or any common metal, causes a transmutation of the same into gold." "This same preparation used in very small doses as a medicine, cures diseases, rejuvenates the aged, and prolongs life, wherefore it is called the Panacea of Life, and since it contains the essence of gold, *Aurum potabile*." "There is another preparation of a white color called the Stone of the Second Degree, the Little Tincture, *Minor Magisterium*, which is equal to the first in half a degree of perfection and changes the commoner metals into silver." "And," he added, "the Grand Elixir will not alone turn base substances into gold, it will dissolve gold itself."

For ten centuries the articles of faith of the Arabian visionary were the articles of faith of the alchemists throughout the world. For a thousand years men dreamt and toiled, toiled and dreamt of the philosopher's stone, of the universal solvent, of the panacea. The incredulous nineteenth century rejected him; forgot him. The twentieth century recalls his creed and with the faith born of the experience of the past, says, with patience, prudence, perseverance, all things are possible.

The dreamer of the eighth century who gave to the world *Aqua regia* and the first solution of gold, is forgotten, but his dream still lives. The chemist is still seeking the universal solvent, the scientist is still trying to transmute metals, the physician is still engaged in efforts to cure diseases, rejuvenate the aged, and prolong life. El Gebir dreamt. No Freudian theory, no psychoanalysis can interpret his prophetic vision. He did not know that the red elixir which flowed in his arteries would dissolve even gold itself if brought into a proper state, he knew nothing of colloidal metals, of radium, or thorium or phosphorus. A thousand years elapsed from the days of El Gebir to the days of Galvani, Volta, Priestley, and Lavoisier.

And while our thoughts as scientists are concerned with the scientific problems which El Gebir bequeathed to posterity, let us not forget the meta-physician whose Mesopotamian philosophy rejected

the Koran's Elysium, and demanded religious liberty and freedom of conscience. Roger Bacon demanded for human reason the right to exercise control over the doctrines submitted to its approval. It was the claim of El Gebir, of him whom Bacon, five centuries later, called the true *Magister Magisterium*.

All honor then to Abu Mussa Jafir el Soh Gebir, Ravendite, founder of the Arabian school of alchemy, philosopher, patriot, scientist, the visionary and dreamer of a thousand years. He gave to the knowledge of the middle ages a course and a goal. He laid out the task for future ages even to this day. He pointed the way to Curie, who perhaps never heard of him, as he did to Brandt,<sup>4</sup> who had faith in his creed, and to Bacon, who had faith in his works. His name is forgotten, but his dream still lives.

103 WEST EIGHTY-EIGHTH STREET.

## A SURGICAL COURSE FOR HOSPITAL INTERNS.

By ARCHIBALD E. CHACE, A. B., M. D.,  
Tarrytown, N. Y.,

Attending Surgeon, Tarrytown and Westchester County Hospitals.

The relation of work to constructive purpose may be brought to the attention of the hospital intern with advantage to himself and his patients. He comes well equipped with theoretical knowledge, with generalizations founded upon only a few instances of personal experience. From this mental state the hospital is expected to lead the intern through the details of practice, through exceptions and varying opinions, to thrust upon him heavy responsibilities. This is usually done with little attempt adequately to systematize his training. The result is often better than the lack of system would presuppose. The careful attention of the attending surgeons may overbalance the deficiencies of the service; yet hobbies are so frequent among medical men that the training is too often lopsided, and here and there sadly deficient. With this situation in mind, the following plan was devised to make the internship more thoroughly constructive.

The length of service, the rotation of stations, the hours of duty, etc., necessarily vary with the needs of each hospital. It is taken for granted that the service is divided into a junior and senior period, and that the length of service is at least eighteen months, of which twelve months are devoted to surgery.

As nearly as possible the time at which the new intern enters upon his duties, he should be met by the attending surgeon whose office it is to guide the interns through their hospital career, or at least through the surgical side of the service. The recent graduate should be made welcome, a copy of the regulations, referred to later, should be furnished, together with an outline of the course of practical work and study laid out for him, and he should be urged to make use of every opportunity "to observe, to listen, to ask many questions, but to talk and judge little."

To follow this plan requires the selection of one

<sup>4</sup>Brandt, of Hamburg, German alchemist, discovered phosphorus while engaged in the search for the panacea.

attending surgeon who shall be responsible for the training of the interns while they are on the surgical side. He should be willing to spend the necessary time and thought to make the work successful, and in most institutions he will need the assistance of a resident house surgeon, a hospital graduate, to relieve him of the more onerous duties. The other surgeons, when on service, should have an equal opportunity to impress their methods of diagnosis and treatment upon the house staff, but the supervising surgeon should direct the general scheme of their work, and inquire into the many omissions and commissions.

To minimize defects, a written set of regulations is needed. It should include:

1. The hours of duty and the lines of authority.
2. A definite schedule of the hospital practice in each department.
3. A statement of the ideals of scientific character at which the intern should aim, and the methods planned to attain them.

From the first to the last day the internship should be planned to stimulate scientific character. There are, I believe, four elements of scientific character to be developed:

1. *The attitude*, which compels one to surround each statement with proof before making it. Conscientious history taking and physical examinations, the laboratory, the operating room, and the autopsy, followed by well planned discussions of the cases, will soon convince the intern of the futility of snap diagnoses and premature statements of therapeutic efficacy.

2. *The habit* of systematic work; the planning of the best use of method and time toward efficient treatment.

3. *The energy* to review constantly the theory of practice in its relation to each concrete instance; and to practise under supervision upon the lower animals that manual dexterity which is essential to successful surgery.

4. *The ambition* to originate and to study in new fields; to prepare papers, and deliver them intelligently, of scientific value and with some degree of rhetorical merit.

The methods here suggested to accomplish these results may be open to much discussion, adverse criticism, and certainly amplification. I present them with the hope of criticism, that the problem, which is certainly a pressingly important one, may be solved.

### I. THE ATTITUDE.

It is not remarkable that medical schools which uphold a high standard turn out medical men who need less training in the scientific attitude than schools where the standard is low. Likewise the *esprit de corps* of the hospital, the exacting methods of the attending staff, the system and advantages offered by the administration, all tend to the same end. In any case, the following means will not be superfluous: 1. Thorough laboratory training, including autopsies. 2. Written opinions as to the diagnosis of each case, to be signed by the senior intern as soon as possible after the case is admitted. 3. Thorough criticism of these diagnoses by the attending surgeon (in writing?). 4. The offering of small prizes for the most correct diagnoses, as



normal by autopsy, by operation, or by the course of the disease. 5. Summarizing good articles on diagnosis, especially with discussion of the qualitative or deductive methods employed, and of the technic. 6. The attitude of intern to patient is important. He should realize that the hospital patient is just as much a sick human being as his private patients will be. With less damage to his career, he can learn in the hospital how to please his patients. 7. The intern should keep in his own records notes of the patients treated by him in the hospital. If his summary of these notes, when presented at graduation, is of a high standard, a reasonable prize should be offered.

#### THE HARRY CAMPBELL WORK

The intern should have aid from his senior and the attending surgeon in planning each hour of the day to accomplish most in the least time. Promptness is the first essential; the work is done better, more easily, and with greater advantage to the patient, and the records are more accurate.

The practice of each department should be worked out systematically, and the intern deserves to have a written statement of just exactly what that practice is. He should not be expected to guess what is expected; he should know.

For example, the admitting of patients is frequently poorly done. I believe that the cases can be classified according to the general divisions of the International List after listening to the history and making the necessary physical examinations and simple laboratory tests:

- Class 1. General diseases.
- Class 2. Diseases of the nervous system and special senses.
3. Diseases of the circulatory system.
4. Diseases of the respiratory system.
5. Diseases of the digestive system.
6. Nonvenereal genitourinary diseases.
7. Diseases of the pregnant and puerperal state.
8. Diseases of the skin and cellular tissue.
9. Diseases of the bones and organs of locomotion.
10. Malformations.
11. Diseases of early infancy.
12. Diseases of old age.
13. Diseases caused by external causes.
14. Ill defined diseases.

Class 14 is, of course, more or less of a scrap basket for doubtful cases until carefully studied. Occupational diseases should be more clearly defined, and it is possible that some other list or a modification of this list might prove more serviceable, but the International List seems the best that can be had at the present.

Having therefore decided to which class the case belongs, the intern carefully fills out a history on a *short outline for the case of the case*. A general physical examination blank in outline is then completed. If the case is surgical, i. e., requires dressings, the application of surgical appliances, or operation, a *third sheet outlined for the type of surgical condition*, is then filled in.

Armed with these three sheets, the house surgeon orders such laboratory tests as may reasonably be needed in making a working diagnosis. This done, he writes out his diagnosis, with full reasons, and files it with the other papers and the laboratory reports. The case thus prepared is ready for the review of the attending surgeon.

After looking over the records, the attending surgeon examines the patient, satisfies himself of the main facts in the history, and dictates the summary of the diagnosis and the treatment. This should be taken down by the intern and signed by the attending surgeon. If more data are needed, he orders further laboratory tests.

I believe that only the nurses' notes should appear on the chart, and that the other papers should be filed in the doctor's office. It is here that the attending surgeon may go first to look over the cases in his wards, and the intern can take with him such records as may be needed on the rounds. Some mechanism should be provided which will hold forty to fifty records, so arranged that they are easily found and filed, yet easily carried to the wards, and provided with writing materials. On rounds the junior intern takes out the records of each case, writes down the clinical notes, etc. If a medical stenographer is provided, the notes may be roughly written out and later dictated. Typewritten records are more convenient and reliable. There are several purposes served by this method: 1. The records with the exception of the nurses' notes are always available for study by the interns in their office. 2. The interns and attending surgeons can discuss the cases under treatment, with the records before them. 3. The treatment can be laid out more carefully and more thoroughly discussed, with works of reference and the medical stenographer at hand. 4. This method saves much of the discussion of the case from reaching the ears of the patient, to say nothing of his neighbor's. 5. These valuable papers are preserved from much unnecessary handling or even loss by the nurses. 6. The nurses' notes are, of course, added when the patient is discharged, thus making a double check on the record and a much more complete record than usually found in hospital files.

To summarize; there are thus preserved: *a.* The outline histories and physical examinations. *b.* The laboratory reports. *c.* The signed diagnoses, with the reasons in brief. *d.* The clinical course of the case and the treatment. *e.* The account of any operation or autopsy. *f.* The nurses' bedside notes. *g.* The report of the condition of the patient at discharge. *h.* The follow-up blanks supplied by the social service bureau, or by other means.

The senior intern should be responsible for the completeness of each record, and this record should be sent to the office with the patient when the latter is discharged. Here the filing clerk takes a receipt from the senior intern for the complete record. By these means I believe that the habit of systematic work can be taught.

#### 3. ENERGY.

Energy is difficult to instill. Friendly rivalry, prizes, the plums of the operating room, etc., may be used with discretion. Of course, we immediately think of the possibility of requiring examination for advancement in the service. This is, however, open to objection, and I know of no hospital which has tried it sufficiently. The army medical corps has been vastly improved, I am told, by this means; yet the conditions in the army are very different. After all, the selection of men based on the competitive examination and the medical school record is the

first aim in improving a hospital staff. The rest is constant and tactful supervision.

One of the best means to stimulate study is the animal laboratory. Here the intern learns, under supervision, to do the more common operations, after satisfying the supervisor of his knowledge. The outcome of these operations may lend a lively interest and rivalry to the work. The functional result, and the assurance that the test of autopsy will be required of his work, instill into the intern the utmost caution. Thus he will study surgery perforce while a junior, and not until he has performed the common operations successfully on the lower animals, should he be permitted to operate upon the human subject.

It seems unnecessary to go into a detailed outline for the surgical study required. Pathology is learned in the laboratory with the greatest care and detail during the junior period. The changes in physiological function under the stress of surgical conditions need thorough teaching. Of course, the intern feels that he has learned all this in the medical school. He should be impressed with the necessity of relearning it in greater detail, and of observing carefully the instances which come before him in the hospital.

Just how this study is to be successfully carried out is a question for careful consideration in each institution. I believe that most interns would appreciate a quiz at least once every two weeks. This should be so arranged that it fills in the gaps in the interns' experience and completes a review of the subject during the time of the internship.

Other means for stimulating energy to study are lectures to the nurses by the interns on surgical conditions, weekly staff meetings at which the juniors read reviews of the literature on various subjects to the seniors and are criticized by them, and also the means discussed below to promote ambition.

#### 4. AMBITION.

The intern who maps out a reasonable new operative procedure, after thorough discussion and the assent of the attending or supervising surgeon, should have the opportunity to test it in the animal laboratory during his senior term.

The senior members of the staff should be required to read an original paper before the attending staff at their monthly or bimonthly meetings.

Interest and suggestions from the attending staff in the original work of the interns lend much weight to its success. On the other hand, lack of interest will ruin the best efforts of those who are attempting to instill good work into hospital practice. It must be admitted that research work on an extensive scale is almost impossible, while the routine ward work occupies as much of an intern's time as it usually does. Yet the smaller problems are possible of solution, and the methods learned have lasting effects.

A hospital which turns out interns trained in slovenly methods is just as much a menace to the State, I believe, as the medical school which upholds a low standard. The man who cannot think along original lines, logically developed from scientific foundations, makes at best a poor physician; and the man who is lax in his hospital work is likely to be

lax in the treatment of his private cases. Furthermore, the living and lasting impressions on the mind of the young practitioner are gained in his hospital. The hospital owes it to itself and to the State to send its graduates out with the correct attitude, good habits of thought, with energy and ambition.

If the attending staff pull together for the benefit of the course, if they treat the interns as they would wish to be treated, if the supervising surgeon gives the thought, time, energy, and ambition in the same measure as he expects from the interns, the course will be a success and a benefit both to the hospital and the community.

To Dr. W. Gilman Thompson and to Dr. Edward Dunham, I wish to express my appreciation for suggestions and criticisms offered in the preparation of this paper.

### Our Prize Discussions.

Questions for discussion in this department are announced at frequent intervals. So far as they have been decided upon, the further questions are as follows:

CLIX.—What is the proper role of the dentist in the therapeutics of internal diseases? (Closed.)

CLX.—How do you treat flatulence? (Answers due not later than July 15th.)

CLXI.—How do you treat syncope? (Answers due not later than August 15th.)

CLXII.—How do you treat the effects of excessive smoking? (Answers due not later than September 15th.)

Whoever answers one of these questions in the manner most satisfactory to the editors will receive a prize of \$25. No importance whatever will be attached to literary style, but the award will be based solely on the value of the substance of the answer. It is requested (but not required) that the answers be short, if practicable no answer to contain more than six hundred words; and our friends are urged to write on one side of the paper only.

All persons will be entitled to compete for the prize whether subscribers or not. This prize will not be awarded to any one person more than once within one year. Every answer must be accompanied by the writer's full name and address, both of which we must be at liberty to publish. All papers contributed become the property of the JOURNAL. OUR READERS ARE ASKED TO SUGGEST TOPICS FOR DISCUSSION.

The Prize of \$25 for the best paper submitted in answer to Question CLVIII was awarded to Dr. Frank C. Makepeace, of New York, whose article appears below.

### PRIZE QUESTION CLVIII.

#### THE TREATMENT OF HEARTBURN.

By FRANK C. MAKEPEACE, M. D.,  
New York.

Heartburn is a symptom of that form of indigestion which is due to a condition of hyperacidity; this is practically always accompanied by more or less constipation, some authorities stating that the hyperacidity is primarily due to constipation. A test meal should be given, the gastric contents secured, and a chemical examination made to determine the percentage of free and combined hydrochloric acid, and total acidity; when this information has been obtained, the physician is in a position to treat the condition intelligently.

The treatment consists of three parts: 1. Relief of the constipation; 2, regulation of the diet; and 3, removal of the hyperacidity.

1. *Relief of constipation.*—One half grain of cal-

and with sodium bicarbonate should be given every half hour until four doses or two grains have been taken, a saline cathartic being given one hour after the last dose of calomel. The fluid extract of *Cassia acutifolia* should then be given every night at bedtime, beginning with a full teaspoonful and gradually reducing the dose until none is necessary. In a great many cases it is also advisable to give an occasional dose of sodium phosphate, a heaping teaspoonful in a half glass of hot water before breakfast. The routine drinking of six to eight glasses of water each day will also be of great benefit.

2. *Regulation of diet.*—The patient should be placed on a strictly milk diet for a few days, after which there should be gradually added bread and butter, boiled rice, baked potatoes, green vegetables, and meat until full diet is again reached. The patient should also be instructed to eat slowly and thoroughly masticate his food before it is swallowed.

*Treatment of hyperacidity.*—In addition to the foregoing measures, teaspoonful doses of *mistura rhei et sodæ* should be given in a wineglassful of warm water before each meal. For a few days there should also be given forty to sixty grains of bismuth subcarbonate four times a day, or a mixture of equal parts of magnesium carbonate, sodium bicarbonate, and bismuth subcarbonate in teaspoonful doses four times a day. Acute pain and distress may be promptly relieved by small doses of codeine, or a combination of codeine and acetanilid.

*Dr. H. H. Holland, of Hot Springs, Ark., remarks:*

Having made a gastric analysis and determined the actual condition of the stomach, the general line of treatment can be given, depending only on the intensity of the condition, as nearly every case of hyperacidity will be accompanied by a catarrhal condition of the gastric mucous membrane due to constant irritation by the hyperacid gastric juice. If practical, and not too trying on the patient, I wash such stomachs out every other morning before breakfast, using about a quart of water containing two drams of sodium bicarbonate and one dram of bismuth subgallate. This serves to clean out the stomach of the accumulation of mucus from the night before and gives the patient a fresh start for the day. Where the patient can take the tube without effort, it is sometimes best to wash the stomach every day before breakfast. Where the heartburn is unaccompanied by a catarrhal condition, I do not wash the stomach, but analyze the contents every few days to determine the condition.

Give patient some antacid to take an hour to two hours after meals, the amount and time depending on individual conditions as attested by the gastric analysis; the object being to neutralize the remaining gastric juice after the food has combined with as much of it as possible, rendering the remaining gastric juice nonirritating to the gastric mucous membrane. This antacid should be repeated at bedtime and at any time that the patient feels heart-

with regard to the analysis and frequent constipation, are the commoner things used. I sometimes add a small dose of extract of belladonna leaves to the sodium bicarbonate and magnesium oxide, where the acidity is very high.

Water in large quantities at regular periods is essential, as it serves to dilute the gastric contents, allay the inflammation of the gastric mucous membrane, and wash out the mucus. It should be taken in small amounts—four to six ounces—and frequently, beginning one to one and one half hour after meals and continuing up to one half hour before meals.

It is very necessary that everything be done at regular times, and that meals do not vary fifteen minutes from day to day. The diet varies greatly in these cases and can be determined exactly only for each case, but the general diet consists of all wholesome well cooked foods, of the more substantial varieties, that are not highly seasoned in any way, and that contain no pepper or vinegar. Coffee or tea should be used only once a day and in connection with a meal. Untoasted bread of any kind and greasy or fried food should not be used.

One will often find some special peculiarity of taste to which the patient is subject and to which the heartburn may be due.

*Dr. John B. Casale, of Newark, N. J., avers that:*

To the professional mind the symptom, heartburn, has always been associated with hypersecretion of gastric juice. Therefore, in our treatment, we must aim to combat this hyperacid condition. For convenience we can divide our cases into three groups.

*First group.* Cases in which the neurotic element predominates, as is found in neurasthenics. These patients respond better to other medication when the nervous irritability is controlled by sodium bromide, grs. x, and fluid extract of valerian, minims xx, in capsules after meals. Advise also a short vacation or trip with a congenial companion.

I have found, from personal experience, that in this type of case a long standing constipation has been the forerunner of the gastric trouble, and as the former is ameliorated the gastric symptoms clear up readily under treatment. Nothing is better indicated in this type of case than Russian mineral oil, half an ounce, before retiring, or agar agar, half an ounce, cooked with oatmeal, in the morning. These doses may be decreased down to one dram as the condition improves. Drug laxatives and purgatives should be avoided. Alkalies, such as sodium bicarbonate and calcined magnesias, half a dram of each in a half glassful of water one hour after meals, are serviceable as a temporary relief. Belladonna is not well tolerated by these neurotics.

It is essential that the diet be regulated, but since each patient finds out his own peculiar adaptability to certain foodstuffs, the physician has but to advise in a general way. Regular hours for eating are imperative. Alcoholic beverages, tea, coffee, and spices should be totally prohibited. A mixed diet with a carbohydrate element predominating should be preferred. A teaspoonful of good olive oil may be given before meals. I have found it beneficial, since it inhibits gastric secretion.

Sodium bicarbonate, milk of magnesia, bismuth subnitrate, charcoal, and magnesium oxide, alone or two or three of them mixed in one prescription,



*Second group.* Cases in which there is a definite organic or pathological cause for the hypersecretion, as chronic gastritis, gastric dilatation, cirrhosis of liver, etc. Gastric lavage every morning with warm water, plus sodium bicarbonate (half an ounce to a quart), benefits these cases. Alkalies should be given and the same rules of diet as given above adhered to, but in gastric dilatation small frequent meals are better tolerated than the ordinary régime.

Bismuth subcarbonate, grains xx, given before meals to coat the stomach wall, finds great favor with these patients. Tincture of nux vomica, five minims after meals, in a little water, aids in restoring the gastric mucous membrane *ad integrum*.

*Third group.* This group includes all cases where operation must be resorted to. Gastric and duodenal ulcer stand out preeminent as exciting causes of hypersecretion and subsequent heartburn. After a thorough medical course of treatment, preferably the Lennhartz cure, operation should be advised. A gastropotosis associated with a general visceropotosis is often the underlying cause of the disturbed functional activity of the stomach. A surgeon should be called upon to remedy the condition. Many times during my internship have I seen hyperacidity disappear after the removal of gallstones or the excision of a chronically inflamed appendix.

## Correspondence.

### LETTER FROM SERBIA.

*Work of the Rockefeller Foundation.—Inefficacy of antityphus vaccination.—New equipment of the Frothingham unit.—Statistics of work accomplished.—The treatment of fractures.—Gangrene a frequent complication.*

SKOPJE, SERBIA, May 5, 1915.

Soon after the Americans arrived and took charge of the conditions here and elsewhere, the epidemic of typhus exanthematicus was under control, and the situation is now absolutely safe. The members of the Rockefeller Foundation clean up every larger city, disinfect unclean places, look after good and pure water, build isolation camps and hospitals, as we have done here with the help of Lady Paget's mission right from the start, trying to establish hygienic conditions in our surroundings as far as possible. We had no special funds for this purpose, but our English friends had.

The practice of vaccination with typhoid serum against typhus has no value; there is no protection in this procedure and we have to vaccinate only as prophylactic measures against the possible appearance of cholera asiatica. The first difficulties of the situation have been overcome and the public instructed by the Serbian authorities, through the newspapers and special circulars, what to do and how to behave, especially during the hot days, which will come soon. The causes of typhus and cholera being known, the plans of our Rockefeller colleagues are plain, and as they have an excellent man, Doctor Strong, at their head, they are able to do lots of good work. All of them are good fighters of disease and others are "immune," having gone through the mill once or twice. The work is done under the

patronage of our American Red Cross, and as rapidly as practicable, the managements of the hospitals everywhere helping along, knowing right from the start that a very large number of the patients came from the barracks of the prisoners and from the pest ridden trenches at the front. The Rockefeller Foundation has helped greatly in financing this campaign, and our Mr. Frothingham, acting under the advice of Doctor Pisek, of New York, gave us twenty-five large tents for about 1,000 patients just to put our unit at the level of others, to say nothing of all the new and modern material we have received.

In regard to our work and our shortcomings, especially in fractures, we should rather like to be our own critics than critics of the work of our colleagues from the field and other hospitals, because we know that this is war, and not a time of peace, and we are not at home in our elegantly equipped operating rooms and first class hospitals. Here it is far easier to criticize than to prevent unfavorable results. In April we had 250 wounded. One hundred and ten got well, and we lost altogether only eight patients, having seventy-seven major operations and thirty-three minor. For paralysis we gave six electric treatments, made sixteen microscopic examinations, six for diagnosis, and thirty-six with x rays. Massage was given in twelve cases. To Montenegro we have ordered help; one physician for the typhus pavilion and two nurses (male) for the bandaging room in the hospital in Cetinje, two surgeons, two trained nurses, and one male nurse remaining here in the Inzinzska Kasarna, as our hospital is called. We have twenty-four Serbian male nurses, from the sanitary corps, military recruits whom we have to instruct in the school, which is open daily, along with our eight dressers in the bandaging room.

We have found in the treatment of fractures especially, that the harmonious cooperation between a patient and a careful surgeon does wonders with proper direct fixation and occasional examination with the x rays. In this way we were able to observe any excessive or defective callus formation, the cause or seat of suppuration, diastasis of the fragments, especially in fractures of patella, find why there was stiffness and ankylosis of the joints, and if there was any fissure fracture, extending into the joint or any dislocation of the same, with the presence of a foreign body or not. Sometimes we were even able to photograph lacerations of muscles and extravasation of blood, with atrophy of the limb, thrombosis, embolism, phlebitis, etc.

Gangrene of an entire limb below the seat of fracture indicates the coexistence of injury of the principal bloodvessels or arrest of circulation by pressure caused by a displaced fragment and a faulty dressing. We had many such cases in the beginning, but gangrene due to frostbite and after typhus constitutes at present the majority of the cases received, amputations being in order nearly every day, to our sorrow and felt as a blow to our conservatism.

At present we have thirty-two gangrenous cases in one room, specially designed for this purpose, and the sight of the humiliation of the soldiers, brave as they are, is simply terrible! But we are

the omnipotent *mors* . . . gives complete relief.

J. KROB. [POLSKY.]

### Therapeutic Notes.

**Tonic Preparations.**—E. Kantorowicz, in his recently issued small book entitled *Die Störungen der Verdauungsfunktion*, recommends tonics to be used for a more or less prolonged period, preparations of quinine and arsenic, either alone or in combination. Pills of the following composition are frequently ordered by him:

#### I.

Althæa . . . . . 3iij (8 grams).  
M. ft. pil. No. c.

Sig.: One pill three times a day, increased progressively to three pills.

#### II.

R Arsenici trioxid, . . . . . gr. iss (0.1 gram);  
Calcii glycerophosphatis, . . . . . gr. lxxv (5 grams);  
Glyceri rhizæ, . . . . . 3iiss (10 grams).  
M. ft. pil. No. c.

Sig.: One pill three times a day, increased progressively to three pills.

#### III.

R Arsenici trioxid, . . . . . gr. iss (0.1 gram);  
Quinæ sulphatis, . . . . . 3i (5 grams).  
M. ft. pil. No. c.

Sig.: Two to five pills three times a day.

### Treatment of Nutritive Disturbance in Adults.

C. Fuchs, in a recent issue of the *Archiv für Verdauungskrankheiten*, discusses the treatment of chronic disorders of nutrition clinically manifested not only in dyspepsia, taken in its broadest sense, but also in pruritus, eczema, constipation—usually spastic—diarrhea, a grayish yellow tint of the skin, general depression, neuralgic states, and neurasthenia. Functional disturbances frequently existing are anacidity and hypomotility of the stomach and defective pancreatic function, but although no evidence of toxic absorption is afforded upon examination of the stools, the underlying disturbance appears to be an anaphylactic state due to excessive permeability of the gastrointestinal mucous membrane for foreign protein matter or to faulty elaboration of secretory products by ductless glands. As a result of the anaphylaxis, disturbance in carbohydrate metabolism may occur, leading ultimately to diabetes or other metabolic diseases.

The treatment in these patients should include diet regulation, gastric lavage, the ingestion of a mineral water in large quantities, and the artificial replacement of gastric, pancreatic, or other fermentations. The most important feature of the author's treatment is, however, systematic washing of the intestinal canal with a hypotonic solution through the duodenal sound. Toxic material is thus removed, the bacterial flora favorably modified, and recovery of the intestinal mucous membrane and glands promoted. The solution is run in at the rate of three quarts (litres) in from two to five hours, and the irrigation was in some instances continued as long as sixty hours. Good results were obtained not only in the condition already referred to, but also in delayed absorption of exudates and transudates, in anemia, in the presclerotic stage of arteriosclerosis,

in advanced cardiac disease, and in impending uremia. In the last named condition irrigation with the hypotonic solution was followed by the use of an isotonic diuretic solution, with resulting profuse diuresis and a fall of 35 mm. of mercury in the blood pressure. In cardiac disease, the pulse and breathing rates were reduced and the urinary output was increased.

**Treatment of Chronic Malaria.**—Cantlie, in the *American Journal of Tropical Diseases and Preventive Medicine* for January, 1915, is credited with the following formula for use in the treatment of chronic malaria with enlarged spleen:

R Quinæ hydrochloridi, gr. v to vii (0.3 to 0.5 gram);  
Arsenici trioxid, . . . . .

gr. 1/36 to 1/24 (0.0018 to 0.0027 gram);

Pulvis ipecacuanhæ et opii,

gr. iii to iv (0.2 to 0.25 gram);

Hydrargyri chloridi mitis,

gr. 1/10 to 1/6 (0.006 to 0.01 gram).

M. ft. chart no. i.

Sig.: One powder twice a day.

The powders should be taken preferably at 11 a. m. and at bedtime.

**Treatment of Constipation.**—P. Merklen, in *Bulletin médical* for April 1, 1914, it is reported, stated that physical measures are, when all is said and done, the most useful of all in the treatment of the commoner forms of constipation. Among the most efficient procedures is the application of warming compresses over the whole abdomen at bedtime. A cold compress is first applied, then a piece of some impervious material, next a layer of cotton wool, and finally a flannel bandage. This compress is to be kept on the whole night unless the patient wakes some hours after going to sleep, in which event it may be removed at that time. When the compress is removed it is found in a steaming condition; it is the transition from coolness of the abdomen to the heated condition which awakens the motility of the intestinal involuntary muscle. Massage of the abdomen, by the patient himself or by another person, the strokes being executed in a clockwise direction for about five minutes morning and evening, is also a valuable measure. The masseur's hand should be covered with petrolatum or dusted with talcum powder before the procedure is carried out. The warming compress over the abdomen is the most effectual measure of all where gastric hypersecretion accompanies the constipation, as it tends both to prevent the hypersecretion and allay spasm of the intestine. As for dietetic treatment in these patients, Merklen points out the happy influence of eating a large bunch of grapes at the noon and evening meals, or in the morning and afternoon, between meals. In spite of the popular prejudice against rice as an article of diet favoring constipation, Merklen advises its use in these cases, partly because of its influence in antagonizing abnormal fermentative processes.

**Treatment of Meningococcic Iridochoroiditis.**—Arnold Netter, in *Presse médicale* for March 18, 1915, is stated to have successfully treated a case of suppurative iridochoroiditis of meningococcic origin, the seriousness of which is well known, by the use of antimeningococcus serum. The serum was administered by intraocular injection.

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CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.

CLAUDE L. WHEELER, A.B., M.D.

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## BATTLEFIELD SURGERY OF TODAY.

At the beginning of the great war, surgeons were persuaded that all that would be required of them would be to apply an aseptic dressing to gunshot wounds, because modern bullets, conical in shape and having great momentum, penetrated the tissues without causing much trauma. The orders were to apply an occlusive dressing and let Nature take her course. Unfortunately, fighting conditions have completely changed and experience has shown that in this war of trenches only active surgery avoids complications and secondary mutilation. Serious wounds from artillery projectiles are twice as frequent as gunshot wounds. Men wounded in the abdomen usually die, and emphysematous gangrene and tetanus occur with disquieting frequency. The bursting of shells tears off limbs, reduces the bones to powder, and forces into the tissues earth and bits of clothing and bone.

In such irregular and soiled wounds, bacteria develop with rapidity, particularly *Bacillus perfringens*, the common agent of emphysematous gangrene, and if surgical interference is not immediate, the patient is sure to die. The free use of the cautery or profuse lavage of the wound with ether after free incision and packing the cavities with gauze saturated with ether, have given excellent results.

Early operation is, consequently, a *synonym* for life, and operating rooms have been placed almost at the firing line, the wounded being brought in as soon as possible. The results obtained so far have surpassed all expectation, and in his report on ambulance work, Hallopeau writes: "Patients with cranial wounds with any chance of recovery have been saved; all thoracic wounds have undergone evolution without fever or suppuration; we have been able to save fifty per cent., or at least one third of penetrating wounds of the abdomen, which, before the introduction of the field hospital, were all fatal. Only one amputation has been necessary, and we have not had a single case of tetanus or emphysematous gangrene." It is the operation on the spot and immediate disinfection of wounds that is necessary, so that the process of cicatrization begins on the second day after the injury. This convincing demonstration was the starting point in favor of automobile ambulances which has resulted in such great saving of life.

But the operative work is not everything. It is systematically preceded by an examination of the patient, a delicate question, particularly when it involves locating a ball or a piece of shell deeply buried in the tissues. In many instances this can be accomplished only by radioscapy, but when the necessary apparatus has been wanting, some ingenious surgeons have successfully employed the older methods of exploration, such as Nélaton's sound or Graham Bell's telephone sound. Others have used Kocher's astatic needle, or a simple compass has served the purpose, because the German ball is covered by a metal cap which acts on the magnetic needle. Although clever, these procedures are inferior to radiography, and it is for this reason automobiles have been equipped with the necessary x ray apparatus and operators. All this is an index of an entirely new tendency of military surgery, so that at present it is the surgeon with his assistants and operating room, a movable hospital in a word, that flies to the help of the wounded, even to the battlefield.

COMMITMENT AND DISCHARGE OF THE  
CRIMINAL INSANE.

At the thirty-seventh annual meeting of the New York State Bar Association there was presented a report, by a committee appointed to consider this subject, which is based upon the theory that no principles should be laid down for the guidance of a jury in determining whether an alleged act was committed while the accused was insane. The committee advises that it shall be left entirely to the jury to determine the question not only of sanity,



but of what shall constitute insanity. It may be stated that one of the sections of 11200 of the present *Medical Code* reads as follows:

Section 11200. By a person who is an idiot, imbecile, lunatic, or insane is not a crime. A person cannot be tried, sentenced to any punishment, or punished for a crime while he is in a state of idiocy, imbecility, lunacy, or insanity, so as to be incapable of understanding the proceeding or making an *intention*. A person is not excused from criminal liability as an idiot, imbecile, lunatic, or insane because of insanity if, at the time of committing the alleged criminal act he was laboring under such a defect of reason as (1) not to know the nature and quality of the act he was doing, or (2) not to know that the act was wrong.

The State Bar Association desires to change the theory of this legislative enactment, suggesting a substitute in which the theory will be accepted that a nonsane person may be guilty of a crime; and its committee proposes that it shall be left to the jury to determine whether at the time of the act its perpetrator was sane or insane.

A number of months ago a committee, consisting of two members of the bar and one physician, was appointed by the Society of Medical Jurisprudence to consider and make suggestions concerning the report of the Bar Association's committee, and at the last meeting of the society before the summer recess this committee presented its report. It is not practicable to review this report here *in extenso*, but the main point brought forward is worthy of attention. The committee is unable to agree with the fundamental principle suggested in the report of the Bar Association's committee. It is clear, it states, that the question whether or not a person was insane at the time of the commission of an act is one of fact to be determined by the jury; but it goes too far to leave it wholly in the jury's hands to determine what constitutes insanity in cases of this kind. This would permit the jury to have recourse to the excuse of emotional insanity, and we should thus return to the many difficulties with which the courts were confronted prior to the acceptance of the definition of insanity now contained in Section 1120; a backward and a dangerous step. These definitions are good, so far as they go, and should not be omitted from the law, but a third subdivision should be added, by which a step forward will be made in furnishing an additional definition of insanity. It is therefore proposed that the section shall be amended so as to bring it into accord with modern views, as follows:

Section 11200. By a person who is an idiot, imbecile, lunatic, or insane person, and at the time of the alleged criminal act is committed by a person who at the time of the commission thereof was an idiot, imbecile, lunatic, or insane person, and at the time of the alleged criminal act was laboring under such a defect of reason that (1) did not know the nature and quality of the act he

was doing; or (2) did not know that the act was wrong; or (3) knew the nature and quality of the act, or knew that the act was wrong, and was unable to resist the commission thereof by reason of the presence and holding of delusions or illusions which were coupled and connected with the said act, then, and only in that event, the jury must find a verdict of guilty but insane.

## MEDICAL AFFAIRS IN RUSSIA.

It was a fact well known in Russia previous to the outbreak of hostilities, that the supply of doctors fell far short of the actual needs of the empire. This deficiency is now aggravated by the circumstance that the representative members of the profession have been summoned to the seat of war, while the doctors at home have abandoned their ordinary duties to wait upon the half million sick and wounded soldiers in various parts of the interior. The public are thus compelled in many places to prescribe for themselves; and their empirical treatment—by no means successful at the best of times—has been rendered all the more uncertain by the extraordinary spread of epidemics. Official reports issued by the municipal councils of Zhitamir, Berditchef, Bialvstok, Nikolaief, Zvenigorodka show an appalling mortality from epidemic diseases. Scarlet fever, smallpox, typhus, and typhoid are the most prevalent, and, if anything, they rage with greater intensity in the country than in the town. Writing from Voznesensk, a newspaper correspondent states that the Cherson district has experienced the enormous loss of thirteen hundred children since last February. Among adults, deaths from typhus fever, cholera, and typhoid have been correspondingly numerous. For this mortality the peasants themselves are greatly to blame. Living on food which no decent human being can touch, filthy in their habits, and having no conception of the simple laws of sanitary science as practised among peasants in more enlightened countries, the muzhiks lay themselves open to the reception of every epidemic that passes over the land. The suppression of the vodka traffic has also given rise to many fatal cases of poisoning from methylated spirit. These evils are largely augmented by the removal of doctors from the provincial towns to the military hospitals, and still more so by the careless manner in which the invalids from Galicia are being transported through the country. Unless the reports in the Russian press are greatly exaggerated, trainloads of men suffering from typhus fever, smallpox, cholera, typhoid, and other infectious diseases pass daily along the lines, and remain for hours in the stations without any attempt being made by the authorities to prevent the spread of infection. The great conflict has also served to bring out in disgraceful prominence

the deficiencies of Russian hospital arrangements for the troops in the field. How will the Russian war office meet the charges of sanitary incompetency and dereliction? Will they deal with these sanitary shortcomings in a spirit of candor? Will they confess their existence? Will they discuss needful remedies? Or will they meet them either with open denial or ingenious attempts at apology or explanation?

#### THE RESULTS OF VENTILATION TESTS.

Since December, 1913, the New York State Commission on Ventilation has been conducting a series of experiments on the relation of humidity, temperature, and composition of air to the physiological, physical, mental, and psychic conditions of the human body. The commission has published an interesting series of preliminary results. They show, for instance, that such extreme conditions of heat and moisture as a temperature of 86° F. with eighty per cent. relative humidity show no effect upon respiration, dead space in the lungs, acidosis of the blood, dissociation of oxyhemoglobin, respiratory quotient and rate of heat production—both measured by oxygen consumption—digestion, carbohydrate or protein metabolism, concentration of urine, and skin sensitivity. The power to do either mental or physical work is not at all diminished under these conditions of heat and moisture. Similarly, psychological tests of color naming, naming opposites, mental multiplication, grading specimens of handwriting, etc., all failed to show any effect of the high heat and moisture upon mental ability, although the disposition to physical or mental exertion becomes lessened.

Likewise, the effects of stagnant air at the same temperature as fresh air, even if it contains from twenty to sixty parts of carbon dioxide per 10,000, proved to be negligible or entirely negative so far as the physiological, psychological, and efficiency tests would indicate. So long as the room temperature remained the same, it appeared not to make any difference to the subjects of the tests whether the air was stagnant or renewed at the rate of forty-five cubic feet a minute per capita, except that stagnant air decreased the appetite by about thirteen per cent. in one experiment and nine per cent. in another.

These results have been misinterpreted in various quarters. They do not discourage ventilation or deprecate the value of pure fresh air; they tend, however, to demonstrate that the "badness" of the air is due primarily, in the words of the chairman of the commission "to high temperature and lack of cooling air movements, sometimes combined with

high humidity. Ventilation is just as essential to remove the heat produced by the human body as it was once thought to be to remove the carbon dioxide produced by the human lungs." To determine what are the good elements in atmospheric influence and how to use them for purposes of ventilation is the great problem before the commission.

The experiments so well begun should be continued on an even larger scale, before any final conclusions are established. It is to be hoped that the State will appropriate the necessary funds to carry on the work of the commission as long as the need of further experimentation is felt.

#### THE SEARCH FOR PAINLESS CHILD-BIRTH.

Under this title, a writer, R. C. B., in the *British Medical Journal* for June 19, 1915, discusses at some length the notorious "twilight sleep," basing his remarks on a popular manual by a woman crusader who voices the opinions of one of the principal sororities in this country which have undertaken to dragoon the medical profession into the adoption of the Freiburg anesthesia in all cases of childbirth. He treats this manual in a spirit of levity from which he would probably have refrained had he been cognizant of the *ad captandum* methods used here to push the proprietary scopolamine-morphine method. After giving a very fair picture, pro and con, of this form of anesthesia in childbirth, the writer takes up tocanalgine, the French preparation said to be derived from yeast and morphine hydrochloride. It seems that Ribemont-Dessaignes, the pioneer of tocanalgine, now uses a 3.24 per cent. solution of morphine hydrochloride—the physiological equivalent of tocanalgine—with a little strychnine and caffeine, injecting one c. c., containing half a grain, and repeating, if necessary, in two or three hours. The French investigator states that morphine at one per cent. arrests labor, while at 3.24 per cent. it does not. Obviously, says R. C. B., we must reexamine the pharmacological action of morphine on the processes of labor, and perhaps extend our view of what these really are. When the mass of Ribemont-Dessaignes's observations becomes comparable to those given out from Freiburg, we may find, after all, that the way to painless childbirth is by morphine alone!

#### "GROWING PAINS."

H. O. Butler writes to the *Lancet* for June 26, 1915, that he believes the so called growing pains of childhood to be caused mainly by adenoids. It is quite common in his experience to find children with a tendency to fidgets, a constantly raised tempera-

one upon the face, and a mottling of the first three, in which the whole state can be completely altered by removal of adenoids. He does not mean obvious adenoid cases with obstructive signs. Careful examination almost certainly shows a few soft and slightly enlarged cervical glands, but with no enlargement the signs are general and not local. Treatment by salicylic acid compounds causes more than a temporary lowering of temperature, and in his cases the tuberculin skin tests are negative—both human and bovine. The writer says he has no means of knowing whether the toxin absorbed is that of the specific organism of Poynton and Paine; but if it is, the riddle of treatment can be very readily solved, which, he remarks, is certainly not the experience of most of us with that organism or one closely allied to it.

### News Items.

**Medical Corps of the Navy.**—The examination of candidates for the Medical Corps took place on Tuesday, July 6th, at Boston, New York, Philadelphia, Washington, Norfolk, Charlestown, Chicago, San Francisco, and Bremerton. Sixty candidates took the examination.

**"Twilight Sleep" Unsatisfactory.**—Scopolamine-morphine anesthesia in childbirth is said to have been discontinued by the St. Louis City Hospital. The treatment has been employed since last February and the reason for its discontinuance is that the method has not proved to be entirely satisfactory.

**Typhus Fever in Baltimore.**—On June 28th a case of typhus fever was reported in Baltimore. The diagnosis was verified by an officer of the Public Health Service. It was impossible to trace the source of infection. The patient was the keeper of a small store. The disease was of the mild type which has been observed in many of the larger cities of the United States.

**Kentucky Valley Medical Association.**—Dr. W. B. McClure, of Lexington, was elected president of this association at the annual meeting held in Winchester on June 24th and 25th, and Dr. W. H. Martin, of Clay City, vice-president. Dr. J. H. Ebans, of Beattyville, was reelected secretary-treasurer, an office which he has held for nine years. The next meeting of the association will be held in Richmond.

**Cholera Kills Many in Hungarian Prison Camp.**—It is reported that among the 17,000 Russian prisoners of war in one Hungarian prison camp 1,414 cases of cholera, with 312 deaths, occurred between June 7th and 13th. Since June 13th the number of cases has increased rapidly, and up to June 26th more than 1,000 deaths had occurred. Already half the prisoners are suffering from the disease and panic conditions prevail in the camp.

**South Dakota Medical Association.**—At the annual meeting of this association, held in Sioux Falls in May, the following officers were elected: President, Dr. J. B. Vaughn, of Castlewood; first vice-president, Dr. F. M. Crain, of Redfield; second vice-president, Dr. H. J. G. Koobs, of Scotland. The secretary-treasurer, Dr. R. D. Alway, of Aberdeen, was elected for two years a year ago and consequently holds over until the next meeting. Aberdeen was unanimously decided upon as the next meeting place.

**New Building for Cincinnati Medical College.**—On July 1st the C. M. H. Co. announced that a total of \$255,000 had been subscribed for the new building for the medical department of the University of Cincinnati, which, added to the gift of \$250,000 made by Mrs. Mary Emery on condition that an additional \$250,000 was subscribed, makes a total of \$505,000. This fund makes the new medical school a certainty. The ground is already the property of the university, so that the work of construction may be

**Gifts and Bequests to Hospitals.**—The will of the late Josephine Lewis includes a direct bequest of \$1,000 to the Home for Crippled Children, Philadelphia, and contingent bequests of \$25,000 each to the University and the Episcopal Hospitals.

The will of the late Emma Paul included among other contingent public bequests, one of \$5,000 to the Hahnemann Hospital, Philadelphia, and one of \$2,000 to the Home for Crippled Children.

**Virulent Smallpox.**—According to reports issued by the United States Public Health Service, during the week ending June 12th, five cases of smallpox and two deaths were reported at Brownsville, Texas, and seven cases and two deaths at New Orleans, La. This indicates foci of virulent smallpox at these two places. As regards the outbreak at New Bedford, Mass., there were two new cases reported during the week ending June 26th, making a total of twenty cases, of which nine had terminated fatally. This outbreak began the middle of May.

**Aid for Belgian Physicians.**—The following contributions were received by Dr. F. F. Simpson, of Pittsburgh, treasurer of the American Committee of American Physicians for the Aid of the Belgian Profession, during the week ending July 3, 1915: Stamford Medical Association, Stamford, Conn., \$25; Buchanan County Medical Society, St. Joseph, Mo., \$25; Captain W. H. Allen, Medical Corps, United States Army, Manila, P. I., \$10; Yakima County Medical Society, North Yakima, Wash., \$25; receipts for the week ending July 3d, \$87.34; previously reported receipts, \$7,457; total receipts, \$7,544.34.

**Philadelphia Physicians and Nurses Sail for the War Zone.**—Ten Philadelphia surgeons and four nurses sailed recently for the war zone in France, where they will take charge for a time of a unit in the American Ambulance Hospital. Dr. J. William White, emeritus professor of surgery at the University of Pennsylvania, is in charge of the party, and the other members are as follows: Dr. James P. Hutchinson, Dr. Daniel J. McCarthy, Dr. Edmund B. Piper, Dr. Walter Estell Lee, Dr. Arthur E. Billings, Dr. Peter M. Keating, Dr. Samuel Goldschmidt, Dr. Thomas C. Aller, and Dr. David M. Davis. Most of the physicians are making the trip at their own expense.

**Personal.**—Dr. William J. M. A. Maloney, of New York, who has been serving as a surgeon with the Dardanelles expeditionary force, is in a hospital in Alexandria, Egypt, suffering from paralysis of the right leg and a gunshot wound of the right wrist. He expects to return to America.

Dr. W. C. Woodward, health commissioner of Washington, D. C., has been suggested as Doctor Goldwater's successor as head of the Department of Health of the City of New York. Doctor Goldwater finds it impossible to remain in the service of the city, as the trustees of Mount Sinai Hospital are anxious to have him resume the superintendency of that institution.

Dr. William G. Bissell, bacteriologist to the Buffalo Health Department, has been reappointed a member of the State Board of Medical Examiners.

Dr. Roger Sylvester Morris, of Clifton Springs, N. Y., has been appointed to the newly established Forchheimer memorial chair of internal medicine at the University of Cincinnati.

**License Reciprocity between Physicians of Great Britain and Ontario.**—The Ontario Medical Council of Ontario has under consideration the proposal to enter into an agreement with the general medical council of Great Britain for reciprocity in the registration of physicians and surgeons. Dr. E. E. King, of Toronto, presented recently a report from the legislation committee on the subject, and explained the regulation which the council will have to adopt to become a party to the compact, and which is satisfactory to the British body. That regulation will provide for the registration in Ontario of licentiates of the British organization who make application and present the necessary credentials, and for the registration on the Colonial list of the British Medical Council, without further examination, of such holders of diplomas from the Ontario Council as apply for it. Ontario physicians who are registered on the Colonial list of the British Council will enjoy the same rights as practitioners enrolled on the British list and will be entitled to privileges in Italy, Belgium, and Japan.



**Over Seven Hundred Thousand Patients were cared for by the Bellevue and the Allied Hospitals of New York during 1914 at a cost of \$1,000 a day for each patient of a total of \$1,431,443.00.** During 1913, \$1,399,142.22 was expended in the care of 650,949 patients at a cost of \$2.13 a day for each patient. The report of the city comptroller which gives these figures also shows that in the last ten years \$10,800,364.61 has been spent to maintain Bellevue and Allied Hospitals, and the total number of patient days was 5,340,732, the average cost of which was \$2.02. The total number of cases treated and the cost for each treatment were: Bellevue, 43,060 and \$0.3539; Fordham, 16,197 and \$0.2171; Harlem, 33,706 and \$0.2755, and Gouverneur, 64,888 and \$0.2756. There was an increase of \$5,866.71 in the cost of general administration, and \$80,394.57 in the professional care of patients, making a total of \$86,261.28. On the other hand, there were decreases in the cost of kitchens, dining rooms, pantries, housekeeping, plant service, ambulance service, dispensary, and day camps, aggregating \$53,800.80, making the net increase \$32,460.42.

**Appointments and Promotions at the Rockefeller Institute.**—The Board of Scientific Directors of the Rockefeller Institute for Medical Research announces the following appointments and promotions: Dr. James B. Murphy, hitherto an associate in the department of pathology and bacteriology, has been made an associate member.

The following have been made associates: Dr. Carrol G. Bull (pathology and bacteriology), Dr. Frederick S. Jones (pathology and bacteriology), Dr. Clarence J. West (chemistry), Dr. Michael Heidelberger (chemistry), Dr. Frederick M. Allen (medicine), Dr. Oswald T. Avery (bacteriology), Miss Angelia M. Courtney (chemistry), Dr. Eduard Uhlenhuth (experimental biology).

The following have been made assistants: Dr. Harold K. Faber (pathology and bacteriology), Mr. Chester H. Allen (chemistry), Mr. James K. Senior (chemistry), Mr. Glenn E. Cullen (chemistry), Miss Mariam Vinograd (chemistry).

The following new appointments were announced: Dr. R. Werner Marchand, assistant in the department of animal pathology; Dr. Carl Ten Broeck, associate in the department of animal pathology; Dr. Herbert D. Taylor, assistant in pathology and bacteriology; Dr. Oswald H. Robertson, assistant in pathology and bacteriology; Mr. Ernest A. Wildman, Fellow in chemistry; Dr. Reginald Fitz, assistant in medicine and assistant resident physician; Dr. Arthur L. Meyer, assistant in physiology and pharmacology.

**Alienists and Neurologists to Meet in Chicago.**—A meeting of alienists and neurologists of the United States will be held in Chicago during the week of July 12th, under the auspices of the Chicago Medical Society, to discuss mental diseases in their various phases. Dr. H. Douglas Singer is chairman of the meeting and Dr. W. T. Mefford, secretary. Headquarters will be at the Auditorium Hotel, where all meetings and social sessions will be held, with two exceptions. On Wednesday morning, July 14th, there will be a session at the Psychopathic Laboratory, City Hall, where a clinic will be held by Dr. W. J. Hickson, and the remainder of the morning devoted to a discussion of the dementia praecox problem from a biochemical standpoint. The subject will be presented by Dr. Henry A. Colton, of Trenton, N. J., and discussed by thirty-four members of the association. On Thursday there will be an all day session at the Chicago State Hospital, Dunning. Dr. George Leininger, superintendent of the institution, will receive the guests, and Dr. H. P. Sights, of Hopkinsville, Ky., will deliver an address on the Value of Environment, Occupation, Absence of Restraint, and Harsh Treatment in the Care of the Insane, which will be followed by a general discussion and the presentation of patients. Friday will be devoted to a discussion of syphilis in its various forms and the most modern method of diagnosis and treatment. On Thursday evening there will be a banquet at the Auditorium Hotel in honor of Dr. C. P. Caldwell, former president of the Chicago Medical Society. Dr. Albert E. Sterne, of Indianapolis, will deliver an address on Reason and Intelligence as Applied to Medicine and Religion, which will be followed by an address by Governor Woodbridge N. Ferris, of Michigan. Dr. William O. Krohn, 29 East Madison Street, Chicago, is chairman of the banquet committee, and Dr. I. C. Gary is secretary.

**Measles and Bronchopneumonia Still Prevalent in New York.**—According to the department of health there were, during the week ending July 3, 1915, 1,247 deaths compared with 1,160 deaths during the corresponding week of last year, the rate being 11.20 in 1915 and 10.81 in 1914. While it is true that there were 87 more deaths, the increase in the population accounts for 47. Moreover, the rate for the first twenty-seven weeks of this year remains lower than the rate for the corresponding period of 1914.

Of the contagious diseases, measles showed a decided increase over last year. This, however, is in keeping with the fact that this is a measles year in New York. Both lobar pneumonia and bronchopneumonia showed a marked increase over the corresponding week last year, as did also tuberculosis. So far as the age of those dying is concerned, the department points out that there has been a small increase in the number of deaths of infants under one year.

**Promotion for Doctor Baketel at the Long Island College Hospital.**—Dr. H. Sheridan Baketel, of Brooklyn, has been elected head of the department of hygiene and public health, Long Island College Hospital, filling the vacancy caused by the death of Dr. Joseph H. Raymond. Doctor Baketel has been an instructor in the institution for two years. He aims to make the department of greater strength, and to aid him in carrying out his plans he has organized a board of special lecturers, consisting of some of the leading men in public health administration in the State, who will lecture to the senior students of the college. The members of this board are as follows: Dr. William G. Bissell, Buffalo, examiner in hygiene and sanitation, New York State Board of Medical Examiners, Major Medical Corps, N. G. N. Y., retired; Dr. Charles F. Bolduan, director, bureau of public health education, Department of Health, City of New York; Dr. Lucius P. Brown, late Food and Drug Commissioner of the State of Tennessee and the new director, bureau of food and drugs, Department of Health, City of New York; Edwin J. Fort, C. E., M. C. E., Cornell, chief engineer, Bureau of Sewers, City of New York; Dr. William H. Guilfoyle, B. S., registrar of records, Department of Health, City of New York; Dr. William A. Howe, Albany, medical inspector of schools, University of the State of New York; Dr. Joseph J. O'Connell, A. M., Health Officer of the Port of New York; Almuth C. Vandiver, B. S., LL. B., late counsel to the Medical Society of the County of New York; Dr. Linsly R. Williams, Albany, Deputy Commissioner of Health, State of New York. Special lecturers in food and milk inspection, hospital treatment of contagious diseases and other pertinent subjects will be announced later.

**Important New Procedure in Measles.**—The July 3d issue of the *Weekly Bulletin* of the Department of Health of the City of New York calls the attention of physicians to an important change in procedure in connection with the sanitary supervision of cases of measles in the city of New York. Measles offers one of the most difficult problems with which sanitary authorities have to deal. Among the chief reasons are the extreme contagiousness of the disease, the great susceptibility of children, the fact that the period of greatest infectivity occurs before the nature of the disease is recognized; i. e., prior to the appearance of the rash, and the fact that because of the mildness of the disease in the majority of instances, a proportion of the cases have no private physician in attendance and are never reported to the sanitary authorities.

About 95 per cent. of the cases of measles are reported by physicians. According to the new plan adopted by the department it is proposed to request physicians reporting the cases to take full and responsible charge of the same, terminating them on recovery, and readmitting the patient and other children and teachers in the family to school, in accordance with the regulations of the department of health. Every case from the department giving directions concerning length of time of exclusion from school, etc., will be acknowledged to the physician by postal card, which is accompanied by a blank return-to-school permit to be filled out by the physician when the patient has recovered.

The physician will be furnished blank school permits for the other children and teachers in the family. Cases reported by nurses, dispensaries, institutions, etc. (constituting five per cent. of the known cases), will be supervised by the physicians and nurses of the department, as heretofore.

## HEMADENOLOGY:\* A NEW SPECIALTY.

THE INTERNAL SECRECTIONS—THEIR FUNCTIONS AND BEARING ON DISEASE AND THERAPEUTICS.

BY CHARLES E. DE M. SAJOUS, M. D., LL. D., SC. D.,  
Philadelphia.

(Abstract Communication.)

(Abstract Communication.)

While further emphasizing in the preceding communication (*The New Medical Journal*, June 29, 1915) the importance of the ductless glands in the pathogenesis of idiocy, I urged that we should consider the nerve cell or neuron as an organ, the axis cylinders of which serve as channels for plasma containing adrenal secretion converted into an oxidizing agent. The latter was stated to be capable, in turn, of acting upon the nerve myelin, a phosphorized fat built up in part by the thymic nucleoprotein and sensitized by the thyroid product—nerve energy resulting from these various reactions. Thus conceived, the neuron was shown to be susceptible to direct nutrition, and, therefore, to development as a functional entity, where, as in idiocy, its growth from the neuroblast to the full fledged nerve cell has ceased. It was shown, more-



over, that regional or focal lesions were present in these cases and that these had to be taken into account when therapeutic measures were to be initiated. In the present communication, we were to inquire into the prophylactic and therapeutic possibilities available to us with the ductless glands playing so important a role in the morbid process.

Here, as elsewhere in the realm of rational therapeutics, a knowledge of the pathogenesis of the disorder to be met is necessary before any profitable suggestions can be offered.

With the neuron considered as a structure having a circulation similar to that of other organs, it is possible to understand many features of pathogenesis which have remained obscure. Why, for instance, should alcoholism in the parent prove so prolific a source of idiocy in the offspring? Out of

1,000 idiots, Bourneville found alcoholism either in the father, the father and mother, or the mother only, in 620 instances. While this proportion exceeds greatly that of other observers, owing to the class of individuals which formed the basis of the study, the fact remains that parental alcoholism is a very prominent cause of idiocy—the average ratio of various statistics being about thirty-three per cent.

The annexed Fig. 1, drawn from a photomicrograph, furnishes a striking illustration of the effects of alcohol on the neuron, the section having been obtained from one of the most affected portions of the first cortical layer of a subject whose death had been caused by alcoholic insanity. Beadlike or moniliform swellings are to be seen along the neuraxons, while the terminal tufts and endings of the protoplasmic apical processes, which doubtless play an important role in mental phenomena, have disappeared—though quite clearly seen in the corresponding layers of normal brain specimens stained in the same way. The lesions were probably not due to a direct action on the cell, but to its influence on the plasma, which it renders viscid, and on the vasomotor system. Thus, Bouchard found that alcohol, owing to its feeble osmotic power, inhibited nutrition by delaying the penetration of plasma into the cellular elements, a feature that is now, from my viewpoint, applicable to the nerve cell. Of even greater pathogenic importance, I believe, are the repeated and intense elevations of blood pressure, coupled with paresis of the arterioles due to the primary congestive stage of intoxication, which gives the drunkard his flushed face, and as far as the effect on the brain is concerned, his garrulousness, boisterousness, outbursts of anger, etc. That this engorgement of the neuron is due to high vascular tension is shown by the fact that other poisons may produce it. This is well shown in the second illustration by Berkley, of Johns Hopkins, which portrays the lesions produced by ricin poisoning in animals. The first of the five cells shown is referred to by Berkley as a "psychical call from the second cellular layer of the cortex." Here again we witness beadlike expansions along the axis cylinders and tufts.

It is obvious that disturbances of the cerebral mechanism must follow such lesions, and that the alcoholic transmits to his offspring the predilection at least, to mental invalidism in one of its many forms. Circulatory disorders in the neuron thus stand as a prominent feature of the morbid process, precisely as they do in all other tissues.

This is not, however, the only effect of alcoholism, for it affects directly the ductless glands. The third illustration shows a section from a pituitary derived from a victim of chronic alcoholism. Two areas of the anterior lobe are fibrous.

Whether we adopt the view that the pituitary is

the source of a secretion, or my own opinion that it governs, through nerve paths, various ductless glands, matters little—the functions carried on by the pituitary are more or less compromised. Alcoholism



FIG. 2.—Swellings in the cortical nerve cells of animals after ricin poisoning (Berkley).

invalidates all ductless glands more or less, the initial lesion being hyperemia, with interstitial hemorrhages in some instances, autolysis in others, both processes leading to fibrosis.

The prevailing teaching that the parent endows the offspring with his or her physical status at the time of conception thus finds additional testimony so far as the ductless glands are concerned, for in idiocy traceable to parental alcoholism, the morbid effects of organic lesions in the cerebral neurons and in the various ductless glands of the parent, become manifest in the child as an arrest of development of the corresponding organs. Not only does what clinical evidence we possess agree with this view, but it explains the absence—or untimely involution—of the thymus in so large a proportion of young idiots as seventy-four per cent. reported by Katz, the subjects examined being 292 of the 1,000 cases in which Bourneville had found parental alcoholism to prevail in sixty-two per cent. The thymus being the purveyor, we have seen, of the nucleoproteids which supply the nerve cell or neuron one of its most important constituents for the elaboration of nervous energy, phosphorus, the connection between absence of the organ and mental deficiency is self evident.

The photomicrograph illustrating the fibrous lesions which alcoholism may cause in the pituitary, but represents, as stated, what may occur in all duct-

less glands. As we shall see, these organs are vulnerable to toxemias, the adrenals especially. Such being the case, alcoholism compromises the whole mechanism of ductless gland activity. When such is the case, the offspring inherits not only the inability through thymic deficiency to elaborate the phosphorus-laden nucleoproteids that are necessary for the development of the organ of mind, but also through congenital thyroid and adrenal deficiency, the power to carry on oxidation of the thymic phosphorus thus distributed to all neurons. The very life process of the nerve cell is, therefore, inhibited. That its development, which requires an *excess* of vital pabula, should cease under such circumstances need hardly be emphasized.

The role of parental alcoholism here but illustrates that of parental syphilis, imbecility, insanity, and other disorders to which defective development of the brain has been traced; all entail *deficient nutrition of the neuron through inadequate activity of the thymus which supplies it with nucleins, and of the thyroid and adrenals which supply secretions through which the phosphorus of these nucleins is oxidized.*

Beside the influence of parental disease in the genesis of idiocy, we should not overlook a cause of this condition which is far more prolific than is generally supposed. Not many years have elapsed since some textbooks, referring to the supposedly mild diseases of childhood, measles for instance, countenanced exposure to them "to have them over with." Since the ductless glands have received greater attention from the histopathologist, however, the fallacy of this attitude has been recognized. Several of the infectious diseases of childhood have been found to provoke lesions in various ductless glands, of which hemorrhagic extravasations followed by fibrosis were the predominant features. Irrespec-

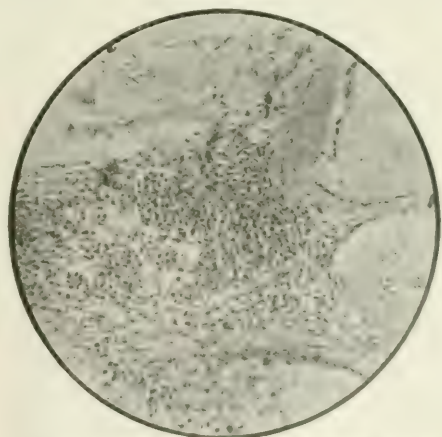


FIG. 3.—Fibrosis of animal pituitary gland with alcoholism.

tive of infections, in which toxins are the main pathogenic agents, various toxemias, due to accumulation of toxic wastes, produce similar results. So manifest are the morbid effects of these lesions that in



case of the adrenal, for example, a special syndrome has been identified as "adrenal hemorrhage," which in its more acute manifestations assumes the type of "adrenal apoplexy," a cause of sudden death in not a small proportion of infants. In some instances this is doubtless due, as I have long urged, to inordinately high blood pressure, and, as a result of this, to rupture of the sinusoidal vessels with which most ductless glands, particularly the pituitary and adrenals, are supplied. In other instances, the lesions are due to autolysis; the local defensive process being too active for the tissues, their cells yield to hydrolysis along with what microorganisms, toxins, endotoxins, autotoxins, detritus, etc., may be present.

The thymus is no exception to the general rule. Dubois has called attention to the presence in this organ of purulent cavities in cases of hereditary syphilis. Schlessinger, in twenty-five autopsies in subjects of this class, found, when the thymus was involved, abscesses in twelve instances, gumma in four, and interstitial hemorrhage also in four, and all these lesions together in the rest. The post mortem studies of Furth, Hecker, Lewis, Wiederhofer, and others have shown that such thymic lesions occur in about five per cent. of all cases of hereditary syphilis. Familiar as we are with the tendency of syphilitic lesions to undergo fibrosis, and with the influence of absence of the thymus in the genesis of idiocy, we are brought to realize that there is good ground for the emphasis laid by French investigators upon syphilis as a cause of imbecility and idiocy in the offspring. Lippmann (1), in fact, asserts in support of this contention, and on the basis of Wassermann tests in 121 mentally defective children in the Uchtspringe asylum, that syphilis is the underlying cause of idiocy in at least forty per cent. of all idiots. This estimate doubtless oversteps the mark, the estimates of French writers being twenty five per cent., while Dean's (2) average, based on ninety-four idiots aged ten years and under, gives it as 21.27 per cent. The fact remains, however, that when all classes of society are taken into account, i. e., not alone public asylum cases, syphilis stands with alcoholism as a prominent cause of idiocy, owing mainly, from my viewpoint, to degenerative lesions in various ductless glands, particularly the thymus.

The variety of toxemias which cause hemorrhage in the thymus may be illustrated by a few examples. Diphtheria is one of the most prominent factors of hemorrhage into the adrenals; as to the thymus, Katz (3) noted long ago its tendency to become either hyperemic, engorged, or hemorrhagic in the course of this disease. Rolleston (4) has also laid stress on the presence of hemorrhage in the thymus in toxic conditions, including asphyxia, and on the influence of back pressure in mitral disease in causing it. This illustrates clearly the role of marked vascular tension in the process. Allen J. Smith (5) found well marked fibrosis of the thymus at the autopsy of a case of congenital hypotonia, a condition due essentially to autointoxication according to this pathologist. Stillborn infants are not infrequently found to have hemorrhagic foci in the thymus, the process proceeding to atrophic cirrhosis, as shown by Durante (6). This is doubtless one of the underlying causes of congenital idiocy.

Measles is so common that it is only when the on-

set of idiocy occurs in a previously normal child coincidentally with the exanthem, and when the immediate parental history shows no alcoholism, syphilis, nor any of the disorders known to promote idiocy in the offspring, that we can connect the two diseases etiologically. Such cases are not infrequent in literature, though the reporters have failed to notice the connection. Bourneville and Crouzon (7), for example, refer to two brothers, sons of perfectly healthy and temperate parents, born at three years' interval, who, though normal at birth and during their first eighteen months, are then stated to have had measles, from which time began a spasmodic diplegia with complete idiocy. The history of the elder brother, which presents adequate details, contains the following suggestive statements: "He had begun to walk when measles came on; after that he ceased altogether" . . . "he again became uncleanly after the measles" . . . "he could say a few words before he had measles" . . . "he had no strabismus until about the second year" . . . "the limbs became stiff as though ankylosed after he had measles" . . . "at sixteen or eighteen months he held himself up about well, trying to walk along chairs. After the attack of measles he held himself very badly" . . . "he drivels and grates his teeth only since he had measles" . . . "very marked valgus occurred on both sides" . . . "the movements of the tibio-tarsal articulation were extremely limited" . . . "idiocy has become complete; he does not pronounce a single word, hardly notices when called, though he will seize bread when it is handed to him." At the autopsy, the cerebellum was found atrophied, but Bourneville and Crouzon remark, "we do not believe that the cerebellar atrophy suffices to explain the symptomatology of the affection; indeed, in the cord degeneration had occurred in the pyramidal bundles." Nor had Charcot "given a precise diagnosis."

In the light of the data I have submitted, we are dealing in the foregoing case, with degenerative lesions in the cerebrospinal and peripheral nervous systems secondary to fibrosis of various ductless glands (none of which unfortunately had been examined histologically in the case described) resulting, in turn, from autolytic or hemorrhagic foci formed in the course of the attack of measles. We have seen that, from my viewpoint, the internal secretions of these organs are deeply concerned with oxidation, and every one knows that hypothyroidism, hypoadrenalism, hypothyism and hypopituitarism are all attended with hypothermia. Bourneville and Crouzon close their paper with a suggestive remark: "Let us mention the very marked (34.4° C. or 93.9° F.) hypothermia which the autopsy failed to explain. We have observed the same phenomenon in other cachectic idiots." And so have I, where stigmata of ductless gland degeneration could be clearly discerned.

On the whole, many cases in literature, the absence of the thymus in seventy-four per cent. of nonmyxedematous idiots, and my own clinical experience have impressed upon me a fact upon which I can hardly lay sufficient stress, viz., that *while parental alcoholism and syphilis may so impair the functional efficiency of the ductless glands, and particularly that of the thymus, as to account for most cases of congenital idiocy, the lesions that occur in the same*

*glands in the course of infantile toxemias and the febrile infections of childhood are equally important in the diseases of acquired adeny.* And in "idiocy" here, we have but the acme, as it were, of the morbid effects of such lesions in the ductless glands, the highest expression of their destructiveness on the mind of the child. The whole gamut of mentally deficient childhood, the so called "backward" child of our schools, is involved in this question, and the sooner the profession at large realizes this fact, the better it will be for humanity at large.

We are now better able to place on a rational foundation the prophylaxis and treatment of these cases. This feature of the subject, as a whole, will be considered in our next communication.

## REFERENCES

1. LIPPMAN, *Myeloid metastases in Hodgkin's disease*, N. Y. Med. J., 1914, 117, 1025.  
 2. DEAN, *Lancet*, N. Y. ed., 1914, 1, 1025.  
 3. KATZ, *Journal of the American Medical Association*, Chicago, 1914, 1, 1025.  
 4. ALLEN & SMITH, *University of Pennsylvania Medical Bulletin*, October, 1914, 1, 1025.  
 5. DURANTE, *Comptes rendus de l'Académie de Médecine*, Paris, 1914, 1, 1025.  
 6. BOURNEVILLE and CROIZON, *Presse médicale*, April 27, 1914, 1, 1025.

(To be continued.)

## Pith of Current Literature.

### BERLINER KLINISCHE WOCHENSCHRIFT.

May 1, 1915.

**Pyodermia or Bockhart's Impetigo**, by P. G. Unna.—Unna cites the original experiments which Bockhart performed upon himself to prove the essential nature of this form of impetigo. He showed that it constituted a primary pustular dermatitis. Impetigo contagiosa, impetigo vulgaris, and Bockhart's impetigo all belong in the same category as due to the presence of pyogenic cocci, although clinically they are quite different. The first two forms of impetigo are always superficial and are harmless affections, while Bockhart's form readily leads to extensive furunculosis and even to sepsis. In this form there first appears a small pustule which is unilocular, not umbilicated, and which leads to a yellow or greenish small abscess. In a few days this dries to a brown crust, which remains for a long time. Typically the disease arises from a neglected furuncle or an infected wound, and is spread by direct inoculation through the finger nails or the clothing. The most important part of the treatment of this disease consists in prophylaxis. When it has developed the healthy skin should be isolated from the infected skin by the application of an antiseptic coating. Among the best are a paste of mercury and phenol in rubber plaster base, an ichthyol paste, pure ichthyol, or a paste of zinc, sulphur, chalk, and oil of turpentine. The pustules should be burned out with a hot metal point, or cauterized with pure phenol. Radical treatment should be instituted for a case with widespread lesions, the best being continuous soaping with one of the antiseptic medicated soaps, in addition to the local treatment of the pustules. Subsequently the zinc-sulphur paste should be employed.

**Essential Thrombopenia**, by E. Frank.—The author shows the various types of purpura to be more or less alike in clinical phenomena when superficially studied. They are also often confounded with

hemophilia. The true constitutional purpura—that for which no primary cause can be found—can be differentiated from the others and from hemophilia by the newer methods of blood examination. This form of purpura shows no hereditary tendency, commonly develops in later childhood (though it may first appear in adult life), and commonly is associated with spontaneous hemorrhages which make it resemble hemophilia very closely. It usually runs a prolonged course marked by repeated attacks separated by intervals of comparative or complete normality. It is probably never cured, the recorded recoveries being temporary spontaneous ones. In severe cases it may run a rapidly fatal course with severe hemorrhages from the buccal cavity, nose, alimentary canal and genitourinary tract. The characteristic blood picture is one of a chlorotic type of anemia plus a great diminution in the numbers of blood platelets (thrombopenia). The blood normally shows delayed clotting in this condition, but this can be caused to occur very rapidly by the application of a few fibrils of cotton. The blood plasma usually clots somewhat slowly, and the clot in it and in the blood is not firm and does not contract well. Three cases are cited which demonstrated these findings clearly.

**Typhoid Abscesses**, by Max Willimeczk.—A study of a large number of recent cases leads the author to the conclusion that such cutaneous abscesses are usually due to invasion by the common pyogenic cocci, although rarely they may be caused by the typhoid bacilli. When they are due to the latter organism, they arise at the sites of some traumatic lesion or in skin areas otherwise damaged.

### ZENTRALBLATT FÜR GYNÄKOLOGIE.

April 1, 1915.

**Röntgen Ray and Radium in the Treatment of Uterine Cancer**, by Futh and Ebeler.—Forty-five cases were treated by radium. Twenty-four of these showed no general disturbances. In the others there resulted various general reactions, slight in character as a rule, excepting in five instances in which marked irritability of the bladder developed. Of the local changes the earliest noticed was a decrease in the suppuration and the bleeding. The tumors soon began to decrease in size and the surface to clean up. The authors believe that this method is a great advance in the treatment of cancer, but they warn against a feeling of too much optimism.

**Conservative Treatment in Chronic Disease of the Annexa**, by Coopman.—Conservative methods should be employed as much as possible. When such are insufficient and there is a collection of material that can be removed by vaginal puncture, this should be resorted to. If indications show the necessity of an operation, the abdominal method should be used. Care should be taken to leave part of an ovary so as to avoid an artificial menopause, and the uterus should not be removed, if it is possible to leave it.

May 1, 1915.

**Light Rays in Gynecological Treatment**, by Van de Velde.—The ultraviolet ray gives the best results in chronic inflammations that are not too deep within the tissues. It also seems valuable in

of general effect, such as improving the condition of a weak anemic patient after an operation. Good results have also been obtained in tuberculous peritonitis. In the treatment of myomas, removal is, as a rule, indicated in the young, while in the old the rays are advised. In regard to the rays in the treatment of cancer Van de Velde believes that radium is of the greatest value. No cancer of the uterus should be treated without it if the best interests of the patient are to be conserved. Every modern gynecologist should have a complete outfit for x ray treatments in his equipment.

BULLETIN DE L'ACADEMIE DE MEDECINE.

**Occlusion of the Lateral Sinus as a Hemostatic Measure in Wounds Involving Large Vessels at the Base of the Brain.** by Lamons and Patel. — Attention is called to the value of artificially induced, permanent occlusion of the lateral sinus in its mastoid portion in wounds at the upper part of the neck, posteriorly or laterally. Great danger from secondary hemorrhage was observed to attend these wounds, the result being either prompt death or the formation of a diffuse hematoma, arterial or venous. Ligation of the carotid in two cases of arterial hematoma was followed in a week by death through spontaneous rupture of the internal jugular vein, and in a case of venous hematoma packing only temporarily controlled hemorrhage, the patient dying. Occlusion of the lateral sinus, on the other hand, was effected with immediate and lasting success in five cases. No untoward result of the procedure was observed except congestion of the superficial veins of the frontal region for a few hours in one of the cases. The packing introduced to compress the lateral sinus was left *in situ* twelve days, and in two cases, absolute certainty of the formation of a clot was attained by puncture of the lateral sinus before the insertion of the packing. Occlusion of the lateral sinus is also recommended as a curative measure in arteriovenous aneurysm of the internal carotid and internal jugular, and for the prevention of hemorrhage in the extraction of foreign bodies imbedded near the styloid process, in the vicinity of large vessels. Illustrative cases are reported.

**New Method of Locating and Surgically Extracting Magnetic Foreign Bodies,** by J. Bergonié. — The method described applies, in particular, to the removal of shell fragments and the German rifle bullets, which are jacketed with nickel steel. It consists in the use of an old x ray induction coil, through which a 110 to 120 or 220 to 240 volt alternating current is passed. In locating an iron containing projectile, the coil is passed slowly around the wounded part, which is meanwhile palpated with the finger. In a certain area the skin is felt to vibrate, owing to vibration of the subjacent magnetic body under the influence of the alternate attraction and repulsion of the induction magnet. The incision is made at the point where the superficial vibration is most marked, the projectile lying precisely beneath this point. At times vibrations of equal intensity are felt at two or three points on different aspects of a part, showing that the magnetic body is equidistant from these several points.

In extracting the foreign body the use of the instrument is continued, the tissue vibrations being palpated with the index finger as the opening in the tissues is deepened. The vibrations increase in intensity as the magnetic body is approached, and the shortest route is thus automatically followed for its exposure.

BRITISH MEDICAL JOURNAL.

JUNE 26, 1915.

**Fatigue Dyspepsia,** by Guthrie Rankin. — Poor innervation of the alimentary canal occurs in persons with hereditary nervous instability, and in those who have overtaxed their nervous capacities. All such cases are accompanied with the underlying symptoms typical of neurasthenia. The chief dyspeptic symptoms may be extremely variable according to the severity and duration of the disturbance. They may at first amount to little more than a fear of certain forms of food, associated with distress after eating. In the later stages acid eructations, severe distress two to four hours after meals, epigastric burning and pain, a sense of great fullness, etc., make their appearance. There is little or no tendency to nausea or vomiting, though the latter is often provoked in the hope of gaining relief from the distress. The taking of food between meals at times relieves the discomfort for a short while. Physical examination in the early stages may show nothing referable to the digestive tract, but later there is often considerable gastric dilatation, tenderness and rigidity in the right epigastric region, and often a distended and filled colon. The general physical signs of neurasthenia, together with some loss of weight and some anemia, accompany the picture. The treatment of such cases should preferably be medical and usually yields good results. Dietetic treatment should demand the greatest restriction in the use of sugar, tea, effervescent wines, uncooked fruit and vegetables, and a limitation of starches and red meats. The meals should be divided up into five during the day, including an afternoon and bedtime drink of cocoa or boiled milk. Medicinal treatment should be directed to the combating of the individual conditions present, but the use of sedatives, alkalies, and later of tonics is particularly to be urged. Lastly, one should employ strict disciplinary measures with morning exercises after a hot bath, and the enforcement of daily rest and annual full vacations.

**Prognosis in Heart Disease,** by C. Edgar Lea. — It is common knowledge that prognosis in heart disease is a very difficult matter, yet it is in just such cases that the physician is most often asked to give an estimate of the probabilities of life and its duration. Such mechanical conditions as adherent pericardium and the several types of malignant endocarditis may be omitted from consideration. This leaves valvular diseases and cardiovascular degenerations. In both of these conditions the factor of greatest importance in prognosis is the condition of the myocardium. Where there is a pulsus alternans, the prognosis is always bad. Aside from the appearance of this demonstrable condition, the best guides for the estimation of the capacity of the myocardium are to be found in the common subjective symptoms such as dyspnea on exertion,



cyanosis, edema, and tachycardia. In addition, no prognosis should ever be given until the patient's response to digitalis has been determined, for if he is capable of being benefited by this drug, his outlook is much brighter than if he is not. When all of these factors have been duly weighed, there still remain certain pathological accidents which cannot be foreseen. These are the possibility of embolism, the inception of auricular fibrillation, cardiac dilatation, and the occurrence of angina pectoris.

**Best Methods of Destroying Lice and Other Body Vermin,** by J. Parlant-Kirchoff.—This preliminary paper reports the results of the experiments up to the present time, but the author says that they are being continued and the conclusions may have to be modified in the light of further knowledge. Simple immersion in water or salt solution did not kill body lice, nor did exposure to boiling water for one minute. Dry heat at 100° C. for one minute was effective against both lice and their nits. The higher paraffins, specially petrol and benzene, readily destroyed both. The same was found true of certain chlorine derivatives of methane, ethane, and ethylene. All five of these agents can be applied to the human skin, the first two in ointments with petrolatum, the latter in soaps. Both benzene and petrol can be used effectively in the dry cleaning of clothes, and are very economical for this purpose. Many other substances reputed to be effective against the lice were found to be without destructive action, although some of the volatile oils did repel these vermin.

#### LANCET.

**Cervical Gland Tuberculosis,** by A. Stanley Griffith.—This study was undertaken to determine whether or not the tubercle bacilli in this form of the disease showed marked departures from the standard of human and bovine types, commonly found in lupus. No such divergence from type was discovered, but interesting information regarding the relative frequency of human and bovine types of infection was obtained. Glands were secured from 110 cases and were examined directly and by culture and inoculation. Of these, ten sets of glands not macroscopically tuberculous failed to produce infection in guineapigs. Glands from twenty-nine other cases, all macroscopically tuberculous, and fifteen of which showed bacilli on direct examination, all failed to infect guineapigs. This shows the large proportion of cases in which the bacilli were no longer active, although it cannot be concluded from this that these cases were entirely cured spontaneously. Glands from seventy-one cases produced tuberculosis in guineapigs. Of these, thirty-seven contained bacilli of the human type and the thirty-four remaining of bovine type. None of the organisms isolated from these glands showed any attenuation in virulence compared with a standard culture of the same type. Macroscopic examination failed to show any one type of lesion which was characteristic of the infection by either form of bacillus. Where, however, microscopic examination showed many short, well stained bacilli, the case was usually one of bovine infection. Analysis of the relative frequency of the two forms

of infection at different age periods showed that the proportion of bovine infections was greatest in children under five years of age (ninety per cent.), but that the bovine type of organism was by no means rare in adults over twenty years of age (twenty-three and a half per cent.).

**Notes on Rheumatism in Children,** by Mary H. Williams.—Rheumatism is a disease which usually begins early in life, even early in childhood; in its disastrous and crippling effects it is second to no other disease, not excepting tuberculosis. Miss Williams regards the condition as an infection, probably due to the micrococcus of Poynton and Paine. While growing pains are often the first symptom of which complaint is made, they are by no means the earliest evidences of rheumatic infection. The rheumatic child can be discovered at the age of five years, possibly earlier. Earlier signs of the disease are an incessant restlessness, a constantly accelerated pulse rate, often reaching 100 or over, and very frequently a constant fever of a little over 99° F. to a little more than 100° F. That such a rise of temperature and of pulse rate are not due to nervous excitement is proved by their being found for years in the same child and always at about the same level for any one child. This observation is based upon over 5,000 temperature records. The heart may show some signs, specially a diffuse apex beat which is often outside the nipple line. In some cases there may be a muffling of the sounds of the heart, but murmurs are seldom found. Abdominal pain and bilious attacks are common symptoms of rheumatism in childhood, and appendicitis is not an uncommon sequel. The frequent occurrence of sore throat in these children is well known. Lastly a rheumatic anemia of variable severity is very common. If the condition is recognized at this early stage of life, if proper care and treatment are instituted, the disease may be permanently checked without serious residual damage.

#### BRITISH JOURNAL OF DERMATOLOGY.

J. CHURCHMAN, EDITOR.

**Frostbite,** by E. G. Fearnside.—The effect of cold is twofold—a period during which the cold is still acting and the primary evidences are manifest and a period during which we deal with the secondary effects. In addition other factors are to be considered, such as the degree of cold, the part of the body exposed, the duration of exposure, whether the surrounding medium is a conductor or a nonconductor of heat, the general health of the person, his nutrition, his mental state and muscular activity. The effect of cold on the human system consists in the alteration of the rhythm of the heart and of respiration and changes in metabolism. When the frostbite is due to actual freezing, friction with ice or cold water or with turpentine and oil is indicated. The part involved should be kept dry, warm and aseptic. In the group of cases where there is vascular and lymphatic derangement, the part affected should be wrapped in cotton wool, should be elevated and either dusted with some simple powder or painted with a two per cent. solution of iodine in alcohol. Active movement should be encouraged from the start. As a preventive against frostbite, the use of

the following treatment has been suggested: Five per cent. of castor-oil made up with suet but particles and complicated.

**Lymphadenoma with Cutaneous Lesions**, by W. Knowsley Sibley.—A boy aged sixteen years had an eruption for eight years. When he was first seen in July, 1914, the child was pale, anemic and had a temperature varying between 100° and 101.08° F. He had a protracted secreted. His sputum was negative. Wassermann and von Pirquet were negative. His urine and blood were also normal. An examination showed a generalized glandular enlargement, also an extensive papular eruption. The lesions were distinctly like tumors. On November 1st, white cells were 23,600; differential count; polymuclear cells, 34.150 per cent.; lymphocytes, 32.3 per cent.; basophiles, 1.76 per cent.; red cells, 4,750,000. At this time the boy was getting weaker. He was put on full pastille doses of x ray and arsenic internally with resulting improvement.

**Morphœa guttata**, by J. L. Bunch.—A case of this affection in a girl aged eleven years is reported. In a month she manifested over her body twelve indurated, porcelainlike spots, some of which were sunken beneath the surface, while some of the recent spots had a pinkish areola. There was some itching preceding the appearance of the lesions. The author reviews briefly the literature of this affection and makes some comments on its pathology.

**Two Cases of Sclerodactylia**, by J. Parker Weber.—Two cases of this affection are described, one in a Russian Jew, a tailor, forty-eight years of age. The patient enjoyed good health until 1907, when superficial gangrene commenced on the fourth toe of his left foot, and the tip of the toe was thrown off. In 1909 the fourth toe of his right foot was amputated. About January of 1914, he acquired an ulcer on the outer side of the left heel. This healed up in three months; he then had a similar lesion on his right heel. In May, 1914, he had gangrene of the second toe of his left foot. The skin over the toes of both feet was stretched out and atrophic and there was purplish mottling. The muscles of the calf were atrophic. There was no pulsation in the dorsalis pedis artery. The blood pressure in the brachial was normal. No sensory changes, no anesthesia, and no intermittent claudication. Wassermann negative. No history of alcoholism; an excessive smoker. Had pyorrhea alveolaris. Blood count gave hemoglobin 60 per cent., red cells 2,600,000, white cells 35,600; polymorphonuclear leucocytes 74 per cent. The second case was in a Jewess, forty-four years of age. Her illness commenced twelve years ago after a stillborn child. She has an atrophic scleroderma which involves her face, neck, and hands. Her feet are also involved. She suffers from frequent indolent painful ulcerations, which result from slight trauma. Her Wassermann is negative. She has no pulsation which can be felt in the dorsalis pedis artery. In this condition, there has been found a thickening of the middle coat of the arteries involved, but no true thrombosis of the vessel lumen. The bone and mus-

cle show the result of chronic inflammation, but the nerves are unaltered.

**Microsporon Tinea of the Scalp in an Adult**, by W. J. Oliver.—This was a case, affecting a woman aged thirty-two years, who complained of itching of the head which she noticed about September, 1914. Three children have tinea tonsurans, showing a microsporon fungus. When the first child manifested this affection, the mother used the same piece of flannel on the scalp of the child with ringworm, on the scalps of the two other children, and also on her own. They have all been attending a hospital where they were treated for ringworm. Some of the infected stumps obtained from the scalp of the mother and also from one of the children were planted on French proof agar and they grew up as a microsporon of animal origin, *Microsporon felinum*.

#### JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

JUNE 26, 1915

**The Nature and Treatment of Bronchial Asthma**, by R. H. Babcock.—In view of the anaphylactic nature of bronchial asthma, the first step is naturally the discovery and removal, if possible, of the focus from which the protein is absorbed when a focus exists in the body of the patient. If, as in some instances, the asthma is evoked by emanations from an animal or other extraneous source, we can do no more than try to protect against exposure; though the establishment of immunity to horse serum or pollen of plants may yet become a positive therapeutic measure. It is probable that most asthmatics have some abnormality within the nose, accessory sinuses, throat, or mouth; and this defect either furnishes the foreign protein or, if in the nose, obstructs nasal secretions and so favors the growth and absorption of bacteria. No possible source of infection, however, in any part of the body, should be overlooked, and a minute inquiry into the history is often of the greatest value. No line of management in this obstinate malady offers so much promise of cure as the use of autogenous vaccines, in addition to the discovery and removal, if practicable, of the focus or foci of infection. The latter may involve much time and trouble, in order that appropriate vaccines may be prepared, and in the meanwhile amelioration of the condition may often be obtained by the administration of atropine, alcohol, or narcotics such as morphine or heroine. Ten minims of a one in 1,000 solution of epinephrine, injected subcutaneously, will in most cases prove highly efficacious, and it is probable that this agent possesses transient antispasmodic or antianaphylactic power. Pyridin, ethyl iodide, and the highly vaunted asthma powders no doubt act in the same way, while at the same time they excite bronchial secretion. Tincture of lobelia, aspidospermin, ipecac, grindelia robusta, or other expectorants may be of service by promoting expectoration, and thereby lessening absorption of bacterial protein when there is extensive bronchitis.

**Treatment of Infantile Paralysis**, by R. W. Lovett.—The therapeutic measures at our disposal in fairly early cases are massage, electricity, and muscle training. Massage improve the local and

general circulation, facilitates the flow of lymph, and retards muscular deterioration; but the transmission of a motor impulse from the brain to the muscle is not hastened thereby. The unintelligent use of electricity month after month, to the exclusion of other measures, has been one of the handicaps which has stood in the way of the best progress in many cases, and this means is now less highly regarded in the treatment than was formerly the case. It is quite possible, however, that it may improve the muscular condition, though the only way to judge of its value is to use it on one side of the body in bilateral cases and use the other side as a control. Muscle training rests on a solid physiological basis and works out empirically better than any other of the measures. A most important point is the possible effect of over-fatigue and the overuse of massage on returning muscular function, a phase of the treatment question almost entirely neglected. Lovett has repeatedly observed that power might begin to return in a very faint way to a muscle under muscle training, and that with care this power would steadily increase; but if that muscle were exercised, even very gently, every day, that power would diminish or disappear. It is advisable, therefore, that such muscles should be exercised not oftener than once in three days at the outset; the work being increased most carefully.

**Experimental Studies of Various Antiseptic Substances; Based on the Work of Sir W. Watson Cheyne,** by R. A. Keilty and J. E. Packer.—The method of Cheyne offers an excellent means for the study, experimentally, of the diffusibility and antiseptic power of drugs, and the results obtained are stated to be confirmatory in some cases, and startling in others, as to the value of well known remedies. The phenol group and thymol have given the best results, and the authors are able to recommend an ointment composed of a base, castor oil, seventy parts; white wax, twenty; spermaceti, ten; with tricresol and thymol, ten per cent. each. Lanolin and wax may be used, but the vegetable base has some advantages. The only drawback is the possibility of toxic effects, and this may be overcome by cautious usage in the amount applied and the interval between dressings. This paste has a wide range in civil life as well as in war, and should prove more effective than ointments in common use on account of the increased percentages of the drugs. The principle of the large dose is to establish asepsis at once in a wound or to maintain it until ideal conditions for surgical treatment are available.

#### MEDICAL RECORD.

*J. M. M. M.*

**The Effects of Radioactivity upon Nasopharyngeal Fibromata,** by D. B. Delavan.—Many favorable reports having been made of radium in the treatment of fibroma of the uterus, it is natural to employ similar treatment for fibroma of the nasopharyngeal region which is relatively very much smaller and much more directly accessible. The success of radium treatment in these growths would not necessarily depend upon the absolute disappearance of the tumor. It is well known that, unlike other new growths, nasopharyngeal fibroma manifests its greatest activity during the years of adoles-

cence, and if, therefore, the size of the tumor can be controlled during the earlier years—until the period of its activity has been passed—nature herself will often bring about a cure. The most hopeful cases seem to be those of slow development occurring in older rather than in younger patients; but even in the case of rapidly growing tumors, in patients far removed from the period of retrogression, the success attained by the use of radium in other types of fibroma would hold out strong hope of its value in these. There is reason to believe, moreover, that the effect of radium upon the growth is active and profound; more may reasonably be expected from it than a moderate reduction in their size. Should radium treatment of nasopharyngeal fibroma prove as effective as it promises—and from the evidence at hand we hope that it may—we shall be able to congratulate ourselves that the unhappy record of surgical failure will be closed. The following is Abbe's method of carrying the radium to the intended part: A celluloid tube about three sixteenths of an inch in diameter, and with one end closed like the end of an ordinary test tube, is cut to the proper length. In the bottom of the section of the tube, the radium is put, and upon it is packed cotton or gauze to keep it in place. The end of a handle made of stout wire is thrust into the tube, and the tube secured to the handle by means of adhesive plaster. For the protection of the normal parts a piece of thin sheet lead, of proper size and shape, is adjusted to the outside of the tube and retained in place by a sufficient wrapping of rubber gauze; the side covered by the lead being directed away from the tumor. One of the nasal cavities is first locally anesthetized, and the radium carrier, properly lubricated, is then passed backward through it until the radium is brought into proper relation with the growth. Proper regulation of the strength of the radium, and of the duration of the exposure, will prevent injury to the surrounding healthy parts.

**Diagnosis of Cancer of the Stomach,** by W. J. Mallory.—The profession should take a less pessimistic view of cancer than it does at present, for it is reasonable to suppose that a more general familiarity with the early symptoms of gastric cancer, and a more universal, diligent, and prompt application of all those tests which have been found to be of diagnostic value, will lead to the recognition of the disease early enough for surgical treatment to be permanently curative in an increasing number of cases. We should distinguish between recognition of precancerous disease (such as chronic ulcer), which is an easy clinical problem, and the recognition of the precancerous stage in the ulcer itself, which is a problem in pathology. The latter refers to the microscopical changes in the tissue cells, immediately preceding cancer, and their relation to each other, and should not be employed to indicate simply chronic inflammation. Whenever the clinician feels positive of the clinical diagnosis of chronic gastric ulcer, he should consider that cancer cannot be ruled out by our present methods of clinical investigation. No time should be wasted trying to make a refined diagnosis, but the ulcer should be carefully and completely excised. In the face of a patient suffering from gastric cancer there is a characteristic pallor,



and the symptoms are often one of defecation and vomiting. Weight, too, comes into, giving a possible criterion. In eighty per cent. of cases the patient is anemic, and there is frequent loss of sleep, and anorexia and malnutrition. Thirst is greatly increased in cases accompanied by obstruction, and vomiting, which is often an important symptom, is naturally earlier and more aggravated when the tumor is situated in the pylorus. Pain, which is usually more or less continuous than in other cases, is immediately intensified by taking even the simplest food or drink. The careful physical examination for the presence of a tumor, although often giving negative results, should never be neglected. The numerous tests used for the recognition of gastric cancer are of two classes; those designed to demonstrate significant changes in the function of the stomach, and those, applicable to cancer in general, for the detection of alterations in the body fluids or secretions. The diagnostic value of the radiographic examination of the stomach is based on the fact that it will show the size, shape, position, mobility and peristaltic movements; but changes in these respects are not demonstrable until the disease has involved the organ to a considerable degree, and, while the changes produced by cancer have their peculiar characteristics, there are other lesions producing similar changes, sometimes hard to be distinguished. Still, there are many instances in which the radiographic examination will furnish decisive data, and it should therefore be employed in all suspicious cases.

#### AMERICAN JOURNAL OF THE MEDICAL SCIENCES

**Pathology of Syphilis**, by J. A. Fordeyce.—The histopathology is uniform. In all stages and in all organs, the lesions begin in the perivascular lymph spaces, as a lymphocytic and plasma cell infiltration. The distribution of secondary lesions, according to Ehrmann, is due to a branching of the vascular stems; in the tertiary stage the ulcerative and destructive character of the lesions finds its explanation in a changed tissue reaction, in the sense of an increased susceptibility to the action of the organisms. Clinical and experimental work has shown that no true immunity exists in syphilis, but that allergia develops during the first incubation period and is complete at the time of the general eruption. This refractory state usually persists as long as the body harbors spirochetes, and when it disappears, with the cure of the disease, the patient is again in a receptive state. In the transmission of syphilis to the offspring the theory of spermatic infection has given place to that of placental infection. Syphilis produces a characteristic type of aortitis very common in individuals. It may be the only lesion in so called latent syphilis with a persistent positive Wassermann reaction; hence the importance of examining all such patients for possible cardiovascular involvement. It is a frequent concomitant of tabes and paresis. Infection of the nervous system probably takes place during the secondary stage. A low grade meningitis may exist for years, or the spirochetes may for years remain quiescent, and then be called into activity. In paresis a mantling infiltration

of lymphocytes and plasma cells is found in the adventitial lymph spaces of the meninges and encephalon, and from its pathological anatomy it is much easier to comprehend this condition than the tract degeneration in tabes. Still, an infiltration of the meninges about the posterior roots between the ganglion and the cord by pressure, producing degeneration of the afferent fibres extending to the posterior columns and leading to an ascending tract degeneration, affords a much more plausible explanation than a primary degeneration without inflammatory manifestations.

**Tests in Chronic Nephritis**, by C. Frothingham, Jr.—The blood pressure determination, repeated urinary examinations, and a study of the ability of the kidney to excrete extra sodium chloride are the most trustworthy tests for making an early diagnosis of chronic nephritis. For prognosis the determination of the nonprotein nitrogen in the blood, the excretion of phenolsulphonaphthalein, and the ability to excrete extra nitrogen in the urine are the most useful tests. By means of these tests it is not possible to group the cases of chronic nephritis in relation to their clinical appearance.

**Practical Importance of Examination of Stools in Infants**, by H. M. McClanahan and J. C. Moore.—Chemical and microscopical examination of stools has passed the experimental or laboratory stage; in any well worked up case the procedure ranks with blood counts and uranalysis in importance. Indeed, in infants with intestinal indigestion it is the only accurate method of determining the food element causing the disturbance. The conclusions drawn from the examination of the stools give information of practical value. Their color, reaction, odor, and consistence all have significance. Black blood, macroscopically visible or appearing as occult blood, in the case of a marasmic infant, nearly always points toward duodenal ulcer or blood swallowed from a fissured nipple. Fresh blood is often caused by a lesion in the colon, by proctitis, or a fissure in the anus. Here careful inspection of the rectum should be made. Mucus always indicates some irritation of the intestinal tract, chemical, bacteriological, or mechanical. Small, flaky fat curds in the stool of a newborn breastfed baby have no significance; nor have such curds any marked significance later in infancy unless accompanied by other clinical signs of an indigestion. The casein curd when accompanied by clinical signs of disturbed digestion, such as colic, diarrhea or constipation, restlessness, etc., usually points to poor proteid digestion. An excess of neutral fat, as shown by the staining method, indicates either a lowered tolerance for fats or an excess of fat in the food. An excess of fatty acids and soaps indicates that the neutral fat has been broken up by the digestive processes, but that for some reason there has been a failure of absorption. This condition should always lead to suspicion of tuberculosis. As to reaction to Lugol's solution, the presence of blue staining particles generally means undigested starch; though certain bacteria accompanying disturbances of carbohydrate digestion stain blue with the solution. In the bacteriological examination the preponderance of the colon or lactic type only need

be determined, a marked preponderance of the colon type indicating a change from normal fermentation to putrefaction.

AMERICAN JOURNAL OF OBSTETRICS AND DISEASES  
OF WOMEN AND CHILDREN.

June, 1915

**Acute Pelvic Inflammations**, by Ward.—The operation of choice is simple incision and ample drainage; there should be as little destruction as possible of the pelvic organs. It also seems evident that in many instances operation is either unnecessary or else performed so early that there is great danger of increasing or disseminating infection. Not infrequently the exudate will absorb without abscess formation. The incision and drainage should not be employed until the indications of a localized collection of pus are well defined and associated with evidences of septic absorption.

**Two Hundred and Twenty-seven Cases of Ectopic Gestation**, by Polak.—In most cases, the symptoms are so typical that a diagnosis should be made readily before actual rupture has taken place; one should not wait for the clinical picture of rupture and internal hemorrhage. Polak divides ectopic gestations into three classes. First, cases in which gestation has been preceded by a varying period of sterility due to some congenital uterine anomaly and not to infection; second, cases in which the tubal lumen has been disturbed by a previous infective process, with a history since marriage of chronic pelvic inflammatory trouble; and, third, the class of women who are subjects of rapidly recurring pregnancies, as found particularly among the foreign population. Most of the observed cases fall within the two latter classes. Polak concludes that drainage, except in infected cases, is a very distinct disadvantage and is a cause of infection of the blood clots. He also does not use any saline by infusion on account of the respiratory embarrassment and even pulmonary edema that may follow. Sufficient liquid may be introduced into the patient by saline solution in the abdomen.

OPHTHALMOLOGY

April, 1915

**Eyesight and Its Conservation in the Prevention of Accidents**, by Mark D. Stevenson.—The physical, mental and moral requirements of the various trades and occupations must be studied and classified. Some positions are safe for certain defectives, although dangerous for others. Applicants should be carefully examined to select the right job for the right man, to care for his efficiency and health. This system would be of value not only to employer and employee, but to the public, which has to pay for mistakes. An amblyopic eye makes a man more liable to accident in some trades, and as he may or may not know of his defect, a slight injury to this eye may lead to a claim, made honestly or dishonestly, for damages for loss of vision. Persons who have suffered from certain diseases have constricted fields of vision and see as through tubes, so although they may see letters across a room they are incapable of protecting themselves against objects moving toward them outside of the space in

which they can see. Special quantitative and color tests are required in certain vocations, and the excessive use of alcohol and tobacco is able to destroy the color perception of a small or distant object without affecting appreciably the general color perception. Persons with contagious diseases of the eye should not be permitted to work where they handle objects from which others are likely to be infected. In many industries so much depends on perfect vision that efficiency as well as the prevention of accidents requires the protection and preservation of the eyesight. Good lighting does not mean overillumination, dazzling, or glare. Eye fatigue, headache, dizziness, and other asthenopic symptoms should be met not only with proper light, but by properly fitted glasses. Many good eyes are lost in certain trades by not wearing protective goggles to arrest flying particles, molten metals, corrosive fluids, ultraviolet, and infrared rays, but much insistence and patience is necessary to persuade workmen to wear them. These protective glasses should be good ones, and no one should be content with cheap substitutes. The removal of foreign bodies from the eye by fellow workmen is dangerous and false economy, as it has led to the needless injury and loss of many eyes. The danger to the eye from the traumatism inflicted by a small foreign body is enormously increased if the patient has an atrophic nasal catarrh, or a dacryocystitis. The dangers of penetrating bits of steel and of sympathetic ophthalmia are understood fairly well. Statistics appended giving the results of vision tests of the employees of a certain company show that of 403 office girls examined, only 371 had both eyes normal, of 926 office men, only 859, and of 8,141 factory employees, only 6328. Among the last, thirty-four had 20/100 vision in both eyes, ten 20/200 in both, six had even poorer vision, and twenty-one were blind in one eye, five having had the eye removed.

**The West Intranasal Partial Resection of the Tear Sac for Dacryocystitis, Dacryostenosis, Phlegmon, or Epiphora**, by J. Sheldon Clark.—The writer is rather enthusiastically in favor of this operation which, he says, preserves a functioning tear apparatus. There is no possibility of an external scar, no epiphora follows, and therefore there is no need of a subsequent operation on the lacrymal gland, such as is often necessary after enucleation of the sac, while an existing epiphora is cured. Furthermore it may be performed in the presence of phlegmon, although one would hesitate to do any external operation, aside from simple incision, under such circumstances. [Unfortunately all writers do not agree in attributing such remarkable efficiency to this operation in all cases of trouble in the lacrymal passages.—Eds.]

**Hyoscine and Morphine as a Preliminary to Local Anesthetics**, by Lee M. Hurd.—Hurd has used hyoscine hydrobromide and morphine in doses ranging from 1/100 to 3/100 of a grain of the former and 1/8 to 10/24 of a grain of the latter, to prevent the effects of shock and fear in operations performed under local anesthesia, especially on nervous patients. The advantage of the procedure is that all shock is avoided. The disadvantages are: It takes much time and experience; its effect differs

widely in different patients, it is unsuitable for use in clinics and most hospitals; commercial samples of hyoscine are not all alike; and there may be a slight fall of blood pressure when the patient sits up. *Thurthill* does not advocate the method as a routine in all cases.

**Chronic Prostatitis a Probable Factor in Iritis,** by P. H. DERNELH.—Three cases of iritis are reported, in men who had gonorrhea six, ten, and twenty years before. Milkings of the prostate furnished in each case a negative diagnosis. We know that the most frequent cause of prostatic disturbance is the gonococcus, that many cases of gonococcal infection cause but few symptoms, and that years may elapse between the last urethritis and the appearance of symptoms of prostatitis. Hence Dernelh is inclined to agree with several other modern writers in ascribing a gonorrheal origin to these cases of iritis.

### Proceedings of Societies.

#### AMERICAN GYNECOLOGICAL SOCIETY.

*Forty-fourth Annual Meeting, Held at White Sulphur Springs, New Hampshire, May 15, 16, and 17, 1905.*

The President, Dr. THOMAS J. WALKER, of Chicago, in the Chair.

(Continued from page 92.)

**Prolapsus of the Uterus.**—Dr. HERMAN J. BOLDT, of New York, stated that before deciding upon a particular operation, it was well to consider whether future offspring was desired by the patient or not. From his point of view, it was perfectly justifiable to give the patient an opportunity to express her wish in that respect, and for them to consider in connection with such a wish the justifiability of granting it. The patient should have a voice in this matter. A simple vaginal hysterectomy for prolapsus of the uterus should have no place in their domain of work, since by it a vaginal descensus could not be cured. During the child bearing period and the uterus in not more than the second degree of descensus, so that perhaps the cervix came down nearly to the vulva, he knew of no surgical intervention which answered an equally good purpose as a ventral suspension by the round ligament according to Gilliam, combined with a plastic operation upon the pelvic floor, but not with too much narrowing of the vaginal canal. If properly done, a permanent cure would result in ninety per cent. of the cases, unless a subsequent pregnancy should undo the result. Patients who had a marked descensus, partial prolapsus, or complete prolapsus, in whom no further offspring was expected, might be treated by a vaginal operation with the expectation of getting a good result. A properly executed vaginal operation would overcome the displacement of the uterus and vagina, as well as any existing cystocele and rectocele. Personally, he preferred the radical vaginal fixation. The technic must necessarily vary with the individual case. In patients who had a complete procidentia of the uterus and vagina, and in whom no further use of the vaginal canal was to be made, as very old women, or widows who did not expect to marry

again, they could do an operation which would guarantee an absolute cure, namely, a total extirpation of the uterus and the vagina, columnizing the vaginal tract by circular sutures.

**Choosing a Time for Operation in Pelvic Inflammation of Tubal Origin.**—Dr. FRANK F. SIMPSON, of Pittsburgh, said it was an axiom in pelvic and abdominal surgery that in competent hands, almost all infections formerly thought to imperatively demand surgical intervention, even at the height of the disease, could be easily converted into conditions suitable for elective work. Practically the only exceptions to this rule were traumatic injuries, intestinal obstruction, perforative lesions of hollow viscera, and some cases of appendicitis and of tubal gestation. In his judgment the questions of mortality, or postoperative morbidity, and the smoothness of convalescence depended almost entirely in competent hands upon a strict adherence to the following postulates: 1. The patient should have recovered from her acute illness and should have regained a satisfactory margin of reserved strength. 2. The temperature should not have risen above normal for a minimum period of three weeks. 3. There should have been no marked or persistent rise of temperature after a careful bimanual examination. 4. The inflammatory exudate surrounding the focus of infection should have been completely absorbed. No one of sound judgment would think of choosing as a subject for elective operation, a patient acutely ill from pneumonia, typhoid fever, scarlet fever, etc. The same principle applied to those suffering from the effects of bacterial poisonings generated in the pelvic structures. As pelvic infection of tubal origin rarely killed, most operations should be done only at the quiescent or elective period.

The temperature should not have risen above normal a single time for a minimum period of three weeks. This was an empirical rule based upon the belief that it frequently required three weeks for Nature to destroy all bacteria and to restore the affected tissues to the normal. All operators of experience knew the serious technical difficulty confronted when intestinal wall and other structures were still infiltrated and friable—stitches torn out, raw surfaces could not be folded in, peritoneum could not be glided over denuded areas, and serous and bloody oozing from infected surfaces tempted them to the use of drainage and invited adhesions, intestinal obstruction, fecal fistula, hernia, etc. An analysis of the first 456 of his series of 856 consecutive abdominal sections was made in a paper read at a meeting of the society in 1905. A study of the records of 400 additional abdominal sections done in part or in whole on account of inflamed tubes showed that there had never been an exudate, or that the exudate had been completely absorbed, 340 times with only one death and without postoperative complications. An exudate of variable extent was present in sixty cases; in forty-four instances it was slight. In this series there were two deaths and twenty patients had a stormy convalescence. In the remaining sixteen cases, there was a marked exudate. Two of these patients died. The remaining fourteen were seriously ill after operation. Where the exudate was marked at the time of operation, the death rate was 12.5 per cent. Where the exudate



was slight, the death rate was 4.6 per cent. Where there was no exudate the death rate was less than 0.33 per cent.

It was evident that in the series of cases analyzed a more rigid adherence to the four postulates given would have resulted in a material reduction in the death rate. It was clear, therefore, that the only safe time to operate was when the patient had a fair margin of reserved strength, when she was not acutely ill, and absolutely no inflammatory exudate would be opened into the free abdominal cavity.

Dr. JOSEPH BRETTAUER, of New York, said when they went back ten or fourteen years and compared the sense contained in the papers read at that time with that of papers read today, they marvelled at the discrepancy. He had heard members of the society read papers the gist of which was to operate as soon as they saw the patient, exudate or no exudate, if they could remove the tube. If they could not pack the entire pelvis with iodoform gauze and drain, they said it was preferable to remove the diseased organ. He did not remember the exact death rate after this interference. He had never done anything except to follow the practice as outlined by Doctor Simpson. Not only did they minimize the death rate by conservative measures, but they decreased the number of patients for whom they found an operation necessary. Many of these patients did not need an operation in the case of purulent collection in the tubes or in abscess formation. The pathological and anatomical end results were a tubo-ovarian cyst, a closure of the tube with adherence of the ovary, breaking through of the follicle into the tube with a resulting tuboovarian cyst, which, in a great many instances never required an operation because there were no symptoms, and it was detected often by mere accident.

Dr. JOHN O. POLAK, of Brooklyn, applied the plan outlined by the essayist eight or nine years ago and followed it to the degree of overconservatism, but he thought he had saved hundreds of organs. He had been surprised to find how perfectly the pelvis had regenerated, not only as regards functional ability, but as to the actual possibilities. For instance, he had seen cases after three or four years absolutely clear up and pregnancy occur after mixed infection.

Dr. THOMAS J. WATKINS, of Chicago, agreed with Doctor Simpson except that sometimes it seemed of value to operate very soon after these patients had acquired complete immunity to infection. They had made some observations, and it was quite safe to conclude that the increased amount of raw surface resulting from operating as soon as immunity had occurred, was so much greater than the raw surfaces which remained after operating, if the adhesions had become somewhat organized, as to make the advantage in favor of the later operation. The number of adhesions encountered in operating at an earlier period were undoubtedly greater, many of them being absorbed more readily than they were during a later period.

Dr. DOUGAL BISSELL, of New York, was in perfect accord with everything contained in this paper. The mortality from persistent operations in cases of acute pyosalpinx and pelvic inflammations was very high, and with increased experience he refused to

operate in these cases, and in following that practice his mortality had been very low.

Dr. J. WESLEY BOVEE, of Washington, D. C., as soon as Doctor Simpson told him of his method of treatment, adopted it, and in conjunction with the leucocyte count, had followed it very thoroughly with the exception of two classes of cases. In tuberculous cases he would operate at once. In these one could hardly expect Nature to bring about a successful cure. He had markedly gone afield in the acute gonorrheal cases. He was not yet ready to report on his work in this regard. He had not seen the abdominal conditions after this procedure, but he had sterilized the vagina and vulva with iodine and the interior of the uterus by injecting it, the vagina and the Fallopian tubes, opening the abdomen, separating adhesions, painting all raw surfaces thoroughly, but not normal peritoneum, with iodine, putting in drains before he opened the abdomen, and then draining through the cul-de-sac of Douglas, and he had been pleased with the results. He had done this in the acute cases with a temperature of 103.6° F. For the cases that were more subacute and with lower temperature he did not think the plan was feasible.

Dr. H. S. CROSSEN, of St. Louis, had more or less difficulty in determining when to operate upon a mass that had passed the acute stage and was in the subacute or chronic stage. It might be two months or two years since the acute infection took place, and it was a question whether to do an abdominal operation or not. They could often determine a gonorrheal infection, and it was safe to operate within three months afterward or two months after sterilization. If it was a streptococcus infection, it was never safe. Streptococcal masses were in many instances found self sterilized. On the other hand, there had been other cases reported in which the infection had lasted as long as six or even twelve years.

**Points in the Diagnosis of Ectopic Gestation.**—Dr. GEORGE TUCKER HARRISON, of Charlottesville, Virginia, said the diagnosis of ectopic gestation often presented few difficulties, but at other times there was no problem so difficult as the establishment of this pathological condition. One error of diagnosis must be carefully guarded against, and that was to assume that the case was one of hematocele, when in point of fact it was a tubal sac, situated in Douglas's cul-de-sac. Such a case he reported some years ago. The deep situation of the fetal sac in Douglas's cul-de-sac and the rough, uneven surface above simulated the characteristic phenomenon of an accumulation of blood in the posterior pelvic cavity. Before he saw the woman, she had suffered a chill, followed by fever. When she came under his observation the temperature was 105° F. His diagnosis was hematocele which had become infected. A posterior colpotomy was performed and to his surprise, on entering the cavity with the finger, a fetus of four months was discovered. Fearing a fatal hemorrhage the placenta was not removed, but treated by continuous irrigation. The patient ultimately made a good recovery. To mistake uterine gestation, the uterus being in a position of lateral flexion, for a tubal gestation seemed to be unjustifiable, and yet such mistakes had been made by competent men.

Dr. ARTHUR H. CURTIS, of Chicago, said in the

ingress, he wanted to mention possible enlargement of one ovary. This was due to the presence of a corpus luteum. Such enlargement was often no greater than that in association with normal menstruation, but it was great enough so that the ovary was noticeably enlarged and felt about double the size of the normal.

Dr. PETERSON A. HARRIS, of Paterson, New Jersey, said they should not place too much reliance on the physical examination of the pelvis in any stage of pelvic congestion, because he did not know of any pathological state in which they would find a greater variety of conditions, owing to the fact that when they had ectopic gestation to deal with, it was likely to present varied conditions and symptoms in different patients. He had come to think that the important thing was to get at the primary history.

Dr. HERMAN J. BOLDT, of New York, said the correct diagnosis of ectopic gestation was by no means easy. A condition that had given most trouble and which made the diagnosis difficult had been that in which they had a virulent inflammation of the annexa. He knew of no condition, so far as the history and the objective symptoms went, which was so likely to lead to error in diagnosis.

(This is concluded.)

### Letters to the Editors.

#### MEDICAL CLIQUES.

NEW YORK, June 22, 1915.

Having been abroad some years, I have only recently learned that in this country of an organization called the American College of Surgeons. As I notice that some gentlemen put in front of their names F. A. C. S., it appears that there is also an organization called the American College of Physicians; so that now there are two classes of physicians and surgeons in this country, those who belong to the A. C. P. & S. and those who do not. The former seem to have assumed a sort of dictatorship. Dr. William L. Rodman, in his address before the A. M. A., published in the current issue of the JOURNAL, quotes Dr. J. M. T. Finney—of whom, I must confess I have never heard before, though I read medicine in four languages—to the effect that the public must be educated to distinguish between the honest, well trained surgeon and the charlatan, with a private hospital and an all too easy

A medical diploma, then, in the eyes of Doctor Finney and Doctor Rodman, amounts to nothing, nor does a private hospital. Does connection with a public hospital necessarily prove honesty and ability? Having graduated some twenty-two years ago, I know how hospital positions are acquired in some cities of this country. I know that in some hospitals the places go to the highest bidders, or to the one belonging to the clique. As to private hospitals, in Germany, for instance, famous surgeons like Dührsen operate in private clinics. The famous French surgeon, Doyen, operates also in his private clinic; and in this country did not McDowell, of whom the American surgeons are prating so much, perform his famous ovariectomy at his house? I am not a surgeon, therefore I cannot be suspected of ulterior motives. I write this simply to say that this is unfortunately a country of combines and pools.

mouth of the one who does not belong to the gang. This great and most glorious land is an ideal country for the gangster in whatever line he is, whereas those who do not belong to any gang have simply to starve. If a medical diploma amounts to nothing, and this seems to be the case, then the existence of a medical college is simply a shame.

B. PATERSON, M.D.

#### UNREMUNERATED ACTIVITIES OF PHYSICIANS.

NEW YORK, July 2, 1915.

To the Editors:

When I visited a drug store the other day which the Government officials were investigating, I asked one of them if they contemplated visiting physicians' offices, to which he replied "Yes, very soon now." Later on when I went down to Sixteenth Street and Third Avenue to register, in accordance with one of the new regulations, a sign posted on the window of the building announced the removal of the office to Twenty-seventh Street and Broadway. Upon arriving at the latter place, I remarked to the gentleman in charge that all this was quite an inconvenience to the physicians, to which he replied "Yes, but it is worse for us," which prompted me to say that he would no doubt have it easier after next election.

The foregoing is simply illustrative of the ever growing tendency to put additional burdens on physicians, as evidenced by the exacting requirements of city, State, and Federal laws enacted from time to time. In all due justice, it must be conceded that the physician is a very useful member of society, whether at the bedside or on the battlefield, and the tendency should be to help rather than hinder him in the legitimate performance of his duties toward the public; and it is with this thought in mind that I call attention to the disposition to overlook the value of the services rendered by physicians to the general welfare—and particularly to the great amount of service which they devote to humanity, through hospitals, clinics, and otherwise, without any compensation, and very often at great personal sacrifice. No doubt the public will come to realize this more fully when, as a result of all such excesses in the way of restrictive and burdensome legislation, physicians generally will be forced to exact compensation for all services rendered by them, which must inevitably result in a great deal of hardship to the general public.

J. COGHLAN, M.D.

#### THIRD DAY IN APPENDICITIS.

NEW YORK, July 5, 1915.

To the Editors:

In reply to your editorial article on The Fatal Third Day in Appendicitis, I, for one, contend that there would be no fatal third day in the most majority of cases, if the medical treatment today were sane, as it formerly was, in my judgment. At that time, continued warm, soothing applications were used instead of the ice bag which lessens pain, I know, but unfortunately arrests circulation and the possibility of an inflamed organ again becoming normal. In many instances, if the now discarded leeches were first applied, more or less free bleeding allowed, and subsequently the warm, soothing applications were instituted, the patient would avoid many operations. Further, small repeated doses of deodorized tincture of opium or codeine, by the mouth, and large oil and flaxseed enemata, would help to reduce the mortality very much. A liquid diet and the recumbent posture are essential and should be insisted upon.

With this treatment, there would be occasional deaths from perforative appendicitis, as there used to be, but not more, I believe, than from the craze for too frequent surgical interference. I have seen many a case of appendicitis and been able fairly to compare the old with the new, as to treatment. I firmly believe that in not a year, but within another few years, operations for appendicitis will be considered the opprobrium of surgery.

BEVERLEY ROBINSON, M.D.

#### A DISAVOWAL.

NEW YORK, July 1, 1915.

To the Editors:

In view of the publicity which has been given by the lay press to a method of treating inoperable cancer, and the use that has been made of the name of the Polyclinic Hospital therewith, the management desires to disclaim any connection with, or responsibility for this method of treatment. The cases that have been treated in the hospital have been received as the private cases of physicians who have the privilege of sending patients to the pay wards and private rooms of the hospital.

BOARD OF MANAGEMENT, POLYCLINIC HOSPITAL.

## Book Reviews.

[I will publish full lists of books received, but not acknowledge any obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

**Evolution and Disease.** By J. T. C. NASH, Captain, R.A.M.C., T.F., S.S.; Diplomate in Public Health, University of Cambridge; Doctor of Medicine, University of Edinburgh, etc. New York: William Wood & Co., 1914. Pp. viii-73. (Price, \$1.40.)

The first important particular in which this work differs from most books on evolution, is that it is by no means dry. Doctor Nash, who has based it upon the Chadwick public lectures which he delivered in 1913, is one of those all too rare physicians with the gift of entertaining as well as instructing his auditors, and we may well be thankful for this combination of interest and orthodox scientific teaching. The first three lectures are brief—necessarily so—summaries of the epidemics of the middle ages, and the subsequent chapters deal with the evolution of pathology. The final chapter is devoted to war as a factor in the evolution of epidemics and conveys a warning of the problems which are likely to confront us at the termination of the present Titanic struggle. Chapter VII on insanitation gives a distressing picture of conditions at the beginning of the nineteenth century, which, however, was probably a great improvement on what preceded. Within the memory of middle aged people are the soft wood floors, and carpets extending to the walls, of twenty-five years ago, superb resting and breeding places for disease. Evolution, by the way, is used in this work in its classical acceptance, and Doctor Nash attempts to prove that the diseases that we know are not those of former times; for instance, measles, scarlet fever, and diphtheria may have had a common ancestor. The strange results achieved by Madame Victor Henri and reported by Roux, in the cultivation of the anthrax bacillus under ultraviolet light *in vitro*, seem to support Nash's thesis. There is a hint that the general neglect and carelessness of former days about sanitation was due to universal drunkenness, rather, a fascinating thesis to follow up. Doctor Nash points out that little has ever been accomplished through sentiment; sharp lessons have always been needed, not mere loss of life, but heavy losses of money, to stimulate reform. Over 30,000 lives were lost in one typhus epidemic in England and Wales in 1847, but it was not until the well to do had to meet the advanced poor rate that the necessity for sanitation was understood. It is the poor, however, who must learn the principles of preventive medicine, and to that end, physicians should become members of governing bodies. As Nash says, it is not only lawful and right, but it is the prerogative and duty of the medical man to take his place in the councils of the nation, which have for long been the too exclusive preserve, as well as the happy hunting ground of his fellow professional, the lawyer; he cites Chadwick, who said cleverly, that man could beat fate by getting behind fate itself and suppressing the forces which led up to it.

This book should be extensively read. Physicians will find in it much that is commonplace to them, but they will be reminded of what it is necessary to hammer into the layman's head; and they should induce their lay friends to read it. The volume is a handy one, but it would look better and probably sell better if it was printed in larger type and on better paper. It is an unusual book, absolutely sound scientifically and, as we have said, of remarkable interest.

**Public Health Laboratory Work.** By HENRY R. KENWOOD, M.B., F.R.S. (Edin.), D.P.H., F.C.S., Chadwick Professor of Hygiene and Public Health, University of London; Medical Officer of Health and Public Analyst for the Metropolitan Borough of Stoke Newington; etc. Sixth Edition with Illustrations. New York: Paul B. Hoeber, 1914. Pp. xi-418. (Price, \$4.)

This is an excellent book, well arranged and well written. The problem of laboratory diagnosis presses hard upon some health departments, particularly in our smaller and newer States, but the times are changing and we hope that

the methods described by Kenwood, being written in English, will command respect and attention where they are still but slightly known. Scientific analysis in public health work, involving a hard technical training, is coming in everywhere gradually, for momentous changes are realized slowly. Accordingly, the few who have not been outpaced in their studies of public health problems, will feel in this book a call to a more definitely modern procedure unhampered by archaic views either of hygiene or biology. To meet the kaleidoscopic needs of the day, a public health official must be a master of the new methods. These facts justify the careful restatement of the subject and the equally modern outline in this work, and it is a fortunate thing that this restatement and this careful outline should be made by such a capable man. It would be too much to say that the book contains everything that is practised by laboratory experts, but it presents everything in such a form as to be uncommonly useful to students and experts. The chapters on milk contain many problems that are fairly faced, but something is left unsaid. The chapter on sewer air, air of mines, marsh air, strikes one as being exact and profound, though not without some inevitable loss, at least, loss through lack of references. We regard this book, however, with well nigh unimixed approval. It would be better, if it were larger.

## Interclinical Notes.

**The Medical Press and Circular** for June 16, 1915, has an editorial article on digitalis, which reminds us of the saying of a well known New York specialist that "the proper prescribing of digitalis is an art." Digitalis is a wonderful drug; and any list of "twenty indispensable therapeutic aids," whatever else it may contain, is sure to have digitalis, as well as mercury and quinine.

\* \* \*

Every doctor with a garden should read John J. Ward's article on the ladybug in the July *Strand*, in which he exonerates that pretty insect from the accusations brought against her. When we learn that one aphid or plant louse may, in four weeks, become the progenitrix of five thousand nine hundred and four million nine hundred thousand individuals, and that the ladybug is the chief enemy of the aphid, we feel that her spotted ladyship ought to be protected. S. Leonard Bastin tells the secret of making giant pumpkins; perhaps the process may some day be adapted to making giant animals.

\* \* \*

A great surgeon, a country practitioner, and a former trained nurse make up the dramatis personæ of *The Discovery*, by Austin Philips, in the July *Strand*. It is a good story and none of the characters makes any unprofessional "breaks," which is something to be grateful for. To be sure, the surgeon remarks that his mother once suffered from "rheumatism" of the wrist and forearm, but a surgeon might easily speak in that loose way of a nonsurgical condition.

## Official News.

### United States Army Intelligence:

**Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the month ending June 15, 1915.**

**Bierbower, Henry C.** First Lieutenant, Medical Reserve Corps. Relieved from duty in the Philippine Islands to take effect on or about April 15, 1915, and ordered to return to the United States. **Cobb, Farrar.** First Lieutenant, Medical Reserve Corps. Resignation of commission in the Medical Reserve Corps has been accepted by the President, taking effect on June 21, 1915. **Dunbar, Lee R.** Captain, Medical Corps. Ordered to proceed to Ludington, Mich., for duty at the camp for troops to be held from July 5 to August 8, 1915, and upon completion of that duty to return to his proper



station. **Duval, Douglas F., Major, Medical Corps.** Assigned to duty at Fort Myer, returned to take effect about June 15th and has present leave of absence until July 1st. **Edger, Benjamin L., Major, Medical Corps.** General leave of absence to take effect about June 15th and terminate August 4, 1915. **Fronek, C. E., Captain, Medical Corps.** Returned

**Halliday, Charles H.**, First Lieutenant, Medical Reserve Corps. Relieved from active duty in the Medical Reserve Corps, to take effect June 29, 1915. **Howard, Deane C.**, Major, Medical Corps. In addition to his other duties is designated as consulting surgeon for the Walter Reed General Hospital, Washington, D. C. **Humphreys, Harry G.**, Captain, Medical Corps. Ordered to proceed on July 1, 1915, to Fort Oglethorpe, Georgia, and report to the commanding officer for temporary duty. **Leighton, William E.**, First Lieutenant, Medical Reserve Corps. Resignation of his commission has been accepted by the President, to take effect June 21, 1915. **Mount, James R.**, Captain, Medical Corps. Granted four months' leave of absence to take effect upon his arrival in the United States. **Pinkston, Omar W.**, Captain, Medical Corps. Ordered to proceed on July 1, 1915, to Fort Oglethorpe, Ga., and report to the commanding officer for temporary duty. **Proxmire, Theodore S.**, First Lieutenant, Medical Reserve Corps. Ordered to active duty, and will report to the commanding officer, Fort Sheridan, Illinois, on July 2, 1915, for duty until September 30, 1915, after which he will stand relieved from active duty. **Putnam, Victor E.**, First Lieutenant, Medical Reserve Corps. Ordered to active duty from June 24, 1915, and will report to the commanding officer, Fort Riley, California, for temporary duty. **Raymond, Henry L.**, Colonel, Medical Corps. Relieved from duty at Fort Riley, Kansas, on July 1, 1915, and will then proceed to San Francisco, Cal., and assume charge of the Medical Supply Department. **Register, Edward C.**, Captain, Medical Corps. Granted leave of absence for one month to take effect about September 15, 1915. **Reynolds, Royal**, Captain, Medical Corps. Granted leave of absence for one month, effective about July 1, 1915. **Ruffner, Ernest L.**, Major, Medical Corps. Ordered to proceed at the proper time to Chicago, Ill., and report in person on July 1, 1915, to the commanding officer, Central Post Department, for duty with the State encampment of the Sanitary detachments of the Organized Militia during July and August, 1915, and upon completion of that duty will return to his station. **Schreiner, Edward R.**, Major, Medical Corps. Granted leave of absence for one month. **Strong, Francis X.**, Captain, Medical Corps. Relieved from duty in the Philippines to take effect on or about November 15, 1915, and directed to proceed to the United States and report for further orders. **Winn, Robert N.**, Major, Medical Corps. Granted one month and fifteen days' leave of absence on surgeon's certificate of disability.

## United States Public Health Service:

Commissioned and other officers of the United States Public Health Service, in accordance with the provisions of the Act of March 3, 1901, (31 Stat. 1024), to be paid at the rate of \$100 per month, and at the rate of \$150 per month, respectively, for the year ending June 30, 1902.

**Alford, Neil**, Acting Assistant Surgeon. Granted five days' leave of absence, from June 29, 1915. **Bahrenburg, L. P. H.**, Surgeon. Leave of absence for fifteen days from June 1, 1915, amended to read twelve days' leave of absence from June 5, 1915. **Banks, C. E.**, Senior Surgeon. Granted fourteen days' leave of absence, from July 6, 1915. **Cody, E. E.**, Acting Assistant Surgeon. Directed to proceed to Boston, Mass., for instruction in the medical examination of arriving aliens. **Robinson, D. E.**, Surgeon. Granted three days' leave of absence, from June 25, 1915. **Rucker, W. C.**, Assistant Surgeon General. Designated by the State Department as delegate on the part of the United States to the Pan-American Medical Congress, at San Francisco, Cal. **White, I. H.**, Senior Surgeon. Granted six days' leave of ab-

road concerned.

A board of medical officers is hereby convened to meet at the Marine Hospital, Chelsea, Mass., on Thursday, July 1, 1915, for the physical examination of an officer of the United States Coast Guard. Detail for the board: Surgeon B. W. Brown, Chairman; Acting Assistant Surgeon H. B. C. Reimer, recorder.

Births, Marriages, and Deaths.

Born.

**Buerger.**—In Edgemore, Long Island, on Sunday, June 27th, to Dr. and Mrs. Leo Buerger, of New York.

Married.

**Baker—Bourne.**—In Fitchburg, Mass., on Tuesday, June 22d, Dr. Leonard A. Baker and Mrs. Etta Bourne.

**Carroll—Dooley.**—In Randolph, Mass., on Thursday, June 24th, Dr. Thomas Francis Carroll, of Brockton, Mass., and Miss Elizabeth O. Dooley.

**Dunderman—Dettling.**—In Akron, Ohio, on Thursday, June 24th, Dr. Frank V. Dunderman and Miss Louise Clara Dettling.

**Horton—Clift.**—In Chattanooga, Tenn., on Saturday, June 10th, Dr. Joseph W. Horton and Miss Florence Clift.

**Lewis—Emmons.**—In Jamestown, R. I., on Saturday, June 26th, Dr. James P. Lewis, of Boston, and Miss Marie Dupont Emmons.

**Rockwell—Wetherbee.**—In Boston, on Tuesday, June 22d, Dr. Alfred E. P. Rockwell and Dr. Lucy E. Wetherbee.

**Sanders—Murphy.**—In Council Bluffs, Iowa, on Wednesday, June 16th, Dr. John A. Sanders and Miss Marguerite Murphy.

**Schaeffer—Wills.**—In New York, on Monday, June 21st, Dr. Forrest G. Schaeffer and Miss Grace Wright Wills.

**Sewall—Gordon.**—In Boston, on Thursday, June 10th, Dr. Edgar Floyd Sewall, of Somerville, Mass., and Miss Edna Florence Gordon.

**Silcocks—Pattison.**—In North Adams, Mass., on Wednesday, June 23d, Dr. William E. Silcocks, of Green Island, N. Y., and Miss Ethel A. Pattison.

**Smith—Akeley.**—In Santa Barbara, Cal., on Thursday, June 10th, Dr. Wilburn H. Smith and Mrs. Clara Rood Royce Akeley.

**Wilson—Hastings.**—In Springfield, Mass., on Wednesday, June 9th, Dr. Samuel Forman Wilson and Miss Della Almira Hastings.

## Died.

**Clarkson**.—In Haymarket, Va., on Thursday, June 17th, Dr. Henry M. Clarkson, aged seventy-nine years.

**Combs**.—In Columbus, Ohio, on Monday, June 21st, Dr. Rebecca V. Combs, aged sixty years. **Fisher**.—In Pittsburgh, Texas, on Friday, June 18th, Dr. Robert Perry Fisher, aged seventy-six years. **Hoffmann**.—In Brooklyn, N. Y., on Thursday, June 24th, Dr. Henry Otto Hoffmann, aged seventy-seven years. **Jordan**.—In Gibsonville, N. C., on Sunday, June 20th, Dr. G. E. Jordan, aged fifty-six years. **Knapp**.—In Canastota, N. Y., on Saturday, June 26th, Dr. James W. Knapp, aged sixty-two years. **Livingood**.—In Philadelphia, on Friday, June 25th, Dr. Horace F. Livingood, of Womelsdorf, Pa., aged fifty-six years. **Poole**.—In Hyndman, Pa., on Thursday, June 17th, Dr. Bushrod V. Poole, aged seventy-eight years. **Priest**.—In Portland, Me., on Saturday, June 19th, Dr. Mary A. Priest. **Small**.—In Kane, Pa., on Sunday, June 20th, Dr. Stanley G. Small, aged forty years. **Spruill**.—In Baltimore, Md., on Thursday, June 24th, Dr. St. Clair Spruill, aged forty-nine years. **Stalker**.—In Borden, Ind., on Friday, June 25th, Dr. Benjamin F. Stalker, aged seventy years. **Stephens**.—In St. Louis, Mo., on Thursday, June 24th, Dr. George W. Stephens, aged sixty-six years. **Stewart**.—In Duluth, Minn., on Tuesday, June 22d, Dr. Charles A. Stewart, aged sixty-seven years. **Temm**.—In St. Louis, Mo., on Saturday, June 26th, Dr. Francis Temm, aged forty-nine years. **Wilbur**.—In Middleboro, Mass., on Thursday, June 24th, Dr. Allison C. Wilbur, aged forty-five years. **Wilhelm**.—In Eufoia, N. C., on Saturday, June 19th, Dr. William W. Wilhelm, aged sixty years. **Windsor**.—In Baltimore, Md., on Monday, June 21st, Dr. Samuel J. Windsor, aged fifty-two years. **Zimmerman**.—In Pocahontas, Va., on Wednesday, June 23d, Dr. George H. Zimmerman, aged fifty-seven years.

# New York Medical Journal

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WHOLE No. 1911.

### Original Communications.

#### THE PSYCHOLOGY OF STAMMERING.\*

BY G. HUDSON MAKUEN, M. D.,

Philadelphia.

Stammering, or stuttering, as the Germans prefer to call it, is an affection characterized by the inability to freely use oral language in the expression of thought and feeling. The affection appears in two more or less distinct stages, an initial or acute stage and a chronic stage.

The initial stage of stammering usually begins during childhood and seems to have a purely physical basis, the stammerer himself not having reached a sufficient degree of psychical development to quite understand or even to notice his condition, and it is only after his attention has been called to it, either by his own increasing difficulties of speech or, as is more common, by the remark of some well meaning friend, that the affection begins to take root and grow in his consciousness until it assumes such proportions as to overshadow everything else in life. This is the beginning of the second or chronic stage, in which the stammering may persist and increase in severity even after the original physical basis for it has ceased to exist. In these cases, the secondary manifestations, such as mental confusion, anxiety, fear, and the autosuggestions which always accompany strongly emotional states, appear to assume causal relations to the affection and suffice to aggravate and perpetuate it.

The etiology of stammering has been a subject of discussion for centuries, and yet it is only recently that satisfactory conclusions have been reached. Much confusion has arisen from the fact that no two stammerers are alike, and in seeking the primary cause, the difficulty has been to find one that will explain all the phenomena of the affection.

In a paper read before the Chicago Medical Society, in 1910, I described the causes of stammering as being twofold, predisposing and exciting. I said that the predisposing or ultimate cause of stammering is probably congenital and often inherited, and that it consists in an irritable or hyperesthetic condition of the psychomotor mechanisms of speech; my thought being that stammering is a form of aphasia, and that like aphasia, it probably has a physical basis which may or may not be demonstrable.

Still more recently and with greater clearness, Mr. C. S. Bleumel, himself a stammerer and somewhat

of a psychologist as well, crystallized my notion as to the causation of the affection by calling it a transient auditory amnesia, and after reading his excellent book I regretted that I had not thought of this very expression.

The speech processes, like all other similar phenomena requiring the action and coordination of muscles, are centrally represented, and the integrity of their performance depends upon certain well ordered if not well known central stimuli.

Of the four so called language centres in the cerebral cortex, the auditory and glossokinesthetic centres constitute what Bastian has called the "primary couplet" representing spoken language, and the remaining couplet, namely the visual and chirokinesthetic centres represent written language. While it is doubtless true, as has been suggested, that individuals vary in respect to the predominance of these various centres in the use of spoken and written language, yet there are good reasons for supposing that the average hearing person depends for his speech cues upon both auditory and glossokinesthetic memories, just as the average seeing person depends upon his visual and chirokinesthetic imagery for his cues in the use of written language. The average stammerer, therefore, is what has been called an *auditomoteur*, and his chief difficulty must be in the action of one or both of the centres suggested by this expression.

Stammering has long been supposed to be due directly to what Wyllie, of Edinburgh, and others have called a faulty action of the laryngeal mechanism in the production of speech, resulting in delayed vocalization. There is much to be said in favor of this theory, but the question arises, What causes the faulty laryngeal action and consequent delayed vocalization?

When we consider that the oral symbols of speech or spoken words have two distinct elements, one of which is largely articulatory while the other is phonatory, and that the stammerer's difficulty is not so much with the articulatory as with the phonatory element, we must conclude that the chief trouble is in the cortical centre representing phonation rather than in that representing articulation. Moreover, the articulatory element of a word being represented for the most part kinesthetically and the phonatory element depending for its production largely upon auditory cues, it follows that the stammerer's disability must exist chiefly in the auditory region of the cerebral cortex. This theory may be demonstrated and established by a careful analysis of the stammerer's difficulties of speech. It will be observed that the articulatory movements of speech or those that are kinesthetically represented are as a

\*Read before the Philadelphia Neurological Society, April 27, 1910. A discussion of this communication, together with Doctor Makuen's statements, appears on page 102.

rule freely negotiated, and the difficulty appears for the most part only when the phonatory element is encountered. For example, we may take the word "fate." The stammerer can easily produce the initial consonant "f," but the vowel "a" which follows it is the element which occasions his difficulty. The consonant sound, being kinesthetically represented, comes easily enough, and owing to delayed or confused auditory imagery, the "f" sound is either prolonged or repeated by the individual in the effort to arouse into greater clearness the delayed or obscure auditory imagery upon which the complete externalization of the word depends.

The theory, therefore, that the primary cause of stammering in the great majority of instances is a weakness or irritability in the auditory speech centre, rendering the patient temporarily unable to arouse adequate speech imagery, is the one that appears to meet the greater number of the conditions with reference to the causation of this affection.

Stammering is in some respects very like aphasia, and it is frequently associated with aphasia in its inception as well as in the course of its development. Moreover, stammering like aphasia is more common in the male than in the female, a fact which is explained on the principle of the greater variability of function in the male, and also by the fact that the female appears to possess a greater clearness and intensity of verbal imagery, as is shown by her greater facility in oral expression. In a study of 1,000 cases of stammering, I found that only twenty-three per cent. were in females, and this is a higher percentage than statistics usually give.

It is worthy of note also that stammering is an affection of childhood and belongs to the developmental speech period. Speech is an acquired faculty, and stammering speech is in a sense an acquired affection, although, as I have said, the underlying physical cause of stammering, namely, a weakness or hyperesthetic condition of the auditory speech centre, is often inherited and is probably, therefore, congenital.

Of my own patients, thirty-nine per cent. admitted having had relatives who stammered, and if we could have elicited the truth on this point, I think we should have found the percentage much higher. The inheritance of the stammerer, like that of the so called deaf mute, is not the affection itself, but rather the physical anomalies that give rise to the affection, and they may appear only occasionally in the family history, skipping one, two, or even three generations. Given these anomalous conditions, however, the child is extremely liable to the development of the affection. Even slight exciting causes, such as emotional disturbances arising from fright or injury, or one of the infectious diseases, will give rise to the auditory amnesia upon which the affection depends.

The development of normal speech always follows the development of normal mental imagery, and this in turn depends upon the physical development of the psychomotor mechanisms of speech. A delayed or distorted imagery, on the other hand, always results in one or more of the disorders of speech.

Although stammering rarely begins after the age of puberty, isolated cases have been reported as developing later in connection with the various forms

of aphasia, as the result of traumatic and other lesions of the cerebral cortex. Accepting what I have said with reference to the development of stammering, it may be fair to presume that the conditions giving rise to the affection in children are those which have been designated as congenital aphasia. It is well known that many children, for no apparent reason, are slow in acquiring speech, and some of them go well into adolescence with little or no speech at all. It is true that in only a small proportion of these so called congenital aphasics stammering seems to develop, but, on the other hand, stammering must be regarded as an outgrowth of the various other forms of speech disorders.

Having established the fact that stammering is due primarily to auditory amnesia, how shall we dispose of the various other so called causes of the affection, of which fear is the most conspicuous and most important? A physician recently consulted me with a history of having stammered upward of forty years, and he was convinced that fear is the sole cause of the affection.

Associated with fear as a factor in the causation of stammering, we have the suggestion to which the fear gives rise, or what has been very aptly called autosuggestion. Fear and autosuggestion, however, while positive factors in the causation or continuance of stammering, are still only secondary factors, and they are themselves the results of the individual's experience as a stammerer. We have, therefore, the curious phenomenon of the result of an affection sufficing in some instances actually to cause its continuance, even after the original cause has ceased to be in operation.

One's auditory imagery seems to increase in accuracy and intensity as one passes from childhood into adult and more mature life, and if the secondary manifestations, such as multiple thought, bewilderment, autosuggestion, and fear have not become too well established, the stammering will cease. This fact gives rise to the popular belief that children outgrow the affection, and offers a possible explanation of this occasional fortunate outcome of stammering.

In a former paper on the subject, I described two classes, namely, stammerers and those who stammer. We all of us stammer on occasions or have stammered during the course of our development, but only those of us in whom the affection has assumed noticeable proportions and accumulated the secondary manifestations of the affection are called stammerers. Those of us whose auditory imagery has developed normally and satisfactorily have overcome the tendency to stammer, while those whose imagery has been stunted, on account of either inherited or acquired anomalous conditions of the psychomotor speech area, have succumbed to the affection and acquired the physical manifestations which develop in each according to his own particular or peculiar temperament.

When the secondary manifestations of the affection have become thoroughly established, and when they have made their full impress upon the mind of the stammerer, the affection sometimes continues almost wholly as a result of those psychic conditions which were themselves the result or complications of the amnesia following the original hyperesthetic condition of the psychomotor speech mechanism.



Two cases of this sort come to my mind. One was that of a young woman, thirty years of age, who had stammered ever since she could remember and whose father before her stammered. She has an important position in the managerial department of a large medical school, and her stammering is objectively a purely negligible factor in her life, but subjectively it has assumed somewhat serious proportions and interferes greatly with her peace of mind and success as a business woman. In other words, she is constantly disturbed by the fear of being hung up on a word, and thus she is unconsciously suggesting to herself difficulties which would never occur but for the mental disturbances which are the result of her past experiences.

A similar case is that of a young man, twenty-six years of age, whose mother, with whom he lives, did not know that he had had for several years any difficulties with his speech whatsoever, and yet subjectively and mentally he is so disturbed by his condition that life to him has been growing almost unbearable. Although a college graduate and intellectually and physically fit for any kind of business, he has purchased a farm and decided to live the life of a comparative recluse, owing to his dread of the speech difficulties encountered in association with his fellows.

Here was a man who could talk freely if he only thought he could. He had had a weakness or a hyperesthetic condition of his psychomotor speech centres during childhood, but his mental imagery had become fully restored and his stammering appeared to be the result entirely of fear and its attendant or concomitant autosuggestion. He had what has been called *lalophobia*, and his fear seemed to result in an absolute certainty of his inability, under certain conditions, to produce the word which was necessary for the expression of his thought. He and others similarly afflicted affirm that one who has not had like experiences cannot fully appreciate the feelings of those who do have them, and quite to understand the position of the stammerer, one must himself have been a stammerer.

These two cases are but examples or types of the affection with which we have to deal, and if we cannot cure them, we should at least be able to show them how the condition may be ameliorated. They appear to indicate that certain forms or stages of stammering suggest a purely psychical affection existing after the original physical cause has ceased to operate.

Psychoanalysis has been suggested as a possible remedy for this condition, but it has proved to be an absolute failure, and this I think is only what we should expect, the wonder being that anyone could have looked for beneficial results from such a practice. The man to whom I have just referred spent eight weeks with a leading representative of this cult, and although he was psychoanalyzed and even hypnotized during this time, he said he received no benefit whatsoever.

Incidentally, I may say that after four weeks of treatment in my office, consisting in an effort to arouse and train the man's auditory imagery through the proper use of the peripheral organs of speech, he went home very much improved and with full

confidence in his ability to work out his problems along these lines.

This brings up the question as to the possibility of successfully training and developing a weak or vacillating auditory imagery. Hitherto but little work of this kind has been attempted in a direct way, although indirectly I suppose all successful elocutionary training must tend to improve the auditory imagery of speech, and it is due to this fact that stammering is frequently cured by elocutionary methods. If, however, the training is carried on with this purpose distinctly in view, and with the attention of the individual consciously focused upon the mental imagery, I find that the results are far more satisfactory.

Fränkel has suggested that locomotor ataxia may be more or less successfully treated by means of physical exercise practised by the patient with what he calls "purposeful intent," and in a similar manner the stammerer in many instances may acquire absolute freedom of speech. The great difficulty with the stammerer, however, is to make his intent sufficiently purposeful. So prone is he to multiplicity of ideas and confusion of thought, that it is only after persistent effort and long training that he is at all able to focus his attention upon the particular purpose in view, which must always be the restoration and development of his mental imagery of speech.

This phase of psychophysical therapeutics opens up a comparatively new field, and but few if any direct attempts have been made to develop auditory imagery, although the training of visual imagery has been repeatedly and successfully practised.

The curability of stammering, therefore, can never be an established fact, and the prognosis must always depend upon the degree of the amnesia or rather upon the extent of the anomalous physical conditions giving rise to the amnesia. Moreover, an important factor in the curability of the affection must always be the extent to which the secondary manifestations of stammering have affected the mind and habits of the individual.

1627 WALNUT STREET.

## IRRIGATION, TRANSINSUFFLATION, AND VISUALIZATION OF THE INTESTINES BY THE DUODENAL TUBE.\*

By I. O. PALEFSKI, M. D.,

New York.

*From the Medical Service, City of New York Hospital.*

Prior to the invention of the duodenal tube, the introduction of substances and medicinal agents into the intestinal canal ordinarily depended upon the propulsive power of the stomach, and hence the kind and quantity used were largely determined by their taste, odor, and chemical reaction, by the capacity and tolerance of the stomach. Taking bitter salts as an instance, we now may introduce directly into the intestines, through the duodenal tube *in situ*, as large a quantity as forty or fifty ounces in various concentrations without revealing their bit-

\*Read and demonstrated before the Section on Medicine, Academy of Medicine, New York, April 25, 1913. Only a few working drawings are shown here, the remainder being reserved for future communications.

ter and nauseating taste. Besides, the mechanical effect of the presence in the intestines of such a large quantity of salt solution should also be taken into consideration, serving as a stimulus to intestinal secretion and peristalsis. Finally, by introducing substances directly into the intestines, we may turn our attention to problems concerning digestion, absorption, irrigation, and disinfection. In this communication I will deal with the introduction of large quantities of salt solutions and gases into the intestines through the duodenal tube and their recovery from the rectum shortly after as a means of ridding the intestinal canal of its putrefactive and bacterial contents, also as a possible measure of



FIG. 1. The duodenal tube should be large enough to admit a large quantity of salt solution.

depleting the body tissues of toxic substances accumulated during the improper functioning of one of the emunctories, other than the intestinal tract. I will also describe and illustrate the technic of visualization of the small intestines by means of introducing a barium meal directly into the jejunum.

#### A. INTESTINAL IRRIGATION.

Intestinal irrigation has been practised by others. Jutte (1) employs 1,500 c. c. of a 0.5 per cent. sodium chloride solution resulting in a copious evacuation about one hour later. McDonald (2) treated and cured fifteen cases of threatened toxemia of pregnancy by intestinal irrigation of a 0.6 per cent. solution of sodium sulphate. Both these salt solutions I found to be invariably absorbed from the intestinal canal and excreted by the kidneys within one hour. It is only in constipated patients that excessive urination is also followed, from one to three hours after, by a solid, fecal movement, the flushing effect, however, being absent. It is probable that the good effects obtained by them were brought about by the stimulation of the kidneys, which, however, might be obtained by colonic irrigation. Besides, the technic they employed is not at all convincing that the tube passed into the duodenum. At this juncture, it should be emphasized, that the aspiration of a specimen of bile colored contents is not always a sign that the tube is in the duodenum; Röntgen rays frequently show it to be in the stomach. The manner of ascertaining the location of the duodenal tube has been described by me elsewhere (3, 4).

The method of intestinal irrigation presently to be described is based upon the observation that the return flow of an irrigating salt solution, of an established concentration, introduced into the intestines through my improved duodenal tube (Fig. 1) appears at the anus, under conditions to be mentioned later, usually within fifteen to twenty min-

utes, and is completely expelled one to one and one half hour after the introduction, the patient lying in a recumbent posture throughout the procedure. It involves the consideration of:

1. Factors influencing the passage of the intestinal contents in the intestinal canal.
2. Mechanism of defecation.
3. Mode of action and effects of salt solutions in the intestines.

1. *Factors in the passage of intestinal contents.* As is commonly known, the onward passage of the contents in the intestinal canal is normally retarded by antiperistalsis at the ileocecal valve and at the hepatic and splenic flexures. The fecal contents in the descending colon, ordinarily, do not pass beyond the pelvic colon, being held at this point until the greater part of the colon is sufficiently filled, when these are expelled by the process of defecation. This prolonged sojourn in the alimentary canal is designed by nature primarily for the promotion of digestion and absorption of all food substances available for body nutrition.

2. *Mechanism of defecation.* In this process there are really two actions, essentially involuntary, depending upon the sense of increased intrarectal pressure caused by the bulk of the residual feces which gives rise to the desire of defecation, leading reflexly to the relaxation of the anal sphincters. This desire, however, is largely dependent upon an acquired voluntary regulation, for, as a fact, a good many persons are able to resist it for a number of

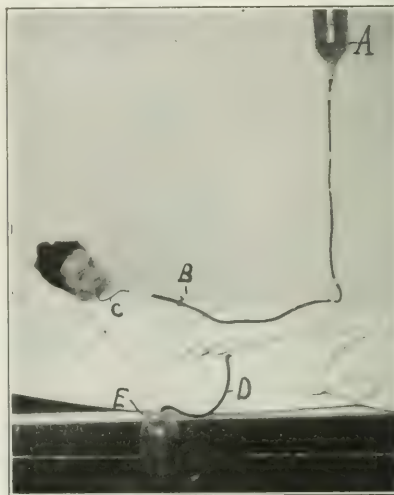


FIG. 2. Irrigation of the intestinal tract. A. Irrigating jar suspended four feet above the patient. B. Stopcock regulating the flow of salt solution through the duodenal tube. C. Duodenal tube. D. Rectal tube. E. Jar receiving rectal flow.

hours, or resort to it only once daily. It is thus seen how the contents in the ascending and transverse colon may be retained for a period of twenty-four hours or over, to be expelled with the next defecation.

In the procedure of intestinal irrigation, presently

to be described, the passage of the irrigating liquid through the intestinal canal is facilitated by the employment of an established concentration of salt solution, which, in accordance with recent investigations, by Hertz (5), Brown (6), and Ury (7), is capable of stimulating peristalsis both in the small and large intestine. To prevent the accumulation of the irrigating salt solution in the colon it is necessary to dispense with the periodical process of defecation, and I am inserting a rectal tube, six to eight inches into the rectum, in a manner described below. The contents in the colon are, therefore, rapidly conveyed outside of the rectum without requiring the least effort on the part of the patient.

### 3. Mode of action and effects of salts in the in-

and their waters upon the motor-secretory functions of the stomach, found that they have a reversible action upon the stomach and intestines, inhibiting the former and stimulating the latter; in both cases they stimulate transudation. However, only hypertonic solutions produce marked inhibition in gastric motility, while hypo- and isotonic solutions leave the stomach little less rapidly than tap water. He also found that sodium sulphate two per cent. and magnesium sulphate 7.5 per cent. to be isotonic to dog serum. ( $\Delta$  0.56° C.), (human serum,  $\Delta$  0.6° C.).

Hertz (6) giving small doses of bitter salts (one ounce) to men, and later examining the salt contents in the stools, urine, and blood, in conjunction

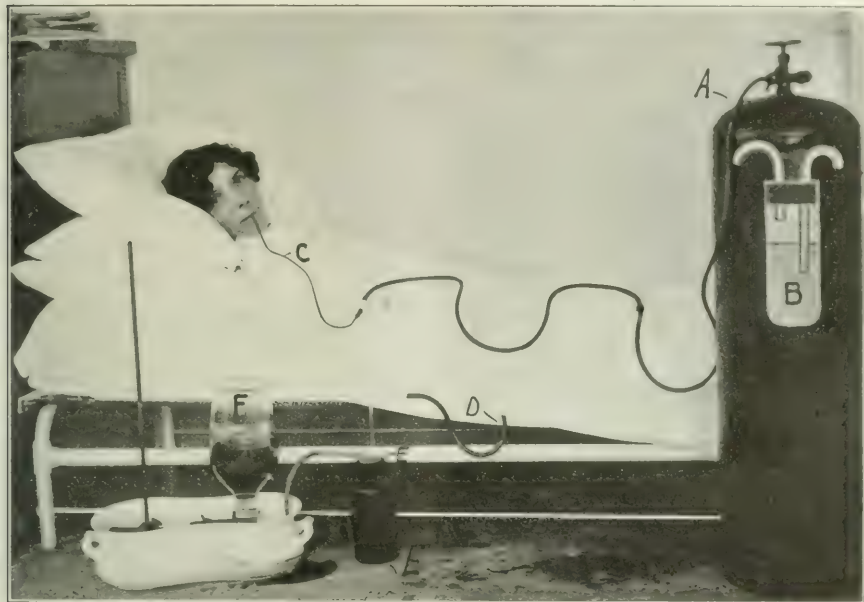


FIG. 3. Transintestinal insufflation and collection of oxygen from the rectum. A. Cylinder of oxygen (100 g. flow). B. Wash bottle (made from a test tube). C. Duodenal tube. D. Rectal tube communicating with E. E. Bottle containing 100 c. c. of carbon dioxide, thirty per cent., communicating with F. F. Collecting bottle for the oxygen (under water).

testinal canal. The mode of action of salts in the intestines is still an unsettled question. They act probably in one of the following ways: 1. By endosmosis, producing transudation into the intestinal canal, varying directly with the concentration of the salt solution used, resulting in several copious bowel movements. 2. By absorption from the intestines and diffusion into the circulation whence they excite the nerve plexuses in the wall of the intestines, thereby stimulating peristalsis. 3. Salts in solution have a poorly absorptive power. They also influence bile and intestinal secretions, thereby preventing the solidification of feces, and producing copious evacuations. 4. By their absorption from the upper intestinal tract and reentering the lower bowels from the general circulation.

Brown (5), studying the effects of bitter salts

with Röntgen ray investigations, concludes that salts act by way of the circulation, stimulating peristalsis in the colon, but having no effect upon the small intestines.

Ury (7), on the other hand, working with larger doses of salts (as high as 500 c. c. magnesium sulphate and sodium chloride three to six per cent.), and by animal experimentation, proved that the action of salt is local, causing in men a capillary transudate rich in chlorides and poor in mucin, while in dogs it causes an inflammatory exudate, rich in mucin and poor in chlorides. They also stimulate peristalsis in both colon and small intestines. He found, also, that as much as fifty to seventy-five per cent. of the total quantity of the magnesium sulphate taken by mouth was excreted with the feces within two hours, while the remainder was



excreted during the following twenty-four hours, while little if any, was absorbed in the blood.

We thus note that isotonic salt solutions stimulate secretion, peristalsis, and transudation; that in men, large doses of isotonic salt solutions provoked no irritation and that nearly three fourths of the ingested salts were found excreted in stools two hours after. The writer has drawn upon these findings in this method of intestinal irrigation.

#### PREPARATION

The intestinal tract must be thoroughly well emptied with one ounce of castor oil, taken on the night



before, followed by a high soapsuds enema preceding the treatment. The irrigating salt solution must be brought directly into the duodenum through the duodenal tube, better still into the jejunum, as when introduced erroneously into the stomach, there usually occur nausea and regurgitation. Therefore, at this juncture, I emphasize the importance of the use of my improved duodenal tube (Fig. 1), as the operator readily learns of the location of the

Upon the aspiration of a specimen of clear, neutral, or faintly alkaline bile colored duodenal contents, usually within one to one and one half hour after the introduction of the improved duodenal tube, one litre of the irrigating salt solution at 40° C. is allowed to run into the duodenum from an irrigating jar suspended from a height of three feet above the patient (Fig. 2), the stream being regulated by a stop cock in the outer end of the tube.

About fifteen minutes are allowed for the introduction, after which the tube is slowly removed if the irrigation is not to be repeated. I have established the necessary concentration of a litre of the irrigat-



FIG. 2.—Introduction of a suspension of barium sulphate into the jejunum with glass syringe 150 c. c. capacity. Arrows showing the position of fingers of both hands of the operator, introducing without force.

ing salt solution to afford a flushing effect upon the intestinal canal, namely: Sodium chloride 1.5 per cent., sodium bicarbonate 1.5 per cent.; magnesium sulphate five per cent., and sodium sulphate 2.5 per



FIG. 3.—Visualization of jejunum and ileum in patient, S. G., ten minutes after the introduction of a suspension of three ounces of barium sulphate into one litre of water at 40° C. B. Jejunum well outlined. A. Duodenal tube in jejunum. (See Fig. 2.)

cent. A litre of each of these salt solutions will cause several evacuations within the next three to six hours, the combined quantity of which will equal that introduced. With weaker concentrations



ing salt solution as a vehicle for medicinal substances to bring them into close contact with the unfriendly host in the intestinal canal, at the same time causing their expansion by the thorough intestinal irrigation. Intestinal disinfectants, such as salol, hydrogen peroxide, guaiacol, ichthyol, etc., have heretofore proved of limited value when taken by mouth, owing to their being absorbed in the upper intestinal tract, exerting little influence in the ileum. By dissolving them in a litre of sodium chloride 1.2 per cent. solution they can be conveyed through the entire intestinal canal. Again, by using sterile salt solution and receiving the flow through a sterile rectal tube, we can study the effects produced on the intestinal flora by each of the disinfectants employed. In autointoxication of intestinal origin, irrigation with a litre of sodium chloride, sodium sulphate, or magnesium sulphate of 1.5, three, and six per cent. respectively, will prove the most effective measure of unloading the intestinal tract of its putrefactive and poisonous material. In general toxic conditions, such as chronic nephritis, diabetic acidosis, and threatened toxemia of pregnancy, intestinal irrigation with increased concentrations of salt solution such as sodium sulphate 3.5 per cent. and magnesium sulphate eight per cent., will not only effect thorough evacuation of the intestinal tract, but, by osmosis, will deplete the body

ished by the introduction into the jejunum of a litre of water or saline solution at 40° C. through the duodenal tube; this quantity is absorbed and retained in the system (Table II). As the bacterial contents

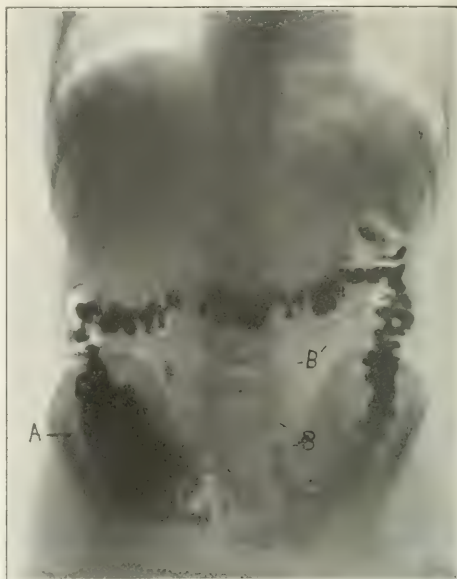


FIG. 8. Two and a quarter hours after patient has had a bowel movement, stools containing barium sulphate. A. Cecum well distended. Spastic units of the transverse and descending colon. B. Duodenal tube in jejunum.



FIG. 9. Two and a quarter hours after patient has had a bowel movement, stools containing barium sulphate 3.5 per cent. A. Cecum well distended. Spastic units of the transverse and descending colon. B. Duodenal tube in jejunum.

tissues of their fluids, as evidenced by the excess of the rectal flow over the quantity introduced, these fluids probably carrying out of the system toxic material. The loss of the body fluid is then replen-

ished by the introduction into the jejunum of a litre of water or saline solution at 40° C. through the duodenal tube; this quantity is absorbed and retained in the system (Table II). As the bacterial contents

in the rectal flow toward the end of the first or the second irrigation has been found markedly reduced (Table III), intestinal irrigation might be employed with benefit, as a preoperative measure in laparotomies, preventing to a great extent postoperative infection from the intestinal tract and postoperative adhesions. Finally, we are now able to study the degree of digestion and absorption from the intestines with greater accuracy than heretofore, by introducing directly into the jejunum a given quantity of fats, proteins, and carbohydrates, and recovering the residue after a definite interval by intestinal irrigation.

#### B. TRANSINTESTINAL INSUFFLATION OF OXYGEN.

A. Schmidt, M. Gross, and others have observed the beneficial effects and changes in the intestinal flora after the repeated introduction of oxygen into the intestinal canal. The method employed consisted in allowing oxygen to pass into the intestines, through the duodenal tube, at short intervals until the abdomen was distended. The oxygen diffuses through the entire intestinal tract and, later on, part of it passes out as flatus. I have improved upon this method by preventing abdominal distention and by establishing a constant flow of gas from the duodenum toward and out of the rectum, where it can be collected and examined.

*Procedure* (Fig. 3). The duodenal and rectal tubes are inserted in the same manner as in in-



testinal irrigation. A cylinder of oxygen (100 gallons) is connected with the duodenal tube and communication made by means of a wash bottle (Fig. 3). The flow of oxygen into the duodenum is made

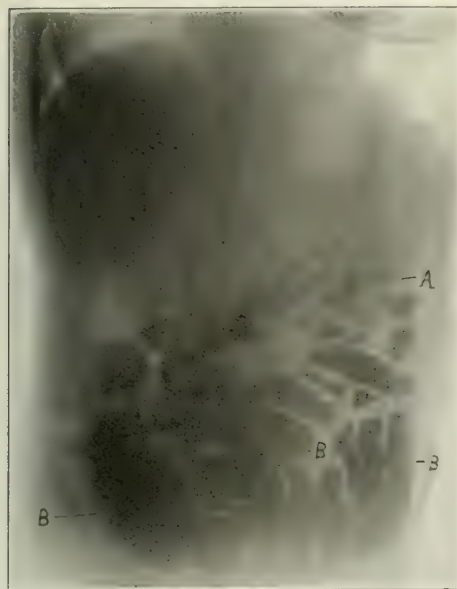


FIG. 9.—B. H., twenty five minutes after the introduction of 1,000 c. c. containing 6 ounces of barium. It shows traces of barium in (A) jejunum; nothing in the cecum. B. Ileum well filled. Duodenal tube in jejunum. (See Fig. 10.)

to be slow, a bubble at a time, and should never produce abdominal distention. Ten to fifteen minutes later, gas will begin to escape from the rectal tube at intervals of one to two minutes. Fig. 3 shows the manner of collection of this gas from the rectum, which was examined and found to be oxygen (Fig. 4). During this procedure the patient does not belch nor has he any discomfort; therefore, it can be kept up for many hours, the oxygen flowing into the duodenum and escaping through the anus. On examination, the abdomen will be found flaccid, though the colon can be readily made out. On auscultation there will be heard loud gurgling showers of rales all over the abdomen. The passage of the oxygen through the intestinal tract seems to be controlled by the pressure in the cylinder of oxygen, as evidenced by the fact that to obtain these results the lumen of the wash bottle must not be any wider than Schmidt's fermentation test tube, otherwise the oxygen accumulates in the intestinal tract, followed by abdominal distention, when the procedure must be stopped.

#### C. VISUALIZATION OF THE INTESTINES.

In a previous communication (4), I described the method of determining the course of the duodenum by filling the duodenal tube with a suspension of barium sulphate, after the latter has reached the commencing jejunum. In this manner I have been

able to distinguish the normal course of the duodenum and differentiate it from the distorted course in adhesions between the duodenum and gall-bladder and stomach. By carrying this principle a little further, I am now able, by introducing a suspension of barium directly into the duodenum, to follow out the course and the duration of the passage of the barium, through the jejunum, ileum, and cecum separately. It should be stated here, that the small intestines are invisible upon an x ray plate when, as usual, the barium is taken by mouth, owing to the fact that the opaque meal is propelled by the stomach into the intestines in insufficient quantities, at a given time, to fill even a single loop of the intestines, until the entire meal has reached the cecum.

*Technic of visualization.* Following the aspiration of a specimen of clear golden yellow, neutral duodenal contents, six ounces of barium sulphate is well rubbed up and suspended in a litre of water at 40° C. It is then strained through gauze, to exclude large particles of barium. It is then introduced through the duodenal tube with a glass syringe of 150 c. c. capacity, using no force (Fig. 5), taking ten to fifteen minutes for the introduction. It is best to have the patient on the x ray table while introducing, and having everything prepared for immediate exposure. Röntgenographs are taken every

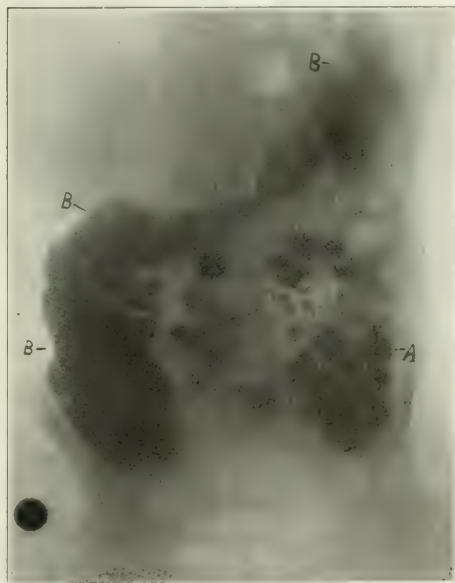


FIG. 10.—B. H., one and one half hour after. A. Traces of barium in the terminal ileum. B. Cecum and transverse colon well distended. (See Fig. 11.)

fifteen minutes the first hour, until the barium reaches the ascending colon (Figs. 6 to 11).

#### SUMMARY.

1. By the conjoint use of the duodenal and rectal tubes we may now introduce into the intestines large quantities of salt solutions and oxygen and obtain

their return flow from the anus in a short interval.

2. This can best be accomplished by the use of the author's duodenal tube (Fig. 3).

3. A litre of sodium chloride, 1.5 per cent.; sodium bicarbonate, 1.5 per cent.; sodium sulphate, 2.5 per cent.; magnesium sulphate, five to six per cent., will produce a flushing effect upon the intestinal canal. In lower concentrations these will be absorbed and excreted by the kidneys. In higher concentrations, they will produce transudation into the intestinal canal, and will be discharged from the rectum in nearly twice the quantity introduced.

4. The irrigation may be carried to a point when



Fig. 3. Duodenal tube. (A) Cecum; (B) Duodenum; (C) Jejunum; (D) Ileum; (E) Cecum. The tube is shown in the position of insertion, and the contrast material is well outlined.

the rectal flow will appear clear, odorless, bile colored, and neutral, with a marked reduction in the bacterial contents toward the end.

5. By employing varying concentrations of salt solutions, we are able to deplete the body of its fluid and replenish with fresh saline or water with or without nourishing material.

6. Intestinal irrigation should prove valuable in dysentery and ptomaine poisoning. It should dispense, to a great extent, with appendicectomy for lavage of the ileum and cecum.

7. It enables us to study more accurately the digestive and absorptive powers of the intestines.

8. Transintestinal insufflation with oxygen should prove valuable in intestinal fermentation. It is accompanied by no unpleasantness to the patient.

9. By introducing barium into the duodenum, we can learn and observe under the fluoroscope, the peristaltic activity of the jejunum, ileum, and cecum.

It should prove a valuable procedure in the study of ileocecal stasis.

In conclusion, I desire to express my appreciation to Dr. S. Wachsmann, medical director of the Montefiore Hospital, as always, for his cooperation and great interest in this work. I also wish to thank Dr. G. Fried, bacteriologist; Dr. N. W. Janney and Dr. M. R. Blatherwick, physiological chemists to the Montefiore Hospital, for their kind aid during the course of this experimental work.

#### REFERENCES

1. Transduodenal Lavage, etc., NEW YORK MEDICAL JOURNAL, March 16, 1912.
2. Treatment of Toxemia of Pregnancy, etc., *Medical Record*, July 18, 1912.
3. New and Modified Gastrointestinal Instruments, NEW YORK MEDICAL JOURNAL, Oct. 18, 1912.
4. Visualization of the Upper Intestinal Tract, etc., *Medical Record*, April 18, 1913.
5. BROWN, *American Journal of Med. Sci.*, 1912.
6. HERTZ, *German Hospital Report*, 1911.
7. URY, *Arch. Verdauungsk.*, 1909, p. 216.
8. KUMMEL, *Deutsche med. Woch.*, June 4, 1914, p. 1165.

MONTFIORE HOSPITAL, GUN HILL ROAD AND 210TH STREET.

### SYPHILIS OF THE NERVOUS SYSTEM.\*

BY WILLIAM V. P. GARRETSON, M. D.,  
New York.

Clinical Professor of Neurology and Mental Diseases, New York  
Polyclinic Medical School and Hospital.

Syphilis of the nervous system is an old story. It is not essential to review the historical data pertaining to the earlier conceptions of prominent observers. Suffice it to say, that to the great Virchow belongs the credit of identifying syphilis pathologically as it affects the nervous system.

No part of the central nervous system is exempt from the ravages of this disease, although a greater degree of vulnerability is evident in certain structural elements than in others. The selective action of pathogenic organisms and many toxins is a well known fact. The peripheral portion of the nervous system is quite free from syphilitic disturbances, and peripheral neuritides due exclusively to syphilis are rarely observed, with the marked exception, however, of certain of the cranial nerves, namely, the first, third, fourth, and sixth, which are peculiarly susceptible to this disease.

At this point it is apropos to consider the question of the tissue selectivity of *Spirochaeta pallida*, a condition which undoubtedly exists, and is our only explanation at present to account for a considerable discrepancy in case histories. Personally, it has been my experience to note that fully thirty per cent. of patients, who have positive evidences of neurological syphilis clinically, and confirmed by laboratory findings, deny any knowledge of having acquired the disease. In former years we thought that these persons lied deliberately, considering such a confession as a reflection upon their morality, and due to a desire to protect themselves from the stigma such an admission was prone to create in the lay mind, syphilis being considered a loathsome disease, acquired usually through licentious indulgence. It is only within recent years that we have dared to speak publicly of syphilis louder than a whisper. Further discrepancy due to denial was charged up to those of the lower stratum of society, who pay less attention to physical symptoms, in whom we

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considered the earlier signs of infection to have passed unobserved.

There are undoubtedly several strains of the spirochete, and except in cases where we are dealing with hereditary syphilis, I firmly believe that fully thirty per cent. become infected and suffer little or no external evidence of the disease at the time of infection.

It is conceivable that a given strain of spirochete in passing through similar tissue structures over and over again in many previous hosts, has become attenuated in virulence to these tissue cells, and thus has lost the power to invade certain structures, such as, for instance, the dermatological tissues (skin and mucous membranes); such a strain of organisms being weakened in its power to invade such tissues, would not produce external chancres or skin lesions, but might virulently attack new tissue to which it had not become inactivated. Without here going into detail, it appears to me that upon this assumption, we can readily account for the protean invasion of this disease.

We also must consider the possibility of tissue immunity having been created by ancestral reactions over long periods of years, thus raising resistance barriers to the organisms in certain structures. In the comparative absence of this disease in ancestral hosts, one might expect the existence of a tissue susceptibility. This would give a clue to the causes of racial resistances and predispositions, respectively.

Syphilographers have long recognized the fact that in those patients who present very mild lesions of the dermatological structures in the primary and secondary stages, there always existed a greater possibility of other tissues being severely affected, especially the central nervous system in tertiary sequelæ.

Syphilis of the nervous system usually occurs in the secondary and tertiary stage, although sometimes it may be manifest during the primary stage. To enumerate in detail the various clinical pictures arising from a syphilitic invasion of the nervous system, would embrace a discussion of the entire subject of neurology. No other etiological factor presents a greater multiplicity of possibilities in the extreme degrees of expression. Syphilis of the nervous system, in its objective symptomatology, may be monosymptomatic or pansymptomatic. Its apparent simulation and many variations are frequently most misleading and confusing to the inexperienced observer. Its imitative capacity applies not only to the organic lesions produced by other diseases, but to the functional disturbances as well. Likewise all of the fundamental psychoses (the manias, melancholias, dementias, and paranoid states) have their counterpart in cerebral syphilis.

Only by experience does one learn how frequently the difficulty of differential diagnosis is encountered with a disease presenting so many fantastic and bizarre clinical appearances; it seems that clinical diagnosis at times would be impossible, and yet if one will gather all of the array of identifying earmarks in logical sequence, there is easily assembled from the chaotic exhibit of symptoms, a working basis upon which to make a correct diagnosis.

For several years I have adhered to a diagnostic syndrome, which, to me, has been of inestimable

value and has withstood the test of satisfactory application in many hundreds of cases.

This syndrome, devised by Pritchard, is as follows: Given a patient between the ages of twenty-five and forty-five years of age, affected with any form of intracranial paralysis, or cerebral disturbance, which was preceded by headaches of nocturnal onset or exacerbation, associated with vertigo and insomnia, the insomnia occurring during the first half of the night, the paralysis developing during sleep, both headache and insomnia disappearing upon the onset of the paralysis—the cause is syphilis.

This will require some further elaboration. The age limit is not absolutely arbitrary, as both older and younger patients will be found to whom this formula will apply. The average time from the period of infection to the development of nervous sequelæ is between six and eight years; extreme variations, however, are frequently encountered. Primary infection is rare before eighteen years of age, while often at fifty or as early as forty-five years, degenerative changes are evident, especially arterial.

Here a difference is to be noted in the clinical picture of neurological syphilis, in that the symptoms after the age of fifty years are usually altered by a depression of function, rather than irritation as in youth. Hence we frequently note beyond midlife a condition of somnolence rather than insomnia, with a tendency to headaches of less violence. Convulsions, too, are less often observed, while the mental state tends to become that of dementia or melancholic depression, as opposed to the exalted and maniacal states of the earlier age.

In this syndrome, no single symptom is pathognomonic; one must consider the aggregate evidence in association. The nocturnal headache, occurring with periodicity, should always excite suspicion. Insomnia alone is not significant, but associated with headache to which it is due, it is added evidence, likewise the vertigo. The appearance of such symptoms as enumerated, the occurrence of fugacious palsies, the presence of paresthesias, tremors, pareses, and complete paralyzes in various regions all indicate and signify the invasion of syphilis.

A very interesting and peculiar evidence of syphilis in all its neurological forms is the nocturnal exacerbation of all symptoms; the frequent occurrence of palsies and hemiplegias during the night is common observation. The vascular lesion most frequently created by syphilis is a progressive endarteritis obliterans, with a gradual occlusion, which is productive of the pathological basis of all the lesions and resulting symptoms.

I shall now refer briefly to two conditions which we have for many years designated as parasyphilitic or metasyphilitic diseases, namely, tabes dorsalis and its superior equivalent, paresis. These two diseases we know today, to be positively always due to syphilis, however certain tract degenerations of the cord may occur due to other than syphilitic disease, which may be mistaken for tabes dorsalis.

In the light of our present knowledge, we can no longer speak properly of these two diseases as metasyphilitic, in that we have always considered them due exclusively to a toxic state of the blood



existing after a syphilitic infection, and have not considered them in the same category as cerebrospinal syphilis, which is due to the active ravages of the virus created by the presence of the spirochetes.

The researches of Moore and Dunlap, later verified by Noguchi and others, have positively proved that the spirochetes are still present in the tissues of the nervous system in both tabes and paresis, although frequently difficult to demonstrate. Here again in tabes we see the selective action of this organism in creating a degeneration of the posterior columns of the spinal cord, and rarely involving directly the other tracts.

The parietic disturbance of brain tissue is due to a cortical invasion by the spirochetes and a degeneration secondary to arterial occlusion (endarteritis obliterans), with resultant nutritional changes and softening.

Today we are not dependent entirely upon clinical symptoms, but we may have recourse to certain laboratory procedures to confirm our suspicions of syphilis as an etiological factor in the production of nervous disease. In the old days, with suspicions aroused by clinical evidences, in the absence of positive history, we applied the therapeutic test to confirm or disprove our diagnosis. Now we look to the Wassermann reaction on the blood serum or spinal fluid, with a result, I am sorry to confess, in my personal experience, quite disappointing and misleading.

We all know the negative value of a negative Wassermann, but do we know for certain that a positive Wassermann on the blood serum is positive evidence of syphilis? My experience and that of others with whom I have discussed this subject, has led me to conclude that a positive Wassermann in the absence of a history of syphilis, and with absence of clinical symptoms, is not to be taken too seriously; only in the presence of clinical evidence does it carry real significance and then only in serving to clinch a diagnosis; and further, by reason of the very uncertainty of this test due to difficulty of technic occasioning possible error, and due also to the personal equation of the individual who does the test, I am no longer content with the report of one man, but prefer two or three tests done by different men under the same conditions and circumstances. This, of course, is a luxury all patients cannot afford.

The luetin test of Noguchi is frequently positive when the Wassermann test is negative. The relative value of the two tests may be stated as follows: The nearer the period of infection, the more apt the Wassermann is to be positive than the luetin test, that is, in the primary and secondary stages, but the luetin test is more frequently positive than the Wassermann in the tertiary stages, in cases of latent syphilis, and in cases of treated syphilis.

In neurological syphilis we frequently obtain a negative Wassermann on the blood, but a positive one on the spinal fluid. In tabes and paresis, the blood serum is very often negative (fifty per cent.), but the spinal fluid is usually positive, and in paresis presents other evidences, such as increase in the lymphocytes and the presence of globulin.

With all due respect to these procedures as an aid

to diagnosis, I, personally, prefer to rely upon the clinical evidence every time.

As to treatment, we are passing through an experimental period in many respects. To me it appears that we have been traveling in a circle and are now back about where we started. With salvarsan and neosalvarsan, men who are dealing with syphilis in its incipency claim wonderful results; however, from what I can learn, they are all using the old treatment in conjunction or as an aftertreatment. It will take another five years or more before we can tell whether this treatment is to prevent syphilis from reaping its harvest of destruction and damage to the nervous system, as it has been wont to do in the past. Even then, whatever the result, our conclusion as to the value of salvarsan will be masked by its association with mercurial treatment, so we shall not in all cases be able to estimate the full value of the drug.

In the treatment of cerebrospinal syphilis, tabes, and paresis, salvarsan has been used and is still being used exclusively by some men. It is being given intravenously, and intraspinally by the Swift-Ellis method as "salvarsanized serum," and by the Ogilvie method, as "serum salvarsanized." A few cases of cerebrospinal syphilis become better, many become worse and end in very disastrous results. I have never seen a case of tabes obtain any more or lasting improvement from the new method than from the old, and I have never seen a case of paresis benefited in the least. The literature is full of thrilling and enthusiastic reports of cases, but they are not long in evidence.

One should ever be mindful of the fact that in syphilitic affections of the nervous system, spontaneous remissions are very frequently encountered, which are often quite misleading, in that the improvement is credited to the special method of therapy being employed at the time. In tabes, particularly, the psyche of the victim is very susceptible to suggestion, and any new procedure, which may excite anticipation of good results, will often create a temporary improvement of the subjective symptoms of the patient.

I am not a pessimist nor a therapeutic iconoclast, neither can I be accused of not having observed many cases treated by the newer methods. Experience and observation prompt me to go on record in stating that, to date, I am convinced that in the majority of cases of *neurological syphilis*, more satisfactory and reliable results can be obtained from the older method of treatment, namely, potassium iodide and mercury, when properly administered, than by the use of salvarsan *alone*, and in those cases where it is used with potassium iodide and mercury, I feel it is getting credit for doing what could be as well, or better accomplished without its use. For me, salvarsan is the drug of last choice in treating syphilis of the nervous system and at best I consider it only as an adjuvant.

The indiscriminate lumbar puncture and intraspinal administration of salvarsan are procedures against which a note of warning should be registered—for they are *not* without grave danger to the patient. Time will permit me only to mention briefly the intraspinal methods of giving salvarsan. Recent experiments by Benedict, of Cornell, as reported

by Sachs, Strauss, and Kaliski, have proved that more salvarsan reaches the spinal fluid after intravenous administration than can be found in the so called salvarsanized serum as used for intraspinal injection by the Swift-Ellis method.

In this method about three quarters of an hour after an average dose of salvarsan is given intravenously, blood is withdrawn, defibrinated, and the serum (omitting details of technic) is injected into the spinal canal, first withdrawing an equal quantity of spinal fluid.

It has been determined, to quote from Modern Methods of Treatment of Syphilis of the Nervous System, by Sachs, Strauss, and Kaliski,<sup>1</sup> "that a man weighing about one hundred and fifty pounds and having a total blood volume of about eight pounds (one nineteenth of total body weight) if injected with 0.4 gram of salvarsan, would have in every c. c. of his blood immediately after the injection, before elimination or fixation by the body cells began, about 0.0001 gram of salvarsan. This is the maximum amount that Benedict has shown to be present in twenty c. c. of whole blood. Thus it is apparent from the analyses of blood taken within three quarters of an hour after the injection of salvarsan, that the arsenic is not free in the blood stream, but is probably bound by the receptors of the body cells, whence it follows that the serum obtained from the blood withdrawn must depend for its efficacy, if it be at all curative, upon some other factor, which has not yet been determined."

It may be that the repeated lumbar punctures in these procedures have some beneficial effect. Intracranial and intraspinal pressure is thus reduced, and it has been proved that the cell count in the spinal fluid in cases of paresis has been greatly diminished by puncture alone, frequently repeated.

The injection of the patient's own normal blood serum (nonsalvarsanized) has also been found to reduce the cell content of the spinal fluid in paresis. Therefore, it is possible that autoserum therapy may have some effect, the nature of which we do not understand at present.

The direct method of administering minute doses of salvarsan or neosalvarsan by injecting the diluted drug (0.002 to 0.010 gram) into the subdural space of the spinal canal, was first tried by Wechselsmann and Marinesco, who mix the diluted drug with the patient's own spinal fluid, which is allowed to gravitate back into the spinal canal through the needle introduced for lumbar puncture. Ogilvie's<sup>2</sup> method is to use the patient's blood serum as a vehicle for the diluted drug (0.25 mg. to 0.5 mg. of salvarsan), which is injected after an equal amount of spinal fluid is withdrawn compared to the quantity of serum to be injected.

It is difficult to conceive wherein any benefit can be derived from these methods of attenuated doses. The contraindications to the use of salvarsan mentioned originally by Ehrlich are, optic neuritis, renal insufficiency, Addison's disease, status lymphaticus, advanced cancer, aortitis, coronary sclerosis, and myocarditis.

"Caesar<sup>3</sup> states that he believes salvarsan has a toxic action on the cerebral capillaries, tending to paralyze their constrictile elements. For this reason he thinks it should not be used where there is arteriosclerosis or capillary degeneration due to chronic intoxications, particularly alcohol and existing disease of the central nervous system."

I am inclined to the belief that the time is not far off when we shall consider that salvarsan must be used only with great caution in the treatment of syphilis of the nervous system, and that advanced diseases of the central nervous system in which marked degenerative changes have occurred, such as tabes dorsalis and paresis, will ultimately be considered as contraindications to its use.

53 WEST EIGHTY-FIFTH STREET.

## UNSUCCESSFUL ADENOID OPERATIONS,

BY WILLIAM BRADY, M. D.,  
Elmira, N. Y.

It never rains but it pours. A revulsion against the practice of indiscriminate operation upon tonsils and adenoids is passing over the country just now. We suspect that the medical school inspector is a provocative factor in this movement. Another cause is perhaps the too frequent habit of operating upon these patients and then dismissing them as cured if they recover from the immediate effects of the operation.

Any one in general practice cannot help seeing many instances in which adenoid operations utterly fail to benefit the patients. The trouble is that some operators, in their zeal for surgery, overlook the underlying lesion of adenoids. In fact, few textbooks throw much light upon the etiology of adenoid hypertrophy, further than to explain that the hypertrophy just grows.

Repeated insults, successive attacks of coryza, the indoor plague, lead eventually to adenoids, and, from the practical standpoint, at any rate, there is the sole pathological feature to be considered in treatment. The same prophylaxis that guards against coryza will protect the child from adenoid hypertrophy. Of course, the prophylaxis of coryza is still a moot question in some communities, east of the Hudson River; we still have in our midst staunch advocates of the ancient theory of keeping good and warm, though most of us nowadays believe it is better to keep cool and well. Officially, however, coryza is infectious, just like the measles. As long ago as March, 1914, the *Bulletin* of the New York State Department of Health (Health News) had this to say: "Every cold in the head or other communicable disease comes from a transfer of excreta from one person to another." Careful search of the *Bulletin* failed to disclose any footnotes or other allusions to bad weather, wet feet, drafts, or exposure to sudden changes.

Frequent attacks of "cold in the head" will in time produce simple chronic rhinitis, with or without accompanying adenoids. In every case of simple chronic rhinitis there is more or less adenoid

<sup>1</sup>American Journal of the Medical Sciences, p. 693, 5, cxlviii, November, 1914.

<sup>2</sup>Hanson S. Ogilvie: The Intraspinal Treatment of Syphilis of the Central Nervous System with Salvarsanized Serum of Standard Strength, *Journal of A. M. A.*, November 28, 1914, pp. 1936-1941.

<sup>3</sup>Treatment of Syphilis, E. W. G. Stiles, assistant surgeon general, U. S. P. H. S.

rhinitis, but we speak of adenoids only when the hypertrophy overshadows the other condition.

In more cases than one would be inclined to believe till he tries, the symptoms of moderate adenoids will disappear in a reasonable period if the rhinitis is properly treated by the physician in his office. Unfortunately only a minority of family physicians are equipped to treat nasal conditions, notwithstanding that "catarrh" in one form or another is about the commonest ailment a man in general practice meets. That every practitioner should be prepared to make rhinopharyngeal examinations goes without saying, for a goodly proportion of coughs, as well as "colds," which come to his hands are impossible to relieve permanently without determining the cause in the nares and applying suitable treatment thereto, as was strikingly brought out by Dr. Adolph L. Schwartz in the *JOURNAL* recently (*June 1, 1905*).

One often sees cases of adenoids in which it is doubtful whether to urge operation. In these cases it would be well to undertake a course of treatment for the accompanying rhinitis and leave the decision until later on. If the patient is old enough to submit to ordinary nasal applications at the physician's office, and if the parents are interested enough to see to it that the child reports regularly for these treatments, there is always a fair probability that operation can be avoided, and at the same time the patient will make a perfect recovery. The applications referred to are nothing more or less than the familiar iodine-potassium-iodide-glycerin solutions suggested in textbooks on the nose and throat for the treatment of simple chronic rhinitis.

Beside this office treatment the patient will be taught some plain principles of hygiene, in diet, clothing, ventilation, and toilet of the nose and throat and mouth.

If a little more common sense and a little less surgical enthusiasm were devoted to adenoid and tonsil cases by the profession, these young patients would fare better in the long run.

DOUGLAS L. STREET.

## MICROSCOPIC LOCALIZATION.

### *A Rapid and Accurate Method.*

By PHILIP ALLEN SHAW, M. D.,  
Philadelphia.

The ready reference to a certain point on a microscopic slide at times becomes highly desirable. There are various methods to accomplish this end, but of those with which I am acquainted all present weak points upon analysis and are more or less inaccurate. The recording of the vernier readings upon the mechanical stage is largely made use of at the present time, but has its disadvantages from the fact that those readings are only applicable to the specimen when used with that particular stage and microscope, and will not stand the test of time, for when the stage and microscope are in daily use, the wear and tear on the mechanism of both is sufficient to alter the alignment and thus render the vernier readings of a previous record misleading.

The "Maltwood finder," consisting of 2,500 squares photographed upon a microscopic slide and distributed over an area of one square inch—each block containing a different combination of numbers—is useful, but where the higher powers are used the method is only approximate in its results, the record leading to a certain numbered square or block, and as that block is larger than the field of

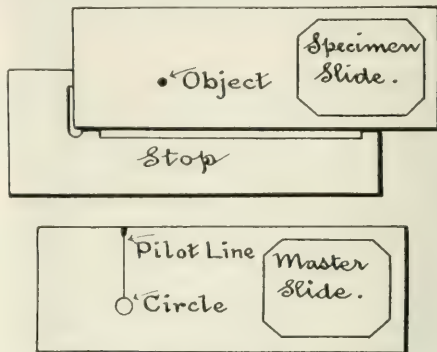


FIG. 1. Master slide.

the microscope, a search for the object becomes necessary, if perchance it is not already visible, and in the hunt one may be going away from it, thus increasing one's difficulties.

Another method consists of scratching a circle with a diamond upon the cover glass, and still another imprints a circle with some marking pigment. Both these methods require cover glass preparations, and both are objectionable from the fact that the lines of demarcation may obliterate some portion of the specimen that it is desirable to retain. Another method has been described which consists in pasting a piece of paper to the slide like the leaf of a book and punching a small hole in the paper directly over the object to be recorded. This is not applicable to high power objectives and lacks accuracy and precision.

There may be other methods with which I am not familiar, but I mention these in illustration of the points which I wish to bring out.

For the method about to be described the following points are advanced: 1. Rapid in performance. 2. Precise in results. 3. Permanent in records, totally disregarding wear and tear in the alignment of the microscope or mechanical stage. 4. Of use with or without a mechanical stage, both as to making the original records and their subsequent interpretation. 5. Possesses the advantage of placing no obliterating marks upon the specimen slide. 6. Records an object wherever located upon the slide. 7. May be used successfully for any specimen attached to a microscopic slide, whether smear, spread, or section. 8. With or without a cover glass. 9. Enables a series of registered microscopic specimens to be placed under one microscope or a series of microscopes for demonstration in a brief period of time. 10. Finally, may be used successfully by anyone possessing a fair amount of skill and care in the performance of the technic.



The mechanical details of the apparatus I will not burden the reader's attention with; suffice it to say that the attachment is screwed into one of the openings of a multiple nose piece, and consists of a revolving spindle carrying a needle. The mechanism is such that adjustments are readily made, and when completed permit the needle point to inscribe a circle of such diameter and in such location that when the objective is thrown into position this circle will be concentric with its centre and just fit within the borders of its field. This circle as described is 0.013 inch in diameter.

Therefore, if it is possible to inscribe a circle possessing the qualifications just enumerated, we are enabled to make a record on a second slide in exactly the same relative position that our object occupies on the first, and in carrying out this thought what I term a "master slide" is made use of. This is merely an ordinary microscopic slide coated lightly on one side by the aid of a camel's hair brush with an alcoholic solution of seven per cent. orange shellac colored with 0.3 per cent. eosin.

In order that the master slide may be placed in the same relative position as the specimen slide, a "stop" is made use of. This is made from a piece of flat brass, preferably the size of microscopic slides, so that it may be kept in the same box with them. It has but three points of contact for the slides, and is used upon the stage of the microscope in conjunction with one or the other slide in a manner similar to a triangle and T square upon a drawing board. This stop is designed for service where

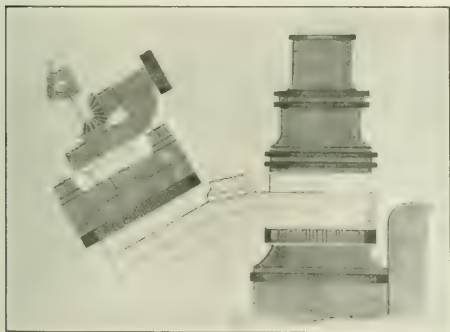


FIG. 2. Circle-drawing attachment.

a mechanical stage is not available, but has the advantage over the latter that it permits any records made by its use, to be used with the same degree of precision on any microscope or series of microscopes.

The technic is as follows: The object to be recorded is placed at the end of the pointer in the centre of the field, and by careful and gentle pressure with several fingers of one hand upon the specimen slide, the "stop" is gently slid into contact with it, where it is held by several fingers of the opposite hand, and so retained upon the surface of the stage by gentle pressure. It is then possible to remove the specimen slide and replace it with the "master slide," where it is held in the exact position of its predecessor.

The circle drawing attachment is then swung into position, the needle point dropped upon the shellac film, and a circle inscribed upon its surface. Without removing the needle from the film, the slide is drawn toward the operator, thus carrying a line from the circle to the upper edge of the slide. The master slide is now completed and may be marked with the same number as the slide from which it was made, the two being kept together. When in use this process is just reversed.

It is a simple matter to focus the objective upon the master slide near its upper border, and a few moments spent in moving the latter in a longitudinal direction brings the "pilot line" into view, and if this straight and narrow path is followed, the observer will obtain his reward, for with the circle placed concentric with the field, the stop slid into place, and the master slide exchanged for the specimen slide, the journey is ended, with the observer not landed somewhere in the block, but actually placed upon the door step.

4008 BARING STREET.

### LATE CONGENITAL SYPHILIS.\*

*Report of an Unusual Type, With Post Mortem Notes.*

By SAMUEL BERKOWITZ, M. D.,  
New York.

"When in doubt, suspect syphilis" is an apothegm handed down from generation to generation in the medical school and in the clinic, from internist to internist, and from syphilographer to syphilographer. After the modern internist has exhausted all his resources in the diagnosis of a difficult case, he turns to the laboratory for assistance and requests among other examinations that an agglutination reaction for syphilis be made. A positive Wassermann reaction often solves his problem.

The following case report typifies such an instance, in which many of the phenomena pointed to a number of diseases, but there was no single illness which might include all the manifestations except syphilis. This tentative diagnosis was confirmed by the blood reaction and later by macroscopical and microscopical post mortem examination of the viscera.

CASE.<sup>1</sup> S. F., female, aged nine years, born in United States, of Russian parentage, was admitted to the Beth Israel Hospital with high fever, chilliness, vomiting, epistaxis, and headache, all of three days' duration. The urine voided was diminished in frequency and amount. It appeared coffee colored. Her appetite was poor and her bowels were constipated. One day after the onset of the illness the fever subsided somewhat, and the mother noticed that the patient's face and legs were edematous. The abdomen also increased in size.

Previous history: The child was born before the accoucheur arrived, with no apparent injuries. She was breastfed for nineteen months. Her hygienic surroundings were always poor. She had a retropharyngeal abscess when one year old, which ruptured spontaneously; measles at the age of two years; and lobar pneumonia at the age of six years. Her mother remarked that she had always been "weak," emaciated, and under weight. At times she vomited soon after taking nourishment, while in apparently good health, during the first year. Patient coughed at

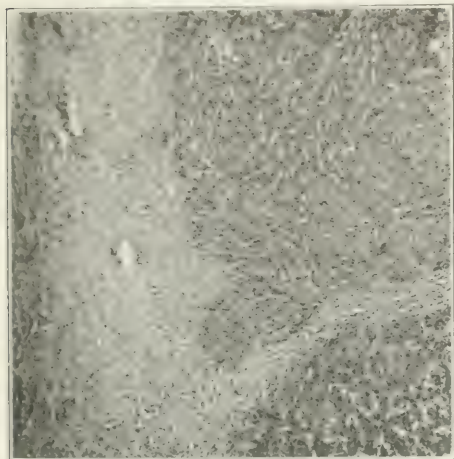
\*Read at a stated meeting of the Eastern Medical Society, New York, February 12, 1918.

<sup>1</sup>For permission to report this case I am indebted to Dr. F. Huber in whose service it occurred.

irregular times. She voided frequently averaging six to eight times a day and once or twice at night. The duration and the amount of each voiding could not be ascertained. All epistemic bleedings slowly, open wounds bled freely; while the least trauma to the skin was followed by extensive hematoma discolorations. There was no history of sores about the mouth, soles of the feet, palms of the hand, or anus.

Family history: The parents had been married sixteen years. The mother gave birth to seven children, two are alive and well. Four died of diseases of infancy. The mother had no abortions. No history of any familial disease could be elicited. Both parents, individually, denied

Physical examination: The child appeared undersized and undernourished, playful, and apparently feeling well. She had a peculiar blank expression to her face, did not speak, and at times did not respond when called; was attracted during these periods by bright objects. The head



was larger at its upper part with prominent frontal and parietal eminences. She had marked exophthalmos so that the lids were partly open during sleep. The pupils were equal, regular, moderate in size, and reacted equally to light and accommodation. The fundi were normal. The gums were hypertrophied, inflamed, and somewhat spongy, especially in the front upper part. Slight irritation of the gums with a tongue depressor caused oozing of blood. The tongue was larger than usual with hypertrophied papillae. The adenoids and the pharyngeal tonsils were abnormally enlarged. With the head extended the thyroid prominence was not visible or palpable.

Examination of the precordium showed signs of cardiac enlargement to the left. The apex beat was visible and palpable in the fifth interspace at the left anterior axillary line. In the region of the apex and in the second, third, and fourth spaces along the left side of the sternum, a soft blowing systolic murmur was audible which was not transmitted. The second pulmonic sound was somewhat accentuated. The bases of both lungs showed signs of congestion. The abdomen was enlarged, with movable dullness in both flanks and below the umbilicus. A hematoma discoloration in the stage of absorption was visible in the median line, midway between the flat umbilicus and the pubis. There was no tenderness or rigidity. The liver was enlarged downward for three fingers' breadth below the right costal margin. Its edge was firm, regular, round, and not tender. The spleen was felt four fingers' breadth below the left costal margin and extended downward and forward toward the umbilicus. The firm, round, smooth edge, together with the notch on its anterior border, were easily palpated. A catarrhal vaginitis was present with a profuse discharge which was negative for gonococci. Both pretibial areas were edematous at their lower thirds. No

malformations of the tibiae were present. The submaxillary, posterior cervical, and inguinal glands were enlarged. Hypertrophy of the epitrochlears could not be elicited.

Subsequent history: The temperature, pulse, and respirations continued normal during her stay in the hospital. Nine urine analyses showed evidences of an acute exacerbation of a chronic nephritis, and averaged as follows: Amber, acid, 1020, moderate trace of albumin, sugar none, bile none, diazo negative; microscopically—many finely and coarsely granular casts, a few red blood cells, and many pus cells.

Four blood examinations were made. On admission, the blood count showed 2,500,000 erythrocytes, microcytes, and macrocytes, polychromatophilia, but no erythroblasts. The hemoglobin was 40 per cent. (Sahli) with a color index of 0.8. The leucocytes counted 15,600 with 87 per cent. polymorphonuclears, 12 per cent. lymphocytes, and one per cent. eosinophiles (250 cells counted). As the quantity of fluid in the abdomen decreased, the leucocytes decreased to 7,800 and 68 per cent. polymorphonuclears, 26 per cent. lymphocytes, and 6 per cent. eosinophiles. The Wassermann and the von Pirquet vaccination reactions were positive.

Improvement in the child's condition was very slow and was accompanied by intercurrent cardiac relapses and bleeding from the gums. On the fifth week after admission, the signs of decompensation were more exaggerated than at any previous time and were soon followed by pulmonary edema and death.

Note. The Wassermann reaction on the father's blood was negative while the mother refused this examination.

The examination of the organs by Dr. Eli Moschcowitz, pathologist of the Beth Israel Hospital, after a rectal necropsy revealed the following changes:

Lungs: Lungs normal in size, gray, and crepitant. Pleura smooth and free from adhesions. On the lateral aspect of the lower lobe of the right lung, close to the lower border, was a small white nodule about the size of a millet seed sharply circumscribed from the surrounding lung and projecting slightly above the surface of the pleura. Section of this nodule revealed a soft whitish gray substance sharply circumscribed from the surrounding lung. Just above the entrance of the right bronchus and lying at a depth of about half a cm. below the surface of the pleura, another nodule presented the same physical characters. Section of the lung parenchyma revealed nothing abnormal otherwise. The left lung was normal. Heart, normal. Liver, considerably enlarged. The surface was extremely irregular and presented numerous nodules, separated from one another by narrow sulci. Section of the organ revealed these nodules consisting of yellowish or yellow brown areas, separated from one another by broad bands of deep red tissue. The nodules varied in size from a pin head to a pea, were sharply circumscribed, irregular in shape, but with a predominating circular contour. They projected slightly above the intervening strands of connective tissue. Some of them were bile stained. The nodules were firm. Section of the organ afforded a gritty sensation. The intervening strands of connective tissue varied in thickness from a mere line to half a cm. The gall-bladder was normal.

Spleen measured 12 by 5 by 7 cm. The organ was firm. The capsule was smooth and had a stretched appearance. On section this organ was deep red; the Malpighian bodies were prominent; the trabeculae were increased; the pulp was firm and did not scrape easily. Pancreas, normal in size and afforded a gritty sensation on section. The lobules were yellowish gray, sharply circumscribed, and the connective tissue stroma appeared increased. Kidneys, slightly enlarged; capsule smooth and not adherent. On section deep red, markings fairly distinct, and the bases of the pyramids appeared somewhat cyanotic. Mesenteric lymph nodes, not enlarged.

Anatomical diagnosis: 1. Gummata of the lung; 2, syphilitic cirrhosis of the liver; 3, chronic congestion of the spleen with interstitial splenitis; 4, interstitial pancreatitis; 5, chronic congestion of the kidneys.

#### HISTOLOGICAL REPORT.

Liver: The distinction between the liver parenchyma and the connective tissue increase was at once distinguishable. The connective tissue was enormously increased and equal in total volume, in all probability, to the remains of the



liver tissue. The liver parenchyma was present in the form of sharply circumscribed areas separated from one another by the enormous amount of intervening connective tissue. The liver trabeculae were distinctly larger than normal, made up of liver cells which were correspondingly increased in size. The liver cells stained well, the cell bodies were slightly granular, the nuclei were large and vesicular, no mitotic figures present. In places, biliary pigment was noted within the trabeculae. The capillaries were slightly dilated and contained numerous red blood cells. The landmarks of normal liver parenchyma were completely destroyed. A central vein was not distinguishable as such. The connective tissue was very cellular and consisted, in the main, of fine fibrous tissue and numerous round and spindle cells. The connective tissue was extremely vascular and rich in smaller and larger capillaries. Newly formed bile ducts especially abundant. Within this connective tissue the original structures of Glisson's capsule, namely, the bile duct, the hepatic artery and vein, could be distinguished. In places the connective tissue revealed small isolated groups of liver trabeculae.

**Lungs:** The nodules described above were typical gummata. There was a central core of coagulation necrosis, consisting of finely granular material containing the remains of nuclear fragments. Immediately surrounding the central core was a rather dense layer resembling granulation tissue consisting of firm fibrous tissue, many round cells, newly formed bloodvessels, and a few giant cells. Some of the bloodvessels showed the characteristic round cell proliferation around the lumen. Beyond this, the lung had undergone interstitial changes with the formation of the so called reversion gland spaces. The remainder of the lung showed some dilatation of the capillaries and very small foci of bronchopneumonia.

**Spleen:** Veins considerably dilated and filled with blood; interstitial tissue fairly abundant; otherwise, no abnormalities.

**Kidneys:** Slight increase in the interstitial tissue; capillaries dilated, and glomeruli normal. Cells of the tubules indefinite in outline. Cell bodies granular and nuclei somewhat pale. The majority of the tubules contained a small amount of debris. **Heart:** Muscle normal. **Pancreas:** Interstitial tissue slightly increased, otherwise normal.

**Microscopical diagnosis:** 1. Syphilitic hepatitis; 2, tertiary syphilis of the lung with formation of gummata; 3, very early bronchopneumonia; 4, chronic congestion of the spleen with interstitial splenitis; 5, chronic interstitial nephritis with chronic congestion and parenchymatous degeneration; 6, interstitial pancreatitis.

#### DIAGNOSIS.

In the differential diagnosis of this seemingly difficult case before the Wassermann reaction was ascertained, the following classification may be of assistance. The types are, according to Osler, noted with their relation to splenic enlargements and anemia: 1, Splenic anemia (Banti's disease); 2, infectious processes: (a) syphilis, (b) tuberculosis, (c) malaria, (d) uncinaemia, etc.; 3, diseases of unknown etiology: (a) pernicious anemia, (b) leucemia, (c) rickets, (d) Hodgkin's disease; 4, new growths—primary or secondary; 5, mechanical obstruction due to: (a) cirrhosis of the liver, (b) heart disease, (c) thrombosis, and (d) secondary adhesions; 6, special causes usually occurring in infancy that cannot be ascribed to any special cause. A majority of these causes could at once be obviously excluded. The following remained as possibilities: 1. Rheumatic heart disease; 2, splenic anemia (Banti's disease); 3, cirrhosis of the liver of indefinite origin; and, 4, congenital syphilis.

1. *Rheumatic carditis.* Rheumatic carditis could explain all the manifestations, except the large but painless liver; it is well known that in exacerbations of rheumatic carditis the liver is nearly always tender upon pressure. Moreover, such a diagnosis is hardly tenable in the absence of fever, arthritis, and a history of previous attacks.

2. *Splenic anemia.* Splenic anemia could account for the splenic and hepatic enlargements, the edema of the lower extremities, and the secondary anemia. It could not account, however, for the leucocytosis, the glandular enlargement, and the nephritis. Moreover, at such a late stage of splenic anemia, one should also expect jaundice and hematemesis. Nevertheless, Osler recently reported a case resembling Banti's disease in a patient aged twelve years, with congenital syphilis. This child showed splenomegaly, progressive anemia, cirrhosis of the liver, and ascites—signs that were present in my case. The high white cell count even suggested leucemia.

Carr also describes a case of congenital syphilis in a child aged twelve years, in whom the liver and

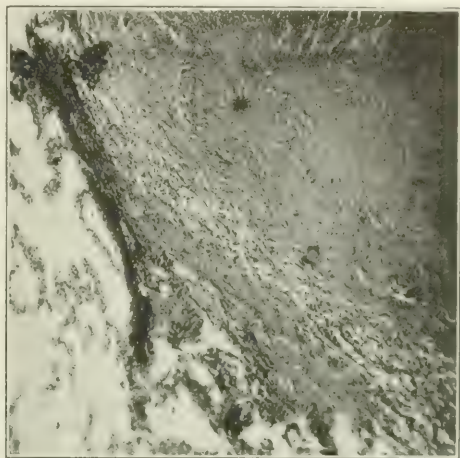


FIG. 2. —Gumma of the lung. (Spirochete not demonstrable.)

spleen were enlarged, and where the family history was negative. The blood picture showed a leucocytosis.

3. *Cirrhosis of the liver with splenomegaly of indefinite origin.* This type of liver disease with splenic enlargement occurs frequently in rickets and marasmus, but should be considered only when all other diagnoses have failed.

4. *Congenital syphilis.* Although there were no definite clinical findings to substantiate this diagnosis, nevertheless, syphilis was the only disease which might cause all the clinical phenomena, even the mental deficiency.

#### SUMMARY OF RECORDED CASES.

*Modes of transmission.*—The modes of transmission of hereditary syphilis may be: 1. Maternal; 2, paternal, and, 3, maternal and paternal.

1. *Maternal.* Matzenauer says that "without maternal syphilis there is no hereditary transmission of the disease." Ferguson asserts that the infection is "invariably" transmitted through the mother for the reason that the size of the spermatozoa precludes growth and multiplication of the spirochetes.

In maternal transmission, the spirochete may infect the fetus in one of two ways, 1, through the placenta; 2, by direct infection. In the latter mode



the infected placenta transmits the disease by direct contiguity after separation of the placenta at its uterine site. Ferguson holds that the separation of the infected placenta corresponds to an initial lesion. Shaw-Mackenzie also holds that the mother is the most common cause. The latter quotes Ferguson to the effect that "syphilis in the child is equivalent to syphilis in the mother." Pernet agrees with Matzenauer that syphilis is transmitted through the fetus always through maternal avenues. This contention has been definitely set aside by Finger, who in experiments upon monkeys was enabled to transmit the spirochetes through the seminal fluid.

2. *Paternal.* Finger has definitely proved that seminal infection is possible. Brennerman goes further and holds that spermatic infection is responsible for hereditary syphilis. Ravogli, supporting Finger, considers seminal transmission as the essential etiological factor. Transmission through the father is also maintained by Cullier, Simonetta, and Oeuvre. In my opinion a syphilitic infection of both parents is the only reasonable method of transmission of syphilis to the infant.

3. *Maternal and paternal.* I hold this view (maternal and paternal transmission) because it is difficult to conceive that a syphilitic infection sufficient to give profound signs in the fetus cannot previously or perhaps simultaneously have infected one or the other of the parents. Coutts, Fournier, and Allen hold that the toxæmia alone may be transmitted to the fetus and cause the characteristic specific changes. In my view, this condition is hardly demonstrable of proof. Moreover, it would be a unique phenomenon in the history of bacterial infections.

In my case the Wassermann examination of the father's blood was negative, while the reaction in the mother was not permitted. The negative Wassermann reaction in the father does not exclude a previous syphilitic infection. At all events, the *subsequent* infection in my case cannot be determined.

*Classification of hereditary syphilis:* 1. Hereditary transmission of the contagion, and, 2, constitutional changes.

Syphilis of the offspring which presents the typical manifestations such as snuffles, rhagades, condylomata, macerations of the palms and soles, etc., is regarded as belonging to the first group. The constitutional changes occurring in syphilitics, such as arrested mental and physical development and osseous changes, are classified in the second group. My case undoubtedly belongs to the second group.

*Mental changes.* That the mental changes are proportionate to the extent of the bony changes in the skull, must be seriously considered. The increase in bone formation occurs in the frontal and especially in the parietal regions; this was exemplified in my case. General "nervousness," feeble mindedness, and epilepsy are not uncommon. Microcephaly and Mongolian idiosyncrasy may also occur. In other cases, as may have intermittent headaches, severer at night; convulsions, facial spasms, and contractures—mostly specific in character. Speech defects, such as difficulty in pronunciation and stuttering have been described. In this group may be included symptoms arising from softening of the brain and ganglia of the cranial nerves. Still reports fifteen cases of hereditary syphilis in which

there were ten with cerebral manifestations. Shuttleworth examined 2,380 imbeciles and found twenty-eight of syphilitic origin. Sherlock found thirteen out of ninety feeble minded children, while Gordon recognized eleven out of sixty-six mentally deficient children with luetic stigmata. Clouston noted juvenile general paresis following lues; cases have also been reported by Mott, Watson, Shuttleworth, and Ferrier. Juvenile tabes may also occur. For ten recorded cases of juvenile paresis, there is but one of juvenile tabes (Nonne, Kuttner, Skala, Raymond, and others).

*Eye changes.* I have been unable to find a report of bilateral exophthalmos in congenital syphilis. On the other hand, unilateral exophthalmos occurs fairly frequently. The etiology of the exophthalmos in my case is obscure.

*Blood picture.* Since this case represents the tertiary stage of lues, the blood changes are studied from this standpoint and compared with the findings of others. Watabinski has found that the total white cell count is usually below normal, but the basophiles and eosinophiles are increased; myelocytes are often found. Engel reports a case of congenital syphilis, in which there was a progressive increase of the polymorphs as the condition became more serious. Hazen also reports a case with 16,000 leucocytes and a lymphocytosis of fifty-seven per cent. Emerson contends that the presence of a high lymphocyte count points to a severe infection.

The leucocyte estimations in my case do not agree entirely with those cited. Ewing says that the white cell counts in congenital syphilis in the tertiary stage are increased and may even equal leucemic counts. Cabot's studies show that a leucocytosis, a lymphocytosis, and the presence of myelocytes are characteristic of congenital syphilis.

*Prognosis.* Marshall, in his *Mortality and Morbidity Studies of Congenital Syphilis*, completely summarizes this phase when he quotes Fournier's table:

|                             | Percentage—<br>Mortality. Morbidity. |    |
|-----------------------------|--------------------------------------|----|
| Paternal transmission ..... | 28.0                                 | 37 |
| Maternal transmission ..... | 60.0                                 | 84 |
| Combined transmission ..... | 68.5                                 | 92 |

From this table it is evident that paternal transmission is less virulent than maternal, and that combined transmission is the most serious.

281 EAST BROADWAY.

## THE PREVENTION OF SYPHILIS.

BY ARTHUR W. STILLIANS, M. D.,  
Chicago.

Associate Professor of Dermatology, Chicago College of Medicine and Surgery, Attending Dermatologist, Cook County Hospital.

It is possible that to syphilis, instead of to tuberculosis, belongs the unenviable distinction of being known as the greatest scourge of modern times. The lack of statistics in regard to syphilis and the fact that the two diseases so often work together to accomplish the destruction of their victims, make absolute statements impossible; but we know enough to convince us that the work against syphilis should be as vigorous as that against tuberculosis.

*Prevalence.* The estimate of Blaschko (1), that

about ten per cent. of the whole population of Berlin is syphilitic and that of Fournier, that about fifteen per cent. of all Parisians are syphilitic, are well known. Donath (1), of Budapest, states that "the ravages of syphilis are more destructive than those of either alcoholism or tuberculosis; fifteen to twenty per cent. of the human race suffer in some form from syphilis."

Recent investigations in our army give good ground for an estimate of seven per cent. syphilitics in one regiment (2) and ten per cent. in another (3). Barrett (4), of Melbourne, made the serum test for syphilis in practically all cases attending his clinics at the eye and ear hospital for over four months; 14.4 per cent. (the average of two series) gave a positive reaction and most of these were cases clinically not even suspected of syphilis. Sir John Collie (5), a member of the British Venereal Commission, chose 500 healthy workmen who had passed an examination like that for life insurance, had their blood examined and found that 9.2 per cent. showed a positive Wassermann reaction.

**Mortality.** Studies of life insurance statistics and hospital records credit syphilis with from 7.5 to eighteen per cent. of all deaths. White (1) says that syphilis causes more deaths throughout the world than any other one disease, except, possibly, malaria. It causes from twenty-five to forty per cent. of all insanity cases admitted into asylums, not counting locomotor ataxia, and more than twice as many deaths of infants under one year of age as are caused by gastrointestinal diseases.

The vivid picture drawn by Fournier (6) of the affinity of the syphilitic virus for the nervous system and its terrible effects upon the family, is a strong indictment of a civilization proud of its accomplishments in other lines of preventive medicine.

Brieux, the French dramatist, calls venereal disease, alcohol, and tuberculosis "the trinity of death" and it is fitting that venereal disease is given the first place, for syphilis and gonorrhea together are responsible for a total destruction of human life that is truly appalling.

**Prevention.** Yet, until recently, efforts at preventing these infections have consisted in attempts to warn the young of the dangers of sexual irregularity, and the attempt to regulate prostitution under the police department. These efforts are so slight compared to the immensity of the problem that the comparison of A. Corbett Smith (7) is fully justified. He says that our ostrichlike attitude in spending thousands of dollars every year in hospitals and asylums in caring for the remote results of syphilitic infection, and practically nothing to prevent infection, is exactly as sensible as to stop vaccination and spend money trying to cure smallpox.

The attitude of the public is largely responsible for this neglect. The old argument that nothing must be done to lessen the danger of venereal infection for fear of encouraging irregular sexual relations is still in use by some otherwise intelligent people. Guy de Preval, evidently one of the Progressives of the eighteenth century, was removed from the list of regent doctors of the Faculty of Paris, in 1772, because his preventive lotion "opened the door to prostitution and produced an upheaval that would do harm to the population, to common

sense, and to the purity of morals" (8). This fear and the Puritanical idea that the venereal infections are God's punishment for sin, are slowly losing ground, and we are learning that the threat of contagion has only a minimum effect in restricting the social evil and that the practical protection of innocent wives and children outweighs these theoretical objections a thousandfold.

**Possibility of success.** The greatest encouragement to renewed efforts in the prevention of venereal disease comes from the success attained in our army and navy. Our army has long had one of the highest rates for venereal disease of all armies of the civilized world. The constant noneffective rate for syphilis, in 1909, was 2.68 per 1,000 men. This rate would naturally have risen considerably in the following year because of the use of the Wassermann reaction in the discovery of latent cases. Instead of increasing, it has been reduced steadily, until in 1913 it was only 1.17 per 1,000 men. In the same period the constant noneffective rate for all venereal diseases has been reduced from 11.14 to 3.38 per 1,000. And as the surgeon general (9) says, a much further decrease is possible if only the post commanders and surgeons can be impressed with the necessity for strict enforcement of orders in this connection. He estimates the saving from this improvement in 1913 alone at about \$190,000.

**Method employed.** An analysis of the method responsible for so brilliant a result gives an idea of that necessary for the campaign among civilians. The means employed can be classified as educational, legislative, and medical. The education of the troops is effected by lectures and literature presenting the benefits of continence and the dangers of venereal disease.

Any soldier who develops a venereal infection is punished for disobedience unless the record shows that he reported at the hospital on returning from leave of absence and received preventive treatment. Men excused from duty on account of venereal disease lose their pay and have to make up time lost. Venereal disease is reportable, and hospital facilities for its treatment are provided, as well as laboratory facilities for early diagnosis. The men are required to report at the post hospital when they return from leave of absence, and if they have been exposed to infection, they receive a prophylactic urethral injection of some silver salt or of potassium permanganate and an inunction with thirty per cent. calomel ointment.

**Application to civilians.** The campaign among civilians can be built up on the same foundation; but must, of course, be much more extensive and a great deal more along the line of persuasion. Of the educational part so much has been written that I touch upon this difficult subject only to lay emphasis on the work among the freshmen of all the higher schools. Every new student, no matter what class he joins, should be required to attend the lectures on this subject before being allowed to take up his regular work. The lectures should be supplemented by literature. Such instruction is always a delicate task; but should be least difficult with dental and medical students. Many of these young men are infected during their student days, and after graduation not a few of them are infected with

sypylis in the practice of their professions. Most of these infections are preventable, and it is inexcusable to deny to dental and medical students the knowledge of the means of prevention of syphilis.

The better education of the medical profession in regard to early diagnosis and thorough treatment of venereal disease is one of the greatest needs of the day. The use of the dark field condenser and the proper appreciation of the value of the serum tests, as well as the proper use of mercury, salvarsan, and the iodides, would mean a great deal in the prevention of syphilis, for, paradoxically, the proper treatment of the disease is one of the best means of its prevention.

Not only must the present teaching of venereal diseases to undergraduates in most of our colleges be greatly improved; but our past neglect must be in a measure expiated by offering postgraduate courses in these subjects to those in active practice, without whose active participation the campaign against these infections is impossible. The present renewal of interest in postgraduate work in this country can do nothing more profitable than to provide up to date courses in the diagnosis and treatment of syphilis. As Nichols (10) says in a recent article, in spite of our great progress in knowledge of its proper management, few patients are given the benefit of early diagnosis and treatment, and venereal sores are still cauterized or treated with a dusting powder. Early ideas about salvarsan need also to be eradicated, for too many still trust implicitly in a single injection to cure the disease.

Some system of teaching the members of the insurance fraternities would be a most appropriate measure. One thinks that they, as well as the old line companies, would consider it imperative to make every possible effort to prevent a disease that causes so great a proportion of the cases of disability as well as so many early deaths (11).

The roller towel and the common drinking cup have been banished; but this is only the first step. The conscious transmission of venereal disease should be made a criminal offense. Convincing evidence of such a crime may be difficult to obtain; but, as Marsh (12) points out, not as difficult to get as evidence of adultery, which is frequently obtained. The moral effect of the statement that it is a crime to transmit these infections, will be of great assistance in impressing patients with the gravity of the infection and their responsibility in protecting others from exposure.

A practical law is needed, requiring a certificate of health before a marriage license can be obtained. To object that this will result simply in the issue of false certificates is to judge the medical profession by its worst members. Certainly the necessity of deciding whether in a certain case marriage should be permitted will stimulate interest in and study of this sometimes difficult question. To leave the decision to the judgment of the bride, as suggested by Cabot (13), is full of hope for about one bride in a thousand. Years of the most energetic educational efforts will be necessary to reach the other 990.

Dentists must be compelled to sterilize their instruments and taught how to protect themselves from infection. Midwives, corn doctors, barbers,

manicurists, waiters, and cooks must be required to take effective precautions.

Snow (14), drawing a parallel between the prevention of yellow fever and that of syphilis, says that in yellow fever the mosquitoes can be eliminated; but in syphilis no such tangible foe can be found, unless it is the quack. There is no doubt that he richly deserves the title, and that his elimination will be an immense gain in the campaign against venereal disease. The newspapers in Chicago and elsewhere have done wonders in this connection; but it is a work calling for unrelenting vigilance.

Following the lead of New York city, the States of New York, Vermont, Indiana, Michigan, and Kansas (15) have adopted measures to insure the reporting of venereal diseases, allowing the omission of names in the case of private patients. This excellent action, which it is to be hoped will soon be taken by all the States, will in a few years give us statistics on which to base estimates of the gravity of the problem and to judge the success of preventive measures.

Linking this division of the work with the third, dispensary and hospital facilities for the early diagnosis and efficient treatment of the disease must be provided. Here in Chicago we have just opened a hospital for tuberculosis that will afford a means of caring for many cases now neglected and will no doubt soon show a definite effect upon the statistics of that disease. How long will it be before something can be done to care for the thousands of venereally infected neglected every year in Chicago and allowed to roam about carrying infection to the innocent and guilty alike?

The demonstration of Metchnikoff and Roux that a calomel ointment is capable of preventing syphilitic infection is too well known to need more than mention. In spite of such attempts to discount it as that of Siebert (16), it has proved its great value in the experience of many military bodies. But that it is not an infallible preventive must be kept in mind, as the reports from Butte, Carle, Gaucher, and others cited by Siebert go to show. This fact can be turned to account in refutation of the often repeated argument that to provide a preventive of venereal disease is to make promiscuous intercourse safe and to encourage looseness of morals. The danger of infection, though much lessened, is still present, and can still act as a deterrent in the small percentage of cases in which it has always thus acted. On the other hand, the immensely greater number of men who will expose themselves in spite of all warnings can be urged to take a few simple precautions to protect themselves, their wives, children, and friends.

There is no need or justification in instructing innocent youths in anything of this kind. The instruction of the young even in sexual physiology is most difficult of all teaching problems. We cannot hope even that the evil minded fiend who delights in leading innocent youth astray will include preventive measures in his devilish curriculum, for they mean danger and might frighten the victim. But every general practitioner has the opportunity, when consulting with "men of the world," to tell them of the way in which they can avoid paying so terrible a price for their foolishness, a payment which



so often falls on an entire family. These instructions cannot in any sense be called reassuring. They are full of warning of the danger of misconduct, and, as I have said, plenty of real danger remains.

To refuse to recognize the fact that men are morally weak and to try in every way to shield them from the physical consequences of their weakness, is anything but sensible or Christian. Does any one think that the standard of morality of the United States army is any lower because the men are in a large measure protected from infection? In the effort to protect the innocent we must protect the guilty also and leave the punishment of sin to the law and the Almighty.

To carry the argument of the hygienic standpaters to a *reductio ad absurdum*, why not inoculate a few prostitutes with bubonic plague and turn them loose to stamp out the traffic and its patrons? On the other hand, any method of lessening syphilis, no matter how far from ideal it is, has a definite effect in raising the moral tone of the community. Statistics from all over the world agree with those of the St. Charles school for girls and of the Chicago Morals Court, to the effect that a large percentage of prostitutes are decidedly subnormal mentally. The institutions mentioned give about eighty-five per cent. of the girls as mentally deficient by the Binet-Simon scale (17). It is also well known that syphilis is one of the great causes of mental defectives. So that here we have a beneficial "cycle." Lessening syphilis lessens prostitution; lessening prostitution lessens syphilis.

It is proposed by Fronzak (17) that the preparation and distribution of the prophylactic packets can be left to the commercial interests. But, I would add, in agreement with Bachmann (18), only under the most careful supervision, to keep the preparation up to the original formula of Metchnikoff. Substitution of the expensive wool fat by cheaper fats impairs seriously the activity of the ointment, as the originator has shown. Until experimental proof has been given that another formula is "just as good," it is absolutely unjustifiable to allow any but the original formula to be made:

|                           |           |
|---------------------------|-----------|
| R Calomel, .....          | 33 grams; |
| Anhydrous wool fat, ..... | 67 grams; |
| Petrolatum, .....         | 10 grams. |

M. ft. unguentum. Sig.: To be applied before coitus to all parts likely to be contaminated and afterward reapplied after cleansing of the parts. This time it should be gently rubbed in for at least five minutes, and not removed for several hours.

Every man who is known to expose himself to venereal infection should be urgently advised by his physician to use this ointment. If the doctor is conscientious and watchful, he will find abundant opportunity to spread this knowledge. All young men with a history or symptoms of gonorrhea, or those who come to the doctor with a balanitis, a genital herpes, or even nothing but an unsupported fear that they have been infected, all men who incidentally mention their familiarity with prostitution, should be given careful instructions and urged to protect themselves. At the same time it should be made clear to them that this protection, while far better than anything else, is not absolute, and that those who expose themselves to infection are tak-

ing an unwarranted risk, no matter how carefully they follow directions for prophylaxis.

Syphilis is one of the preventable diseases (14), and no useless customs, no prudish notions, no lazy inertness, should be allowed to stand in the way of a movement to make it one of the rarest instead of one of the commonest of diseases.

#### SUMMARY.

1. The need of an active campaign against venereal disease is pressing.
2. The possibility of eradicating syphilis is demonstrated by the brilliant record of the United States army.
3. A campaign based upon the same principles should be instituted among civilians.
4. Educational efforts can well begin with students, especially medical and dental students.
5. Among legislative measures needed, an act making it a crime knowingly to transmit venereal disease and an act requiring a certificate of health before marriage are important.
6. Prevention by means of the Metchnikoff ointment should be advocated for all those who expose themselves to the dangers of irregular sexual intercourse.

In conclusion, I wish to thank Dr. W. A. Evans for valuable advice and the loan of literature not otherwise accessible to me.

#### REFERENCES.

1. WHITE, R. P. (quoted by): The Control of Syphilis, *Medical Magazine*, N.Y., p. 265, May, 1914.
2. REASONER, William. *Syphilis*, N.Y., p. 189, 1909.
3. BARTLETT, quoted by NICHOLS, H. J.: *Jour. of M. Sci.*, N.Y., p. 1828, 1914.
4. BARRETT, I. W.: The Prevention of Syphilis, *Lancet*, i, p. 1749, 1914.
5. COLLIER, SIR JOHN: The State and Venereal Disease, *Brit. Med. Jour.*, ii, p. 285, 1914.
6. FOURNIER: Report to the International Congress for Prevention of Venereal Disease, 1899.
7. SMITH, A. C.: *Jour. of State Medicine*, N.Y., p. 129, May, 1914.
8. MATSON, NEUGE: The Experimental Prophylaxis of Syphilis, 1908, p. 39.
9. Report of Surgeon General, U. S. Army, p. 58, 1914.
10. NICHOLS, H. J.: Syphilis as a Public Health Question, *Jour. of M. Sci.*, N.Y., p. 1828, 1914.
11. PATTERSON: An Economic View of the Venereal Infection, *Ibidem*, ixii, p. 668, 1914.
12. MARSH, P. L.: The Sociological Aspect of Venereal Disease, *Phys. and Surg.*, XXXV, p. 549, 1913.
13. CABOT: Medical Ethics and Social Hygiene, *Lancet Clin.*, Jan. 17, 1914, p. 65.
14. SNOW, W. F.: The Preventive Campaign Against Venereal Diseases, *A. M. A. Bulletin*, ix, 4, p. 188, 1914.
15. EVANS, W. A.: Article (read at the 1914 meeting of the American Public Health Association, Jacksonville, Fla.).
16. NEISSER: *Pathologie und Therapie der Syphilis*, 1911, p. 551.
17. BACHMANN, R. A.: How to Abolish Venereal Diseases, *Urol. and Cutan. Review*, xviii, 5, p. 241, 1914.

MICHIGAN BOULEVARD BUILDING.

## THE GOUTY INDIVIDUAL.\*

### A Few Reflections.

By W. RIDGELY STONE, A. B., M. D.,  
New York.

This subject, while perhaps somewhat trite and much worn, still affords an enormous field for original investigation and accomplishment. I feel sure that to the average practitioner, in these days of quick results both in surgery and medicine, such a condition as gout, which requires infinite patience in its treatment and care both for the patient and the physician, can afford but little actual interest. The true cause for this lack of interest to the average physician lies wholly in the failure in the generally accepted empirical treatment of the disease. Would that it were possible to impress upon

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the profession the utter futility of empiricism here as has been demonstrated in the therapeutics of other well recognized diseases! Gout and colchicum have long been almost inseparable, and today we have only a slight change in the fad for coltar derivatives. It is the author's belief that empiricism must eventually give way to a more rational therapy where the gouty are looked upon, not as an unsatisfactory group of patients, but as individuals affected individually and therefore successfully managed only when individually studied. Indeed, we doubt that there will ever be found a categorical method of treatment for all cases of gout. Mankind varies so materially and the manifestations of gout are so strongly variable, that its consideration must of necessity lead only to individual treatment. No disease, with the exception of syphilis, can so variously display itself and also have its true nature, as can gout.

We are all taught the various etiological factors in the production of gout and the modern investigators are stumbling over one another in their eagerness to tag the xanthin, hypoxanthin, or purin which shall establish its own specificity. When this is accomplished, will it materially influence the treatment of the disease? We doubt. Therefore, why not accept, for want of something better, the uric acid of our benighted forefathers, or perhaps, for something which can be specifically referred to, a substance which we may term "goutoxin," which would be as good as any other name.

We are accustomed to look upon the victim of gout—inherited or earned—as but a broken down repository for toxic purins produced by a ruined or congenitally impaired digestive apparatus. It is true that a large percentage of all cases come under this category and present themselves as miserable specimens of humanity, but they have as a rule been subjected to the rigorous empiric maltreatment by mismanaged dietetics and overdrugging. However, we have also a very large group of cases where can be found neither malnutrition nor digestive disturbance, nor a history of prandial excesses or eccentricities. The first group can easily be assisted to a certain vigor where the gout will remain quiescent and under control, while the other more nearly normal individuals present therapeutically a more complex problem. It is among these that we find instances of "lateral" or "masked" gout, chronic rheumatism, goutiness, and certain neuritides. Eczema in various forms, fibrositides, chronic faucitis, headaches, migraines, and sciatica are other pronounced symptoms. The hot, itching eyeball, described by Hutchinson, and cramp in various muscles frequently manifest their presence.

While those of the gouty habit are only too often victims of chronic bronchitis, glaucoma, and iritis, all or any of these symptoms may be present without the slightest involvement of a joint of the body. For the last twelve years the writer has had under observation a physician who has had no manifestation of his gout other than pain and swelling of the border of the tongue. Only a course of gout medication controls and dissipates this condition. Delos Palmer, a dentist, has described certain forms of dental neuralgia in which the origin of the pain is to be found in the gouty deposits along the

nerve canal in teeth of patients between the ages of forty and fifty years, and even older.

Possibly you will say that every one is familiar with this sort of talk about gout, but I am refreshing your memories so that you may better appreciate the conditions which surround the gouty individual. The individuality of each case of gout impresses the writer more and more as his experience widens. The highly sensitive nervous organism which such people have cultivated, makes it imperative that the physician be thoroughly familiar with each patient's temperament in order that lasting benefit be derived from a course of treatment. Practically speaking, it is rare that one finds a suspicion of gout in others than those endowed with either intense uncontrollable natures or those in whom suppression of feelings is and has been continuous for a long period of time. Let us analyze this statement.

Textbooks tell us that alcoholics, gourmands, and those who burn the candle at both ends are most successful in attaining a gouty diathesis. What better evidence do we need for mental control than such individuals? Among the poor, only heavy food stuff can be had which forces gout upon them by compelling the digestive apparatus to overwork with resulting damage to the body's nervous equilibrium. All sorts of bodily excesses are indications of uncontrolled mentality, so that, in the end, under the influence of each and every causative factor in its production, we find this selfsame impairment of the nervous system in that its reserve force and stamina are diminished in amounts. So, too, do we find individuals of most abstemious habits who overtax their physical and nervous systems in hard work without due regard for physical relaxation. In such individuals as have been cited, one can scarcely fail to recognize the similarity of causation of an attack of gout to those which set up certain forms of urticaria where any irritation of the nerve centres may bring on an attack. So, too, we find that once in possession of the tendency to gout, any shock to the higher nerve centres will induce an attack. Falls or trauma of any sort will have the same result. I have in mind a patient who has been in my care for some time, who in the morning will be as well as possible for such an individual, who will go to his office and become enraged with an office boy or anyone over some trifling thing. Within the space of a very few hours he will develop all sorts of symptoms which show that his toxin control equilibrium has been upset and the absorption of the poison has the upper hand in the metabolic activity of the body economy. Fortunately for him, he has been shown the evil result of his lack of temper control, and had latterly been able to save himself much pain, distress, and unnecessary medical treatment. Again, sudden bad news in sensitive individuals will produce an attack of gout as will continued mental strain and worry. We are all familiar or should be, with the importance of keeping gouty patients free from excitement of any sort during an attack in order that convalescence may not be retarded, and to my mind no form of medication will have a curative effect unless this fact be constantly held in view. No case of gout can be made to disappear in spite of the patient, and

therefore it is imperative that one be familiar with each individual's mental makeup before attempting to do more than allay pain. Time and again I have been asked what drug or specific I employ in the treatment of my cases, and though it may appear irregular, I am forced to acknowledge that I believe that the most important curative factor is proper handling of the individual patient's mental condition and positive *knowledge* of his mental viewpoint. I do not remember to have met with two cases of gouty individuals of the same identical sort. In no diseased condition are consolation and encouragement so necessary for a cure. Mental depression is almost constant, and self pity is never absent. No drunkard is so remorseful as the podagra victim who knows the cause of his attack. Impatience and irritability are classic symptoms during an attack and indeed are characteristic of most of the disease's victims.

Now gout, as we consider it, is founded either on an acquired or an hereditary tendency. The man with the acquired *Anlage* is, as a rule, the victim of his own temperament. Most often we find him to be between forty and fifty-five years old before he develops the condition to the extent of an outward manifestation. We see him among his fellows who have worked for success after years of mental activity and worry, and he is now striving to better his financial or esthetic standing in the community. It has been years since he gave up his regular outdoor exercise; he has been too busily occupied with other things. He has eaten irregularly and of indigestible foods, or he has been too tired to eat at all, and he has remained awake at night. Business and worry, worry and business, have been his daily routine. He has become easily upset both at home and in his office. Alcohol is his stimulant for the rebellious flesh, which cries aloud for sleep and quiet. Vacations are but excuses for further physical fatigue; he goes on a shooting trip and his body, unaccustomed to such unusual exercise, is forced by his misguided eagerness to "rest up," to tramp miles over rough unbroken country. At night, when he comes into camp, physically exhausted, he then furnishes his "wonderful appetite" rough unusual food such as he would not and should not look upon in his own home. These things he does until premature senility, manifested in his thickened arteries, warns him of deranged metabolism in the resultant dyspepsia, constipation, pains in joints, and other symptoms of like common occurrence.

Now, when one has acquired a gouty tendency a rather interesting state takes place within the system, which is exceedingly important to understand in order to accomplish any beneficial result by therapy.

The amount of "goutoxin" which is produced in faulty metabolism has reached a point where it has thoroughly saturated the whole body. The point at which the body will tolerate the greatest possible quantity of toxin is what I call the pinnacle of toxic equilibrium. Now any condition which arises to prevent elimination of a great quantity of toxin which may be produced, or any shock to the nervous system which in any way upsets this established equilibrium, will immediately bring about an over-

saturation of the body with the toxin and produce an attack of gout or goutiness. This equilibrium naturally varies in individuals, both in its pinnacle and its stability.

When under proper treatment, this equilibrium has been reduced to its lowest possible point, the gouty patient is freest from manifestations and may be said to have reached a minimum toxic form. However, even when this is accomplished, the tendency to its rise is in no way reduced, and the patient still retains his susceptibility to outbreaks, which, however, are more slow to develop and are more easily checked.

It has not been the intention to make this in any way a learned dissertation, but rather to set forth some few points of vital importance in treating the ever increasing members of this vicious band of self produced sufferers. We insist upon the importance of the victim of this result of faulty metabolism knowing how to rearrange his mode of living so that he may safeguard his subnormal metabolism. Well does Sir William Roberts remark, "nowhere, perhaps, is it more necessary to consider the man, as well as the ailment," and very often more the man than the ailment.

The failure to remember this leads to empiricism in therapeutics and a resulting failure of a beneficent outcome of an otherwise conscientious therapy. There is no disease of man in which common sense in therapeutics is so necessary, since overtreatment is fraught with unhappy results both for the patient and his physician. On the one hand, he meets with overdieting to starvation, on the other, he is nauseated with drugs and rejuvenated with radioactivity, ultraviolet rays, fanciful matters, and frauds.

Indeed, every uric acidist most eagerly seizes upon this unfortunate, and crowns his victim's hopes with a garland of roses, the flowers of which wither and fall, leaving behind but a circlet of thorns.

73 WEST FORTY-NINTH STREET.

## LIFE INSURANCE AND THE KIDNEYS.\*

By J. S. LANKFORD, M. D.,  
San Antonio, Tex.

Since the acceptance of the teaching of the younger French investigators, medical directors of life insurance are in better position to study the question of selection from the standpoint of the kidneys. The kidney is a common permeable filter which may become disordered and filter some things, as albumin, too freely, or become more or less impermeable and retain in the blood other things, as urea and chlorides. The newer classification of nephritis should be albuminous, uremic (urea retention only), chloremic, and cardiovascular. The all important question in diagnosis and prognosis is the permeability of the kidneys.

Our actuaries can verify the statement that the mortality statistics of life insurance companies and of governments, show an increase in the death rate from kidney disease that may well give concern to life insurance officials, and especially to medical directors and medical examiners, for upon them falls

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a heavy responsibility. The increase during the last twenty years has been startling, as any one may easily prove by data readily available.

It would seem that this increase in nephritis and other kidney diseases is due to many causes. Drinking is a factor in the general causation, chiefly for the reason that it induces a marked impurity and excessively; but the drink habit is diminishing. There has been no great increase in the consumption of proteins to account for it, and, besides, the increase is notable in Japan, a rice eating nation. Syphilis is not responsible, for there has been no growth of moral depravity to augment exposure. There are probably three great causes operating: First, the growth of transportation facilities during the last quarter of a century has increased travel and the intermingling of people a hundredfold, greatly increasing exposure to infection, especially by the pneumococcus, streptococcus, and colon bacillus; second, during the same period, there has been a radical change in our food, so that we almost live on cold storage supplies and a thousand things from the shop shelves. It is difficult to believe that all this food supply is free from bacterial and chemical matter that might damage the kidneys. Nature wisely provided man with organs to digest natural things in great variety, but not adulterated abominations. It is probable that we suffer from food poisons in this way and that the intensive study of the chemistry of the body now going on may develop some interesting truth relating to the increase in kidney disease. Third, and most important of all, is nerve strain. It is significant that by far the greatest increase is found in Japan and the United States, in spite of the fact that the Japanese are vegetarians and the Americans heavy consumers of animal food. It may be the high pressure of big business affairs, or the dreary and weary way of the careworn housewife; it may be the repeated shocks and constant strain of the conscientious physician, or the drudgery and the worry of the mechanic or laborer trying to exist. Undue nerve stress from some cause depresses the functions of organic life for a considerable time, and the whole machinery is thrown out of order; food that has been digested without difficulty becomes a poison through some unknown cellular action, and the intestinal tract is loaded with indoxyl sulphate and its mischievous allies, and with harmful bacteria. Resistance is weakened, absorption through bloodvessels and lymphatics is continuous, the blood is heavily toxic, and the kidneys, in a constant effort to eliminate the poisons, are kept in a state of irritation until they become diseased.

The wise medical director will keep in mind other not infrequent causes of kidney disease, such as tuberculosis and various infections from the bladder and prostate, especially by the gonococcus. Heredity also is a factor that should be carefully considered if there are two or more cases in the family history.

This matter of the cause of kidney disease has an important bearing on selection on account of occupation, environment, habits of life, and even disposition. The chloremic, uremic, and cardiovascular forms, of course, represent advanced stages of disease, and would not be put upon the books if every

applicant was carefully examined by a competent and honest man who would recognize the early signs and associated symptoms. But the regrettable fact is that the urine is not even examined in some cases, and that many such applicants are insured and a large number go down in the mortality records as pneumonia, "convulsions," "congestion," acute indigestion, or other misnomer. This makes it a most excellent rule to require a specimen for examination in the home office as well as a report. The expense involved in the employment of assistance for this special work and the postage would prove a fine investment by materially reducing the mortality. The albuminous form falls in the same category with the others when well marked and attended by the usual symptoms.

Transient albuminuria is not inconsistent with insurance at standard rates, but each case must be examined repeatedly and studied carefully. It is conceivable that sound, permeable kidneys might leak albumin temporarily from circulatory pressure, as in strenuous athletics or hard physical labor; in great excitement or strong emotion; or when extreme cold suppresses the action of the skin. The circumstances of the examination therefore must be ascertained. In testing for albumin the magnesium sulphate-nitric acid test is strongly recommended for universal adoption. Heat with nitric acid is uncertain and sulphosalicylic acid is too delicate. In prohibition countries there is no alcohol, and gas is found only in cities; but this test is always available anywhere and is perfectly reliable.

If an applicant has persistent albuminuria, even a trace, it is one of the most difficult things in life insurance to rate him with justice and safety. In such a case there must be glomerular change. So called "irritation," in final analysis, is beginning organic disease, and it is a question of progress in development, and that again depends on many side issues, as occupation, diet, habits of eating and drinking, weight, method of living in general, and the disposition to worry or to be a happy philosopher. It may require many months or several years of observation to estimate the future of these cases. The sphygmomanometer is an invaluable aid in this study, and frequent tests should be made. In some cases the tension, both systolic and diastolic, runs up above the limit of safety for months or years before any other sign of trouble appears. In others a general low tension with a very limited pulse pressure range occurs, on account of myocardial weakness from poison.

Persistent low specific gravity is decidedly unfavorable. Three cases are recalled in practice before the days of the blood pressure instrument, in which there was profound uremia with no other abnormality discoverable even with the microscope. Persistent specific gravity of 1.015 is suspicious, and if it runs constantly about 1.010 or 1.012 or lower, with the blood pressure tending to cross the line of safety, and there is a trace of albumin present, the applicant should be postponed or declined, especially if the pulse pressure is as low as twenty-five mm. If, in addition, indican is constant and excessive, cylindroids are numerous, and hyaline casts are found, nephritis is present or inevitable and the risk is very unsafe. If the albuminuric is free from

these various indications and the eye grounds are clear, the functioning power of the kidneys should be tested out by the phenolphthalein or methylene blue method, and if found satisfactory he may be accepted without limitation, or receive an endowment, or be rated up according to occupation, environment, and other circumstances surrounding the case. But great care is necessary to determine the question of urea and chloride elimination especially.

A paper on the kidneys in life insurance would be incomplete without some reference to the possibility of prolonging the life of the nephritic. The race is on and there seems to be no way of checking the unsafe speed of humanity; but two things can and should be done. There is a mighty untapped power in our millions of policy holders that could be utilized in forcing the Government to create a cabinet position and to establish an adequate department of health for the better control of food supplies and infectious diseases, and general promotion of the public health.

Finally, in the face of known facts, no company can afford to overlook the advantage of a regular annual examination of policy holders over the age of forty years. This would be a highly creditable business procedure, and at the same time a meritorious philanthropic work that would bring tenfold returns in the general education of the public and in lengthening life.

The young French scientists have revolutionized our conception of kidney disease, and with the application of this recent knowledge in directing the life and habits of the policy holder, especially in the matter of diet, years of usefulness may be added to the life of the nephritic to great profit.

When these things are done the life insurance company will be serving its highest possible purpose in the interest of the stock holder, the policy holder, and the people.

## PULMONARY TUBERCULOSIS AND DIATHERMY.\*

BY ALBERT C. GEYSER, M. D.,  
New York,

Professor of Physiological Therapy, Fordham University Medical College; Instructor in Electrotherapy and Radiography, Cornell University Medical College.

The members of this association, perhaps more than any others, are so thoroughly conversant with the etiology, symptomatology, diagnosis, and prognosis of tuberculosis that I need not waste time upon these questions. Professor William H. Welch, of Baltimore, at last year's meeting of the National Tuberculosis Association in Denver said among other things: "In the light of our newer knowledge, there is abundant reason for the ever increasing emphasis placed upon the importance of attacking the problem of tuberculosis in the early years of life."

Professor Welch evidently had in mind the prophylactic treatment, and while I am in absolute sympathy with his remarks, yet there must be something done for the patient who does not show any

manifestations of the disease until later in life. It is for this stage of the disease that this paper is intended, and I would add to the remarks of Professor Welch, that this disease should be attacked in the early weeks or in its incipency. When it comes to a question of therapeutics, we must stop to consider the statistics for the past few hundred years. We will then ask ourselves the question, Has the death rate diminished, or has the disease process been in any way mitigated by artificial means?

The answer is only too obvious. Tuberculosis is among us; the tuberculin test has shown that over ninety per cent. of children are infected before their twelfth year; nearly one hundred per cent. of all the bodies that come to autopsy show unmistakable signs of a previously existing tuberculous lesion; one seventh of the entire human race die annually of this disease. I need, therefore, offer no apology in bringing before this association a subject that seems almost threadbare. On the contrary, it is not only the privilege but the special duty of this association to investigate the merits or demerits of clinical research.

The first law in all therapeutics is the removal of the cause, or if that is impossible, then to make the cause inoperative by so calling the forces of Nature to our body defence as to ultimately overcome the effects. This leads us to the consideration of two questions: What is the cause of tuberculosis, and what are our body defences that overcome this cause? All authorities seem to have agreed upon two requisites, *Bacillus tuberculosis* and a suitable medium for its development and future propagation.

The symptoms which are manifested by the patient are the result of absorbing a toxin elaborated by the bacillus or as the result of the death of the bacilli so that we have *Bacillus tuberculosis*, a suitable medium, the formation by the bacillus of a toxic element, the absorption of this toxic element by the individual cells of the host.

Should any one of these conditions be lacking, we should not, we could not have these manifestations of tuberculosis. Viewing tuberculosis from this standpoint, it would be simple enough at least to interfere with one or even more of these essential conditions. Has the disease process ever been interfered with? Let us see, about ninety per cent. of children, before the age of twelve years, are infected with the bacillus; do the ninety per cent. of such children die of tuberculosis? Certainly not. Do they manifest this disease during the rest of their lives? Again most emphatically not, because only one seventh of the entire human race die of the disease.

Something has removed one of the necessary elements in the chain, something has arrested the progress. Persons well advanced in years die of accidents and other intercurrent diseases; their bodies come to the autopsy table; over ninety-five per cent. will show unmistakable signs of having had at some time during their existence all the elements necessary for the development of tuberculosis. The progress, however, was arrested, the lesions healed and perhaps tuberculosis was never even suspected and certainly not treated, yet *something* did heal the lesions.

That *something*, whatever it was, wherever it

\*Read, by invitation, before the American Association of Clinical Research, Baltimore, November 8, 6, 7, 1934.

came from, was inherent in each system, it was not produced by artifice, it was natural, it was physiological. That something we must find, that same something that is now curing patients, that always has cured them we must discover if we ever hope to cut short the ravages of this dread disease, "the white plague."

There are two main channels for infection, the one through the inspired air, the other through the gastrointestinal tract. Environment and heredity are predisposing causes. We have tuberculosis taking place as a result of these conditions, in or around the immediate neighborhood of joints (spine, hip, knee, elbow, and finger), the glandular system (cervical, bronchial, and mesenteric), the skin or the apices of the lungs. All these tissues, though differing widely in their anatomical structure and physiological function, have one thing in common, namely, physiological anemia.

Because *Bacillus tuberculosis* seems to select these regions, it would appear as if these bacilli possessed a predilection for blood poor areas. Not only that, but because the toxins do not call forth a positive chemotaxis, whenever this toxic material becomes associated with the tissues, anemia is the inevitable result and a further spread of the bacilli is made possible.

Contrary to general expectations, we have in the lungs anemic areas. They are endemically found in individuals wherever our too gregarious ways of living herd masses of human beings together within cramped spaces. In the confined and polluted air of schoolrooms, factories, shops, all night restaurants, people unlearn the habit of deep breathing by the way of unconscious reaction against the vitiated air. Nonuse of the lungs soon leads to anatomical and functional atrophy with consequent anemia. The relatively imperfect mobility of the apex, its insufficient aeration and lessened blood supply render it a very favorable soil for the growth of the bacilli.

"Under ordinary circumstances, the disease begins in the apical portion of the lungs, not quite at the apex, but usually at a point about one and a half inch below the extreme apex." (Osler). The explanation of this local start is found in the fact that at this point the functional anemia begins and marks the line of demarcation between suitable and unsuitable soil for the bacilli.

Stone cutters, miners, foundrymen, tailors, clerks, and men in similar occupations furnish a high mortality percentage in tuberculosis. In many of these occupational cases we find upon autopsy evidence of dust and dirt deposited in the middle and lower portion of the lung. But the initial focus of the tuberculous lesion is found, not among the dust and dirt, but in the upper or unused area: the anemic area. This forces upon us the conviction that *anemia* is an essential factor. Our conviction regarding anemia as a pathological basis of tuberculosis is furthermore strengthened by the fact that wherever there is an abundant blood supply, this ailment is ~~scarcely present, for instance, in such cases~~ lessions as lead to pulmonary congestion, tuberculosis seldom, if ever, occurs. Asthma is frequently associated with lung congestion and seldom, if ever, is tuberculosis found in an asthmatic patient.

As it is the intention of this paper to deal only with tuberculosis of the lungs, especially in the early stages, I shall omit matters not bearing upon my subject. The diagnosis of tuberculosis resembles that of cancer in the following particulars; the moment that we succeed in establishing a positive diagnosis of either, it is nearly too late for therapeutic benefit. The early symptoms of tuberculosis are subjective and objective. The subjective symptoms cause the patient to consult the doctor for nearly everything except tuberculosis.

1. General malaise and fatigue; the patient tires easily, his appetite is capricious, nothing seems to taste just right, he becomes irritable and moody, he thinks a tonic or stomachic might help.

2. Cough. Upon awakening in the morning there seems to be an unusual amount of mucus, and the patient is obliged to clear his throat. The patient always remembers having been exposed to a draft of fresh air and so "catching cold." He thinks he needs a cough remedy.

3. Loss of weight. For some reason the patient does not seem to fill out, he remains lean and lanky; he is usually ten or more pounds under weight.

*Objective symptoms.* 1. Rapid pulse. As soon as the system absorbs the toxic products of the tubercle bacillus, there ensues a reaction on the part of the system to overcome this toxemia. The result is a quickened pulse rate. A daily pulse of eighty or more becomes suspicious.

2. Increased temperature. It is far better to be guided by the daily variation between the minimum and the maximum than by the temperature *per se*. The normal temperature differs with each individual, but if the daily variation exceeds one and six tenths degree it should arouse our suspicions. The daily variation in a tuberculous subject amounts to from two to three and a half degrees.

3. Progressive loss of weight. A patient with incipient tuberculosis systematically loses weight. This loss of weight is disproportioned to the food intake or manner of labor performed. Such a patient fails to assimilate fat; he is actually eliminating it.

4. Litten's phenomenon. With even a slight tuberculous lesion of the lung, the diaphragm on the affected side does not make its full excursion during inspiration and expiration. In a good light a shadow or wavelike motion can plainly be seen to lag behind its fellow of the opposite side.

5. Supraclavicular retraction. As soon as there is the formation of tubercles in the upper part of the lung, inflammatory adhesions develop. As a result, the supraclavicular fossa on the diseased side is markedly affected upon deep inspiration. On forcible expiration it does not fill out quite as well as its fellow.

These are some of the early important clinical signs of pulmonary tuberculosis. Whenever a majority of these are present, the case should be considered in the pretuberculous stage. If the patient shows a minority of these symptoms, then laboratory aid must be sought.

1. Tuberculin reaction. Whether this responds to the cutaneous, the subcutaneous, or the conjunctival is immaterial. Reaction means that there is or recently has been a tuberculous process some-



where in the patient. If the process is latent and the local lesion cannot be determined, such a patient may be considered tuberculous, but he should not undertake therapeutics. Hygiene and prophylaxis are his safeguards.

2. The presence of bacilli in the sputum. Tubercle bacilli never appear in the sputum unless softening in the focus has taken place. It is, of course, *prima facie* evidence of tuberculosis. If the greater majority of clinical symptoms are absent or even of only moderate severity, the patient may still be considered an early case. If the majority of clinical symptoms are present, the family history good, the environment suitable, his general physical condition still at par, he may be classed as in the early second stage.

When all of these clinical manifestations and the laboratory signs are in evidence, the patient is in the late second stage. It matters little as to time, whether they have been present for one month or several years. Some patients never get past the first stage, others live for years in the second stage, while some die in the third stage a few weeks after the onset.

#### TREATMENT.

The treatment must be based upon the following considerations.

1. The removal of the cause. The bacillus cannot be removed *per se*; but the anemic area can be changed to a hemic one, as the blood contains all the elements necessary for the destruction and final elimination of the bacillus.

2. The healing or recovery from any injury cannot take place without the intervention of at least some of the phases of an inflammation, this must be produced in the affected area.

3. An active inflammation means a positive chemotaxis, which takes the place of the negative phase always associated with tuberculosis.

4. The blood of each individual only is capable of furnishing the needed antibodies for his own particular system.

5. By proper breathing, the patient must prevent a future unused lung area.

Have we a means whereby these much desired requisites can be furnished? We certainly have. The diathermic phase of the high frequency current fulfills every requirement. The high frequency current is a rapidly alternating current. The alternations amount to one million or more a second. When the two conducting cords of a Wappler high frequency machine are attached to two thin electrodes, and between these the patient is placed, the rapidly alternating currents pass in straight lines between the two electrodes.

The human body offers a certain amount of resistance to these alternations. The arrest of motion results in heat. The heat dilates the bloodvessels; the blood being thus heated, performs its physiological function, which is increased oxidation, increased elimination, increased phagocytosis, the formation of antibodies and antitoxins to the particular germ or toxic material present.

In tuberculosis we are dealing, as a rule, with an inadequate attempt on the part of Nature to establish recovery. In tuberculosis of the peritoneum

the surgeon opens the abdomen and again closes it; nothing more is done. The amount of energy or inflammation required to heal the wound, plus the minimum amount of irritation to the peritoneum from the exposure, is sufficient to change an inadequate reaction to an adequate one and a cure results. Though extraneous to my narrower subject, I have mentioned this extraordinary surgical procedure as affording a valuable hint concerning the ways of Nature in combating tuberculosis.

Let me describe now the electric phases of diathermia as following the same line of imitative therapeutics.

*Diathermia.* Let us take an ordinary sixteen candle power lamp and pass through the carbon filament an electric current, either direct or alternating, with one hundred volts and one half an ampère, and what happens? The carbon filament undergoes little or no chemical change, but, on account of the arrested motion, the friction among the carbon atoms becomes so great that the filament is heated to incandescence. This kind of a current of fifty Watts sent through the human body would cause more or less serious injury to the tissues. Let us take this same lamp and attach it to a high frequency current and at once we have the same incandescence.

Now let us attach one pole to the hand of a patient, while he makes contact with his free hand to the lamp, and we have this same current passed through the body of the patient, illuminating the lamp as before, yet there is not the slightest sensation to the patient, in fact, he is not aware that the current is passing through him at all.

Let us take this U shaped tube and fill it with a solution of boiled starch to which some potassium iodide has been added. We are now passing a few milliampères of an ordinary galvanic current through this solution, at once there is a chemical change, the iodine set free at the positive pole forms the blue iodide of starch. This proves that electrolysis has taken place. If we attach the high frequency current to a similar mixture, no change in color takes place. There is instead a gentle warming of the solution, but nothing more.

Here we have an ordinary potato; we pass the high frequency current through this and find that the current has passed directly from electrode to electrode, in other words, the current has passed in straight lines. The potato was cooked in a path straight through the centre, while the outer portion is hardly warmed by the passage of the current.

For our next experiment, we fill a U shaped tube with the white of an egg and insert into each arm an electrode. The current is turned on and we find that the centre of the tube is heated so that the egg albumin is completely coagulated, yet there is no change around the electrode. This demonstrates that it is the tissues that become heated; the electrodes themselves remain quite cool.

Another and much more valuable point is the fact that, while the heat emanates from the periphery to the centre, very soon the greatest heat seems to accumulate midway between the two electrodes. If we take a piece of beef or liver and attach an electrode at either end, the beef or liver undergoes the same heating effect as the potato. If we place three

thermometers in the path of the passing current, we find that after a short time the centre one shows the highest reading.

It may be said that perhaps the blood current flowing within the tissues neutralizes the heating effect. For purposes of demonstration, we make use of a rabbit or guinea pig. We attach an electrode on either flank, and in the short space of three minutes, and with a current of 500 milliamperes, the rectal temperature shows an increase of from three to five degrees, proving that the rectal tissue was heated in spite of the circulating blood.

We will now consider the treatment of tuberculosis in the early stages through diathermia. Patients have recovered from this disease, of that there is no doubt. How did they do so? In the first place, there was an adequate reaction, and a positive chemotaxis caused the germs either to be destroyed or, as is more often the case, to become walled off and isolated from the general system. This could have been accomplished only through the medium of an active blood stream. The blood also furnished the necessary antibodies or antitoxins to overcome the constitutional manifestations.

What are the toxic manifestations? General malaise, variation in temperature, increased pulse rate, and sweating, local or general. It is a fact that the only artificial means that has ever given results, is the injection of tuberculin in infinitesimal doses, one millionth mgm. When this amount is injected and a reaction occurs, the patient suffers from general malaise, variation in temperature, increased pulse rate, and local or general perspiration. We also know that when a patient suffers from tuberculosis, active exercise will in a short time be followed by exactly the same reaction as though he had taken an injection of Koch's tuberculin.

By the physical exertion an increase in the pulse rate with increased temperature and sweating was caused. Some of the patient's own tuberculin was swept into the circulation, hence this reaction. From such experiences we draw the erroneous conclusion that tuberculous patients must be kept absolutely quiet. We now realize that proper, judicious exercise can be made an important adjunct in the treatment of this disease.

In the application of diathermia we produce heat, an increase in the pulse rate, local and general sweating, but seldom general malaise. As a result of localized heat production, there ensues a dilatation of bloodvessels in this area, followed by the entrance into the general circulation of a limited amount of the patient's own tuberculin.

Before considering the clinical record of diathermia, a few words regarding therapeutic lung exercises as an indispensable adjuvant to thermopneumation will be in place. It has previously been pointed out that *anemia* of the lungs is a prerequisite to tuberculosis. How can anemia of the lungs be prevented or overcome by exercise? That is the question, and the correct answer determines the therapeutic exercise required for that particular condition. The answer is deep breathing. This should at first be taught by the patient standing in front of a mirror so that he can observe the entire mechanism of respiration. This deep breathing exercise must be a graded one. The patient must

be gradually taught how to inspire, hold, and again expire the air.

A second indication for exercise is the fact that after all we cannot cure the patient, but the patient must learn to cure himself. The patient's blood contains all the elements necessary for a cure. The system can best furnish these when small doses of the toxic material are caused to circulate in the blood. To accomplish this, nothing is better than a few minutes spent daily in general physical exercise, where every muscle of the body is brought into activity. Whatever these exercises may consist of, like the breathing exercises, they must be prescribed in graduated doses, and above all the physiological reaction must be our guide.

A patient with a high temperature requires rest, while one with a subnormal temperature should take advantage of proper exercises. The variation of the two extremes of the temperature during the twenty-four hours is the best guide as to the amount and frequency of the exercises. The greater the variation, the less the exercise, the less the daily variation, the more energetic the exercise. No law or rule can be laid down in a paper of this kind; the conditions must be treated according to the laws of physiology and the attending physician is the best judge.

This question is frequently asked, What kind of exercise do you recommend? The recommendation of therapeutic measure must be based upon some positive physiological reaction to be desired. It is one thing to prescribe exercises for the purpose of prophylaxis, it is quite another to prescribe for curative purposes.

In an admirable work by Dr. Adolphus Knopf, *Tuberculosis a Preventable and Curable Disease*, the eminent author describes and depicts six exercises. I am sure that if Doctor Knopf's recommendation was carried out, tuberculosis among school children would be reduced fifty per cent. Doctor Knopf very wisely does not lay down any specific exercises for therapeutic purposes in this disease. Each case is a law unto itself. In a paper of this kind I can only again call your attention to the physiology involved and the particular reactions desired under certain conditions, for we must not treat the disease, but rather the conditions as they present themselves.

In the NEW YORK MEDICAL JOURNAL for August 22, 1914, appears the presidential address of Doctor Van Rensselaer, the medical director of the Albany Tuberculosis Camp, entitled, *Diathermia in Phthisis Pulmonalis*. Doctor Van Rensselaer in this address reported to the therapeutic society of this State, that with this system of treatment the recoveries or the apparently cured amounted to the amazing rate of sixty-nine per cent. The best previous methods have to their credit only fifteen per cent.

At the Albany Tuberculosis Camp this system was given a thorough trial in the following manner: All patients regardless of condition were divided into three groups. One third received the usual hygienic treatment in vogue in all sanitariums; the recoveries were fifteen per cent. The next third were given the same treatment plus tuberculin injections; the recoveries were fifteen per cent. The

last third received the usual hospital care *plus the diathermic method of treatment*; it was in this one third that sixty-nine per cent. of recoveries took place.

From my own experience in institutional treatment I am convinced that in properly selected cases ninety per cent. are amenable to this treatment; in private practice about eighty per cent., while in public clinics the percentage drops to about fifty per cent. of recoveries.

In the Fordham University clinic, which is under my immediate supervision, and in charge of my able assistant, Doctor Weldon, we expect sixty per cent. of recoveries. There is no doubt that this percentage could be materially increased if the habits of the patients were under better control as far as their economic conditions are concerned while away from the clinic.

*Technic for the application of diathermia.*—The present technic is very simple. The tin electrodes are applied front and back over the area involved. The current is gradually increased to 1,500 milliamperes. After two or three weeks of this strength, if everything has progressed normally, the current is increased to 2,000 milliamperes, while in another month the current is given to the point of tolerance, which is about 3,000 or even 3,500 milliamperes; at this point it is maintained during the entire course. At least from twenty to thirty minutes must be devoted to each treatment, while the entire period requires from six months to one year.

During the actual application of the current, we observe an increase of the pulse rate, four to ten beats a minute, an increase of body temperature of from 0.5 to 1° F. There is at first local, later profuse general perspiration. If the dose has been too strong or the time too long continued, all these symptoms are exaggerated and followed by general malaise lasting several hours.

Time does not permit of a detailed account of the behavior of patients under treatment. I refer those interested to *The Chironian*, Flower Hospital, New York, issue of December, 1913, or the *Medical Times*, issue of September, 1914. We have in diathermia an agent and a method capable of simulating Nature's own in the cure of this disease. After all what greater healing power is there than the *vis medicatrix naturæ*?

231 WEST NINETY-SIXTH STREET.

## THE TREATMENT OF DIARRHEA.

By JOHN C. SIMPSON, M. D.,  
Philadelphia.

In the treatment of diarrhea, the primary consideration is relief of the cause, as diarrhea in each instance is the result of a definite cause. This being removed, the diarrhea in most cases ceases, but should this not occur, then measures must be directed to the diarrhea itself. In this paper, therefore, we take up the treatment in relation to the various causes.

*Food intoxication.* The most common cause of diarrhea is the ingestion of tainted meats, spoiled sea food, unripe vegetables, etc. The diagnosis is made from a history of having eaten suspected food,

followed by a sudden attack of colicky pain, frequent watery stools, nausea and vomiting, and at times shock and even death. In these cases an absolute necessity is the removal of the offending substance. The treatment, therefore, is inaugurated by a thorough lavage of the stomach, using lukewarm water through a stomach tube, and if a tube is not available, the patient is directed to drink a large amount, say two quarts, of warm salt water, thus causing emesis and a thorough evacuation of the stomach. The intestinal tract is then to be relieved of its contents. I am accustomed to give a soap-sud enema, and immediately to administer one ounce of castor oil, either plain or in some pleasant form. Should the patient refuse castor oil, then a two grain dose of calomel, one sixth grain every fifteen minutes, followed by a saline, is given. Castor oil is to be preferred, as it acts rapidly, and is a mild purge. As the abdominal cramps are usually severe, they require relief. This can usually be accomplished by the application of local heat with a hot water bottle. Should this fail, ten drops of the tincture of belladonna, or a hypodermic injection of atropine sulphate, grain 1/100, tends to relieve the painful spasm of the intestinal walls, and finally, a preparation of opium is to be exhibited, preferably paregoric in dram doses every two hours, till relief is obtained; in extreme cases morphine must be given hypodermically. A mixture of ten drops of spirits of chloroform in a dram of compound tincture of cardamom *pro re nata*, succeeds in relieving pain in some cases.

The patient is to remain in bed throughout the attack, and all food is to be withheld for the first twenty-four hours, when, if the diarrhea has abated, albumin water may be given every three hours for the first day, and from this time on, a normal diet may be gradually approached. The patient is strongly urged to drink all the water possible, as a diluent to the poisonous matters absorbed and to replenish the fluid lost by bowel. In the great majority of cases the foregoing treatment will suffice, but occasionally the diarrhea will persist, when a bland sedative to the mucous membrane must be administered. The subnitrate or the subgallate of bismuth in ten grain capsules, every two hours, twenty minims of aromatic sulphuric acid, three times a day in water, or the following prescription, tends to abate the persistent diarrhea:

|    |   |       |
|----|---|-------|
| R  | Tincture opii, .....                              | ℥xxxj |
|    | Tincture lavandule, .....                         | ℥ssss |
|    | Tincture kramerie, .....                          | ℥vi   |
|    | Pulvis crete composita, .....                     | ℥vi   |
|    | Aque cinnamomi, q. s. ad, .....                   | ℥iij. |
| M. | Et S.: One half ounce every three hours in water. |       |

Salol has been advised in these cases for its antiseptic action in the intestinal tract, but it seems to me that this is irrational, as it would require a dose toxic to the host to influence the intestinal flora. The severity of the attack has at times sent the patient into a state of shock, requiring the usual stimulating and supporting treatment.

*Summer diarrhea of children.* A troublesome complaint is the summer diarrhea of children, due to the fermentation of undigested food. If possible, the child is to be removed from the heat to a cooler climate, preferably the mountains during the summer months. If this is impossible, he should re-



mean in a cool shady place in the open air, and is to be clothed in a light cool garment during the attack. The tepid bath with water at 100° F., for twenty minutes, given three times a day, and the water gradually reduced to 85° by cracked ice, combined with gentle friction, are of distinct value in the management of the case. If the child is vomiting, the stomach should be evacuated, either by a pump or warm saline, as noted under food intoxications. For the removal of any substance that may be irritating the intestinal canal, one fourth or one half ounce of castor oil is to be administered at once. The colon is irrigated twice daily with warm saline at 100° F., throughout the treatment, by a small rectal tube—attached to the nozzle of a fountain syringe, held three feet above the bed—inserted from six to ten inches, and the irrigation continued till the fluid returns clear. Food is to be withdrawn for at least twenty-four hours, and for forty-eight hours if there is no improvement, water being freely given. Barley water prepared by adding one tablespoonful of barley flour to twelve ounces of boiling water, should be the first food permitted, and is started at one and a half ounce, every two hours, gradually increased to three ounces every two hours, then milk, modified to suit the individual case, is added and increased till, in four or five days, the child is on his regular diet. In the majority of cases this plan of treatment will suffice, but at times the diarrhea continues; a preparation of opium is then indicated. Paregoric in five drop doses three times daily, one fourth grain Dover's powder, or even morphine in one one hundredth grain doses may be required. If the pathological condition is due to protein putrefaction, as indicated by an alkaline stool, a culture of *Bacillus bulgaricus*, administered either in tablets or in bouillon culture, is of value, as by its production of lactic acid from the fermentation of sugar, it tends to destroy the harmful intestinal flora. On the other hand, if the condition is due to the fermentation of sugar, we have an acid stool and the lactic acid bacillus is of no value and may even increase the trouble. Benedict concluded that the best preparation was a broth culture obtained fresh from the manufacturer. One c. c. of the broth culture is given three times daily, and should contain between five hundred million and one billion living bacilli. Should the child be prostrated by the attack, he requires stimulation. Brandy, one half ounce in twenty-four hours, will tide over the attack, and a mustard bath, prepared by adding five tablespoonfuls of mustard to five gallons of water at 100° F., for ten minutes, will be of service.

**Dysentery.** A frequent cause of diarrhea in the United States since our acquisition of tropical possessions, and the closer intercourse with tropical lands, is dysentery. Dysentery is of two types, amebic and bacillary. The diagnosis of the amebic type rests on the finding of the ameba, or the ova, in the stools; while in the bacillary type, we have an agglutination reaction with the bacillus of Shiga and Flexner, a complement fixation test in the serum, and the causative organisms can be demonstrated in the feces. Ipecac has long been known as an active amebicide, but the studies of Verder, of the United States army, demonstrated that this property was due to the active principle, emetine, which produces

the same result when given hypodermically, and is then less emetic. Emetine hydrochloride is the preparation used, in one half grain doses, hypodermically, twice daily for a week, repeated three or four days in each month for one half year. A course of emetine will relieve the condition in less than a week, as the ameba is destroyed and inflammation subsides. The treatment with ipecac consists of large doses, and when it is desired to use this drug, the following plan is necessary, as ipecac, when given in large amounts, is a powerful emetic. No food should be taken in the morning, and two hours before the time for administering the ipecac, one half grain of morphine is to be administered, and the patient instructed to fight the nausea, remaining perfectly quiet for at least three hours after the treatment. This is to be repeated each morning for a week. Jones (*Journal A. M. A.*, LXIV, 12) believes that both emetine and ipecac should be used, as he obtained better results by this method than by using one alone. Colonic irrigation, with antiseptic solutions, is a distinct factor in the treatment. The most active solution is a one to 1,000 solution of quinine, but sulphuric acid, one to 2,000, or bichloride of mercury, one to 5,000, is of service. High colonic irrigations with one of these solutions are given once daily, preceded by a one grain opium suppository should the lower bowel be irritated by irrigation. A quart of the solution is sufficient for the purpose. The patient is to remain in bed, and the bowels are to be thoroughly evacuated by castor oil or calomel and salts at the outset of the treatment. The diet should be liquid, preferably milk, and should not be increased till the stools have been normal for three days, while water is to be freely used. Pain and tenesmus are to be relieved by opium either as laudanum, ten drops, or one fourth grain of morphine, by mouth or hypodermically.

**Bacillary dysentery.** As the bacillary type is an acute infection, the treatment is directed on the general lines of that of an acute infection, with local treatment as in the amebic type. A specific serum has been elaborated by Flexner from the various strains of the Shiga bacillus, which has proved of considerable value. The serum is to be given in twenty c. c. doses every six hours throughout the attack. Willmore (*British Medical Journal*, September 25, 1909) reduced the mortality in the quarantine station in Sinai from 64.4 to 9.7 per cent. in one year by the use of this serum.

**Intestinal parasites.** A common type of diarrhea that deserves mention is that due to tape worms, the segments and ova of which may be demonstrated in the stools. The bowels should be thoroughly opened for three days by salines, the food during this time being liquid. From six o'clock the night before treatment is to be given, no food is to be taken. In the morning a two dram dose of the oleoresin of malefern is to be given, followed by a brisk saline purge. The malefern kills the worm, and the saline causes its discharge. It is to be remembered that castor oil must not follow the malefern, as it increases the absorbability of the malefern, and may lead to toxic symptoms. A decoction of pomegranate, four ounces to ten ounces of water, or its active principle—pelletierine—in six to ten grain doses, followed by a saline purge, may be used.

**Nervous diarrhea.** Occasionally a diarrhea is noted for which no cause can be found, occurring in the neurasthenic, nervous patient, probably due to the nervous condition. The treatment here is entirely directed to the nervous condition, upon improvement of which the diarrhea ceases. An excellent treatise on this subject may be found in Dr. S. Weir Mitchell's *Fat and Blood*. The diarrhea of fright may come under this classification, but requires no treatment.

**Thermic.** In very hot weather, with a sudden fall in the temperature, a diarrhea may occur which usually ceases after a few movements, but may continue. Should it continue, a ten grain capsule of bismuth subgallate, taken every three hours for one day, will usually put an end to it.

**Lienteric.** In some patients a diarrhea is noted immediately after eating; this can usually be attributed to one article of diet, upon removal of which the condition improves. Should it still persist, a sixty grain dose of bismuth subnitrate, before eating, is advised.

**Allied with constipation.** All cases of partial obstruction, intestinal stasis, and chronic constipation, show between long periods of constipation, a loose watery diarrhea lasting for a few days, due to the tunneling of the fecal mass by the intestinal contents. The treatment is that of the obstruction, either surgical or medical.

**Infectious.** In the course of practically every infection, diarrhea may be noted, and requires no treatment other than that of the particular infection. But in typhoid fever, should the patient have more than four movements in twenty-four hours, the diarrhea must be treated. As it usually comes from the diet, temporarily stop the milk and substitute albumin water. Bismuth, ten grains, every three hours, a lead and opium pill, five grains, or aromatic sulphuric acid, twenty drops three times a day, may be used.

**Foreign bodies.** A rare type of diarrhea, but one which must be considered, is that due to the presence of foreign bodies in the intestinal tract, introduced through the anus, through the mouth, or coming from within the body, as in a case recently reported by Adler to the Philadelphia County Medical Society, in which the fetal skeleton of a ruptured extra-uterine gestation sac was discovered to be the cause of a long standing diarrhea. The only indication here is removal of the foreign body.

**Tumors.** In practically every tumor of the intestine, or intraabdominal condition causing pressure on the bowel, diarrhea will be noted at some time in the course of the lesion. Here removal of the tumor is the only indication.

GIRARD COLLEGE.

**Vaccine Therapy in Staphylococcal Skin Affections.**—L. Spillmann and R. Zuber, in *Progrès médical* for April 11, 1914, it is stated, report that rebellious cases of acne were scarcely influenced by the vaccine except that pustular lesions became much smaller, less numerous, and more evanescent after the treatment. Some cases of impetigo, of folliculitis, and of syosis barbe in which all previously employed measures had failed, showed striking improvement under the autovaccine treatment.

## AN IMPROVED URETHROSCOPE

### Observation and Treatment of the Deep Urethra and Verumontanum.

By EDGAR C. BALLENGER, M. D.,

Atlanta,

AND OMAR F. ELDER, M. D.,

Atlanta.

The figure shown herewith is of a modification of the urethroscopes now in use, which provides an easy method of disposing of urine, which may pass from the bladder into the instrument; it has furthermore well rounded blunt edges which make it unnecessary to use an obturator. Consequently, when making an examination, the observation may be begun as soon as desired, and continued as the endoscope is introduced. The verumontanum is easily

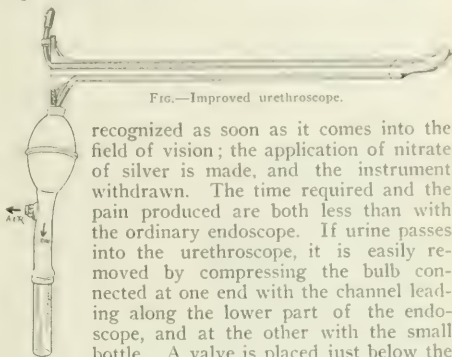


FIG.—Improved urethroscope.

recognized as soon as it comes into the field of vision; the application of nitrate of silver is made, and the instrument withdrawn. The time required and the pain produced are both less than with the ordinary endoscope. If urine passes into the urethroscope, it is easily removed by compressing the bulb connected at one end with the channel leading along the lower part of the endoscope, and at the other with the small bottle. A valve is placed just below the bulb so as to allow the exit of air when the urine is carried into the bottle. The urine, however, gives less trouble when using an endoscope that does not require an obturator.

The lumen of this endoscope is somewhat smaller than in those with obturators, but the ease with which it may be moved backward and forward overcomes this slight disadvantage.

## Therapeutic Notes.

**Active Immunization in the Treatment of Hay Fever.**—K. K. Koessler, in the *Illinois Medical Journal* for August, 1914, reports his experiences in the active immunization of forty-one cases of hay fever by subcutaneous injection of increasing doses of pollen extract. Preparation of the extract was carried out as follows: One cgm. of ragweed pollen is broken up finely in an agate mortar, and ten c. c. of 8.5 per cent. sodium chloride solution added drop by drop. This saline suspension is shaken for two hours and then left in the incubator at 37° C. for sixteen hours. The extract is then again shaken for two hours, subjected to centrifugation, and the supernatant fluid drawn off with a pipette from the undissolved residue. This concentrated pollen solution can be kept on ice for three weeks. For use, it is diluted with nine parts of sterile distilled water and 0.25 per cent. of phenol, thus making the salt solution a physiological one, and the pollen dilu-

from one of one in 10,000 strength. This solution only keeps eight or ten days, becoming then toxic through progressive proteolysis. In immunizing a patient, the initial dose is ascertained by instilling pollen extract into the conjunctival sac and noting the highest possible dilution which will produce hyperemia of the conjunctiva when used in quantities of one drop (0.05 c. c.). This amount of soluble protein pollen causing this hyperemia lies between 0.000,000.1 and 0.000,005 gram. The initial subcutaneous dose given is one half the amount required to produce this hyperemia, never exceeding, however, 0.000,001 gram. For prophylactic purposes the injections are, by preference, begun in May. Few patients show any local reaction at the place of injection. Succeeding injections are given at intervals of four to ten days—the smaller doses at shorter intervals and the larger at longer. The regulation of dose is such that the difference between succeeding doses increases, or at least, remains the same. In some patients an increase of immunity against pollen amounting to as much as several hundredfold or even one thousandfold, as measured by the eye reaction, was obtained. Similar increased resistance was noted where the injections were given, not prophylactically, but after the disease had fully developed. Of the forty-one cases referred to, five were of the early spring variety of the disease and thirty-six autumnal catarrh. Of the latter seventeen had prophylactic treatment and nineteen were treated while hay fever symptoms were present. Four of the forty-one patients were rendered completely free from their hay fever, though remaining in their usual abode. Of the other thirty-seven, twenty-nine were markedly improved subjectively as well as objectively, the attacks being later, milder, and shorter, the patients being enabled to remain in town and at work for the first time in years, and troublesome cough and constitutional symptoms being diminished or disappearing. The remaining eight patients were not objectively improved, though five felt subjectively benefited. Asthmatic attacks, present in twenty-three patients, were ameliorated in sixteen.

**Radium versus Röntgen Ray Treatment in Splenomyelogenous Leucemia.**—Rénon, Degrais, and Tournemelle, in *Bulletins et mémoires de la société médicale des hôpitaux de Paris*, March 20, 1914, assert that the results obtained by them with radium in splenomyelogenous leucemia in the last four years prove this agent to be among the most useful now at hand for the treatment of this disease. Twenty-five cgm. of radium sulphate were applied over the splenic region for a day at a time in each case treated, and the rapidity of action of the remedy, the prompt subsidence of the splenic enlargement, the very pronounced decrease in the number of leucocytes, and the marked improvement in the general condition of the patients, were striking features in the effects produced. Of twelve patients referred to, eight had already been treated with the Röntgen rays, with no advantage or only temporary improvement. In each case radium, used as a last resort, had a marked effect on the spleen. Whereas, in the case of the Röntgen rays, strong irradiations cannot be long kept in spite

of thick filtering shields, lest the skin be injured, radium, with suitable filtration, can be left in the tissues for many hours without danger to the integument. The blood elements can therefore pass repeatedly through the spleen, which is under the influence of the radium rays and gradually absorbs the radiant energy imparted by the latter. The number of leucocytes undergoes a marked decrease in cases in which the Röntgen rays, already used, have lost their effect. In one of the authors' patients, whose general condition had already become desperate, the use of radium brought about so marked an improvement that pregnancy, some months later, was withstood without difficulty.

**A Simple Method of Extracting Foreign Bodies from Deep Wounds.**—P. Lacroix, in *Bulletin de l'académie de médecine* for January 12, 1915, describes a procedure likely to prove effective and useful in the numerous cases of gunshot wounds in which small foreign bodies, such as splinters of bone, fragments of metal, and bits of clothing carried along by the entering bullet have become deeply imbedded and caused protracted suppuration, remediable apparently only by an extensive and therefore more or less serious operation. The author's simple procedure, which was employed with success in a number of cases, consists merely in deep injection, in the sinus through which discharge is taking place, of a small quantity of hydrogen dioxide solution. After probing the sinus a narrow but long drainage tube is introduced down to the point where the foreign body is believed to lie. Two to five c. c. ( $\frac{1}{2}$  to  $1\frac{1}{4}$  dram) of hydrogen dioxide solution is then injected through the drain. The copious liberation of oxygen taking place at the terminal blind end of the sinus loosens and drives out through the drain the foreign body or bodies previously inaccessible. The energy of the gas set free is often sufficient even to expel pieces of metal from the sinus. Where the first attempt is unsuccessful, subsequent introduction of hydrogen dioxide rarely fails to produce the required result.

**Treatment of Typhoid Fever.**—Broadbent, in the *British Medical Journal* for November 21, 1914, advises the employment of an ice bag, hung from a cradle over the right lower portion of the abdomen, in the treatment of typhoid cases. Only a piece of gauze or muslin should intervene between the ice bag and the skin, in order that the cold may act as deeply as possible. As regards drug treatment, Broadbent highly recommends the following combination:

R Quinine sulphatis, ..... gr. ii (0.12 gram);  
Acidi sulphurici diluti, ..... ℥iv (0.25 c. c.);  
Hydrargyri chloridi corrosivi, gr.  $\frac{1}{32}$  (0.002 gram);  
Aque, ..... ℥ss (2 c. c.).

M. Sig.: To be given every four hours—each time at least half an hour before taking food.

In cases with very pronounced diarrhea Broadbent increases the amount of sulphuric acid, while if there is constipation he adds enough magnesium sulphate to insure one or two bowel movements a day. He considers that the sulphuric acid, in addition to overcoming diarrhea, tends to lessen the likelihood of hemorrhage from the intestinal mucosa.



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CHARLES E. DE M. SAJOUS, M. D., LL. D., Sc. D.

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## SCHOOL LUNCHEES.

With the end of the school year it may be worth while to say a few words about the school lunches, which are beginning to be regarded as indispensable adjuncts in school hygiene and as practical methods of teaching children dietetics and food values. Recently an interesting and elaborate report has been issued by the School Lunch Committee of Philadelphia, which analyzes the experimental work which has been carried on for the last five years. The purpose was to find out, first, whether the children would avail themselves of opportunities of buying wholesome food in preference to other kinds sold by street vendors; and, second, to demonstrate a method of serving lunches which would maintain a high standard of food value and at the same time be sold at no loss. It is the opinion of the committee that both are possible, and that they should be extended to all schools and be carried on by the department of education and not by a private agency.

The practical difficulties with which the problem is beset are numerous. The price of the lunches must be uniform and very low, while the cost of food fluctuates; the tastes of the children of various nationalities and of various ages and at various periods of the year must be taken into consideration. Colored children, for instance, like their food very sweet and the Jewish theirs very salty. The lunches

must appeal to the children, yet must contain a prescribed amount of food values and there must be no financial loss in their dispensing. The committee met these and many other problems most successfully. They were also able to observe certain tendencies. They found, for instance, that most lunches are sold at the ten o'clock recess, and that all the children want something to eat at that time and will buy wholesome food if the opportunity is given. Another thing of interest is that the demands for lunch do not follow school attendance and are usually heavier in winter than in summer.

Those who object to the extension of lunches in schools on the grounds of interference with parental duty and pauperization of the children, overlook the facts that very many of the children come from poor homes, where, in addition to poverty, ignorance of hygiene and of dietetics rules supreme, where bad nourishment interferes seriously with the health of the children and their ability to cope successfully with the school tasks. Moreover, the practice as carried on in our schools does not tend to pauperize the children, because the lunches are not given gratuitously, but are based on a *quid pro quo*; and, secondly, they are offered to all the children without discrimination. We shall watch with interest the results upon the health and development of the school children of Philadelphia from the management of the school lunches by the department of education, on a scale hitherto unknown.

## PURE VACCINE VIRUS.

There is no procedure, antivaccinationists to the contrary notwithstanding, that has done more for the health and consequent happiness of humanity than vaccination against smallpox. There have been certain drawbacks to its employment, however, that deserve serious consideration. In the past, after a vaccination, there was expected a period of varying duration in which the arm would be swollen, tender, and painful. There was found a large reddened area that under ordinary conditions would excite anxiety. A large ulcer developed and many days passed before the sore healed completely. The success of the vaccination was in direct relation to the severity of the reaction and the size of the scar. In the course of time it was found that, if the process were looked upon in the light of an operation and the skin surface were cleansed, the reaction was much less severe. In other words, the painful "takes" of early days indicated a lack of cleanliness with consequent infection.

The next step, after cleansing the patient, was the investigation of the virus. It was found that bacteria of many sorts were present constantly. The

attempt was then made to decrease the number, and experiments showed that mixing the virus with concentrated glycerin and keeping it in the refrigerator for two or three months caused a great reduction. The spores that might be present, however, were not affected, while the activity of the virus was impaired considerably. This method of preparation, nevertheless, is what is commonly employed today; infections are not numerous, but the percentage of "takes" may not be as great.

The ideal sought is a sterile vaccine virus that will avoid all chances of infection and that can be used before its activity has been lessened by long keeping. That this ideal has been attained is evidenced by a recent article by Noguchi (*Journal of Experimental Medicine*, June, 1915). He first inoculates the skin of a rabbit, everything being as sterile as possible. Then when the eruption occurs the vesicles are cleansed with absolute alcohol and ether. The scrapings are emulsified in salt solution, then mixed with several volumes of ether and incubated to prove freedom from bacteria. Although this reduces the activity of the virus to one fifth of that which it originally possessed, its characteristic properties still remain. This material is then inoculated into the testicles of rabbits. The testicles when removed at the end of five days seem to possess the maximum activity. After passage through several animals, the virus regains its original strength, and an emulsion of the testicle gives results as good as those obtained by the use of the skin virus.

With such material, untoward effects would indicate either carelessness in the act of vaccination or an infection due to some act of the patient. With the removal of the bacteria the last real argument against vaccination vanishes.

#### SOME PRINCIPLES OF DIETETICS.

The enunciation of true principles in any complex scientific field is an extremely difficult task and one likely to lead to sharp criticism. In recent years the question of human nutrition and the proper diet of man has engrossed many able workers and a considerable volume of literature bearing on this problem has accumulated. But, like all great problems, it is one of many sides, and few men have had the breadth of perspective to enable them to see more than a few of its many phases. We know the work of Pavloff and his followers on the physiology of digestion, we are learning something of the ultimate and intermediate products of the digestion of the several types of food stuffs from the biochemists, and our American workers are giving us accurate information as to the actual needs of the human body in terms of heat units. We can now talk

freely of caloric requirements and balanced diets, but have we yet learned the true principles of dietetics? J. Sim Wallace (*Lancet*, June 12, 1915) does not think that we have and sets out to formulate some of these.

He seems to base his principles largely upon his own experience with dental caries and digestive disorders and upon his own powers of deduction. His first principle is that the kind of food best suited to man is that to which he has become adapted through countless generations, his second, that the anatomy of the digestive organs indicates generally the most suitable type of food; with this is correlated the relation of the diet to the physiological processes of digestion. The fourth of his principles is to the effect that the diet should be so arranged as to leave the mouth and teeth physiologically clean when the meal is finished. This principle should be extended to include the leaving of the rest of the alimentary canal in a similar physiologically normal state. Habitual tempting of the palate is held to be contrary to the teaching of evolution. Other principles of minor importance are suggested, but those mentioned are sufficient to indicate the lines along which Wallace's thought has run.

Each of his principles is supported by arguments and logical deductions, some of which must appeal strongly to the thoughtful student, while others are scarcely acceptable as bases for the formulation of guiding principles. There is so much that is good, however, in the generalizations made by Wallace, and the point of view is both so practical and so foreign to the thought of the ordinary researcher in nutrition and dietetics, that these virtues should not be lost. What is needed now is the fortunate combination of the results of modern scientific studies with the broad and practical principles suggested by Wallace. Such a union should be productive of results for which the practising physician and his patients would be profoundly thankful. How limited are the good effects of the present uncorrelated teachings is too well known to need comment, though it calls for expressions of regret.

#### SARCOMA OF THE PROSTATE GLAND.

A sudden acute retention of urine in a child and the appearance of a tumor in the hypogastrium and perineum, followed by disturbances in the general health rapidly leading to cachexia, should cause us to consider the possibility of prostatic sarcoma. In elderly subjects, too, disturbances of micturition and defecation, with phenomena of cachexia, should cause similar suspicions. This neoplasm must not be mistaken for sarcoma of the bladder, although diagnosis may be difficult, particularly when the sar-

coma develops in the vesical fundus and in very young children. In the adult rectal palpation shows that the prostate is not increased in size.

Hypertrophy of the prostate is observed more frequently in subjects over sixty years of age. Dysuria is more marked, the gland is more regular in outline and less liable to cause compression of the rectum. The elongation of the prostatic urethra is more appreciable. Cancer of the prostate is harder than sarcoma, gives rise to hematuria, and sends out prolongations which compress the sacral plexus. The diagnosis of sarcoma, however, is not unattended with difficulty as is proved by many recorded cases.

Prostatic sarcoma is so malignant that the surgeon is powerless to stop its evolution. In children palliative treatment alone is indicated, the urinary retention being overcome by suprapubic cystotomy. Any other interference seems futile. Bayer extirpated a vesical growth in a child three years and three months of age, by suprapubic cystotomy, cut the vasa deferentia, and anastomosed the ureters into the rectum. The patient died five days later. Gratzner was compelled to give up enucleation by way of the perineum on account of hemorrhage, the patient dying twenty-eight days later.

In the adult the neoplasm grows less rapidly, so that operation offers more chance of success. Fuller operated by the suprapubic incision, Socin by the parasacral route, and Verhoogen by the perineum. Proust recommends, in the case of small growths, free perineal prostatectomy according to the rules formulated by Young in the case of cancer, and in very large growths projecting into the bladder, he advises suprapubic incision.

Prostatectomy gave a survival of five years and a half in a patient of Socin-Burekhardt, four years in a case of McGowan, eleven months in Fuller's patient, and nine months in Verhoogen's case. Thus, surgical treatment in adults may prolong the patient's life provided that the growth is not too extensive, from which arises the necessity of early diagnosis.

#### A SANATORIUM DE LUXE.

The problem of providing suitable environment for the treatment of such metabolic disorders as diabetes, gout, dyspepsia, etc., is an old one. The depressing effect of the usual type is humorously set forth in O. Henry's *Let Me Feel Your Pulse*. There is no doubt that whatever advantage is obtained by a strict régime in regard to diet, exercise, and therapy is often offset by the introspective attitude the patient assumes if his whole interest is allowed to become centred on his symptoms.

An institution of this sort, to be successful, should

create the effect of being a pleasure resort, rather than a cure. It should have every climatic advantage, should abound in natural resources, and be fitted with enough aids to recreation to please the most varied tastes. Above all it should be conducted by scientific officers and have complete laboratory facilities.

Such a happy combination seems to exist in the case of a Scottish institution, which is fully described in the *British Medical Journal* for April 24th. Although it is situated in the north of Scotland, not far from Aberdeen, the climate is exceptionally good. The sunshine in the summer is thirty-seven per cent. of the possible. The scenery is picturesque and the region abounds with game. There is a golf links, of course, and provisions are made for indoor games, such as billiards and cards. The park is 165 acres in extent.

Laboratory methods in constant vogue are x ray pictures of barium or bismuth meals and daily examinations of urine, both for sugar and diacetic acid. The chief medical officer prescribes in each case so many calories of food daily and the forms these shall take. All food given to the patient is weighed; what he leaves and the feces are also weighed. Hydrotherapy is exhibited by the Vichy douche, the Plombières douche, the sitz bath, the effervescent bath, and others.

Even more important, perhaps, than the scientific treatment which is given in each case of metabolic disorders, is the research work which is being carried on at the sanatorium into the origin and nature of these maladies. Other investigations of great practical value are also being done, for instance, an inquiry into the nature of the various foods sold and recommended for diabetics.

#### A SUCCESSFUL METHOD OF TREATING WOUNDS.

C. W. Dugan communicates to the *British Medical Journal* for June 26, 1915, his method of treating septic wounds, which is as follows: Mix equal quantities of pure ichthylol and glycerin, spread it on boric lint by means of a camel's hair brush, and apply it to the wound. The wound should be dressed daily. If there is also suppuration from a sinus, as in the case of a bullet wound, it should be syringed out with pure alcohol; in this case dressing with gauze is preferable to boric lint.

This treatment produces a healthy granulating surface in a few days, and does not cause any irritation of the wound. The daily dressing has a great advantage over fomentations, which necessitate frequent changing and disturb the patient, beside prolonging suppuration. The less moisture about a wound the better. Mr. Dugan has almost discarded what he calls "that barbarity—the drainage tube." The results obtained by this treatment, he says, are most brilliant.



## A STRANGE RESULT OF TYPHOID INOCULATION.

Already a number of instances of typhoid inoculation have been published with ever increasing satisfaction, but a writer in the *Prager medizinische Wochenschrift*, p. 287, 1915, has a genuine novelty to record in this method of prophylaxis. The patient was a waiter in a military hospital. An injection of one c. c. of the Hlava-Honl vaccine was practised on his forearm. Hecht, who reports the case, is unable to explain the phenomena which followed, and which, he writes, are remarkable enough to draw our attention. Soon after the inoculation, the patient was found unconscious. His subsequent symptoms were intense redness and itching of the skin, tremor of the lips, like sobbing, rendering speech inarticulate and wholly unintelligible, abdominal cramps of the most violent character, and a fear of speedy dissolution. The redness and itching of the skin continued for several days, but the spasms of the facial muscles gradually lessened. At this stage spasmodic vomiting occurred; the site of injection was red and slightly painful. The temperature was normal throughout. The symptoms slowly lessened and disappeared on the sixteenth day. Whether the seizure was anaphylactic or an abnormal reaction in a neuropathic person is a matter of speculation.

## TEN PRECEPTS FOR THE WOUNDED.

In one of the hospitals of the eastern district in France, according to *Paris médical* for June 26, 1915, the surgeon in charge has had painted on the walls of the wards containing wounded soldiers, the following ten precepts:

1. Alcohol kills energy.
2. The soldier should wear his hair short.
3. Better live outdoors than crowded into narrow and dirty quarters.
4. Clean your plates with ashes from the hearth.
5. Never expectorate where there are human beings.
6. Typhoid fever is a disease of unwashed hands.
7. Bodily cleanliness guarantees physical and mental health.
8. The dejecta create more risk than the projectiles of the enemy.
9. It is the louse that transmits typhus.
10. When at leisure, do not forget to write to your relatives.

## News Items.

**Changes of Address.**—Dr. B. S. A. ... North Main Street, Liberty, N. Y.

**Medical Assistant, District Attorney's Office.**—Among the ... Commission will hold examinations on July 31st, is that of medical assistant in the office of the district attorney. ... had experience including the whole subject of medical jurisprudence and such scientific subjects as are connected therewith, as clinical medicine and surgery, pathology, pathological anatomy, pathological histology, bacteriology, chemistry, serology, toxicology, etc. The full duties of the examination is open to residents of New York county only.

**The Lane Lectures.**—The next course of the Lane Medical Lectures, at Leland Stanford Junior University, San Francisco, will be given by Dr. Frank Billings, of Chicago, his subject being Focal Infection. The five lectures will be delivered on the evenings of September 20th to 25th. Doctor Billings will also give clinical demonstrations of the subject.

**American Physicians and Nurses for the Teutonic Armies.**—A committee of prominent American citizens, of which former Congressman Herman A. Metz, of New York, is treasurer, is raising a fund to send American physicians and nurses to the Teutonic powers. Contributions sent to Honorable Herman A. Metz, 122 Hudson Street, New York, will be duly acknowledged.

**American Aid for Belgian Physicians.**—The report of the treasurer of the Committee of American Physicians for the Aid of the Belgian Profession for the week ending July 10, 1915, is as follows: Contributions—S. E. B., Pittsburgh, Pa., \$50; Dr. George B. Broad, Syracuse, N. Y., \$10; Dr. Winfred Wilson, Memphis, Texas, \$11.50; Delta County Medical Society, Escanaba, Mich., \$10; receipts for the week, \$81.50; previously reported, \$7,544.34; total, \$7,625.84; total disbursements, \$7,310.04; balance, \$315.80.

**American Surgical Society.**—Dr. Robert G. Leconte, of Philadelphia, was elected president of this society, at the annual meeting held in Rochester, Minn., June 10th and 11th. Other officers were elected as follows: First vice-president, Dr. Charles L. Gibson, of New York; second vice-president, Dr. Archibald MacLaren, of St. Paul; secretary, Dr. John H. Gibbon, of Philadelphia; recorder, Dr. John Binnie, of Kansas City; treasurer, Dr. Charles H. Peck, of New York. Next year's meeting will be held in Washington, D. C.

**American Academy of Medicine.**—Dr. George A. Hare, of Fresno, Cal., was elected president of this organization, at the annual meeting held in San Francisco during the last week in June. Other officers were elected as follows: Vice-presidents, Dr. Reuben Peterson, of Ann Arbor, and Dr. R. W. Corwin, of Pueblo; secretary, Dr. Helen C. Putnam, of Providence, R. I.; treasurer, Dr. Charles McIntyre, of Easton, Pa.; assistant secretary, Dr. W. L. Estes, Jr., of South Bethlehem, Pa. Next year's meeting will be held in Detroit.

**Industrial Accidents in the United States.**—The number of fatal industrial accidents among American wage earners in a single year is placed at 25,000 by the Bureau of Labor Statistics of the Department of Labor, which has issued a report on industrial accident statistics. The number of injuries involving a disability of more than four weeks is estimated at 700,000. "These numbers, impressive as they are," says the bureau, "fail to indicate fully the number of industrial accidents, for such studies as have already been made show that of the accidents involving disabilities of one day and over at least three fourths terminate during the first four weeks."

**Gifts and Bequests.**—By the will of the late Dr. F. S. Pearson, of Great Barrington, Mass., who was a victim of the *Lusitania* disaster, Tufts College will receive \$500,000, the Lowell General Hospital \$50,000, and the House of Mercy of Pittsburgh \$50,000.

By the will of Albert Plaut, who died in New York recently, the Montefiore Home and Hospital will receive \$2,500; Mount Sinai Hospital, \$2,500; Hebrew Orphan Asylum, \$2,000, and the United Hebrew Charities, \$2,000.

By the will of Waldron Post Brown, who died in New York on May 15th, St. Luke's Hospital will receive \$10,000.

The will of the late Dr. Edward R. Gregg, of Pittsburgh, contains a bequest of \$10,000 to the Homeopathic Hospital, Buffalo, to endowment of a bed in the institution in honor of his father, the late Dr. Rollin R. Gregg.

**Personal.**—Dr. Mark J. Schoenberg, of New York, has been appointed instructor in ophthalmology at the College of Physicians and Surgeons, Columbia University, New York.

Dr. Wolff Freudenthal, of New York, has been elected second vice-president of the Brookhaven Village Improvement Association.

Dr. W. F. R. Phillips, of the University of Alabama, has accepted the chair of anatomy in the Medical College of South Carolina.

Dr. Ramon Guiteras, of New York, sailed for France on July 10th. He will remain abroad until about October 1st.

**The American Ophthalmological Society.**—At the annual meeting of the American Ophthalmological Society, held in New London, Conn., July 6 and 7, 1915, the following officers and committees were elected: President, Dr. G. E. de Schweinitz, of Philadelphia; vice-president, Dr. Peter A. Callan, of New York; secretary-treasurer, Dr. William M. Sweet, of Philadelphia; council, Dr. William H. Wilmer, of Washington; Dr. R. A. Reeve, of Toronto; Dr. Alexander Quackenboss, of Boston; Dr. Arnold Knapp, of New York, and Dr. William Zentmayer, of Philadelphia. The committee on thesis is composed of the following members: Dr. W. H. Wilder, of Chicago; Dr. Alexander Duane, of New York, and Dr. G. S. Derby, of Boston. The next meeting of the society will be held in Washington, D. C., May 9 and 10, 1916.

**Measles on the Decrease.**—According to figures compiled by the bureau of records of the department of health, the outbreak of measles which has prevailed in New York city for the past few weeks has passed its height and is now declining. The decline is clearly reflected in the death rate 11.02 per 1,000 of population compared with 11.24 for the corresponding week of 1914. Measles and scarlet fever were the only epidemic diseases to show increase over the corresponding week of last year. The others all showed a gratifying decline. Organic heart disease showed an increase of twenty-two deaths, but when considered in conjunction with chronic Bright's disease, the increase amounted to but one death. There was an increase of twenty-two deaths from pulmonary tuberculosis last week, compared with the corresponding week of last year.

**A Campaign against Typhoid Fever.**—Pointing out that the proportion of typhoid cases in the United States is from two to five times the rate in many European countries, due solely to the practice of preventive precautions in those countries, the United States Public Health Service has announced an active campaign of education. Attention is called to the fact that 30,000 persons in this country died last year from typhoid, and 400,000 persons were incapacitated. In many American cities, the bulletin points out, there has occurred within the last twenty years a considerable reduction of typhoid fever. For the country as a whole the rate has been reduced about 50 per cent. in the last forty years. But the present rate is about the same as that which prevailed in some of the other advanced nations of the world thirty years ago. In other words the United States is a generation behind the times in respect to the reduction of its typhoid rate.

**Retail Druggists Condemn Fraudulent Patent Medicines.**—At a meeting of pharmacists of this city, held on July 2d under the auspices of the Bronx County Pharmaceutical Association, the following resolutions were adopted:

WHEREAS, The Department of Health of the City of New York has for some time past been engaged in a campaign against proprietary medicines and so called "patent medicines" which make claims to curative properties not substantiated by fact;

WHEREAS, We know that a greater part of the so called "patent medicines" are practically worthless as medicines, exorbitant in price, and often dangerous to health, and extremely injurious to the claims, our;

WHEREAS, We are forced to keep these so called "patent medicines" in stock and supply the demand created for them by the sensational advertising indulged in by their manufacturers, and

WHEREAS, We can properly meet the legitimate need among the public for household remedies with the harmless and efficacious preparations made according to the approved formulas of the National Formulary and the Pharmacopoeia and the nonsecret formulas of reputable pharmaceutical houses, and with preparations the formulas of which have been approved by committees of pharmaceutical organizations, be it

Resolved, That we, the pharmacists of Greater New York, present, or represented at this mass meeting, do hereby condemn the exploitation of the public of the city of New York by the manufacturers of these "patent medicines"; that we heartily endorse the action of the Department of Health of the City of New York in combating these manufacturers in their exploitation of the public; and that we are ready to aid, either through our organizations, or through our endeavors as individuals, the efforts of the department of health or of any other civic organization in this matter.

WHEREAS, In various instances, in the prosecution of its campaign against the manufacturers of these nostrums the department of health has caused great distress and injury to pharmacists who, according to the statements of the officials, are not to be blamed for their sale of these nostrums, and

WHEREAS, The department's manner of conducting the campaign has brought disrepute on the members of the profession in greater New York;

Resolved, That the department of health be urged to so modify its methods as to remedy this condition; be it further

Resolved, That this meeting strongly disapproves such action on the part of the department, and that the secretary of this meeting be instructed to send copies of these resolutions to the department of health, the organizations, and the metropolitan press.

**Fourth of July Injuries.**—According to an investigation just completed by the New York department of health, no fatal casualties attended the celebration of the Fourth of July in this city. There was, however, an alarming increase in the number of accidents that resulted from the misdirected enthusiasm of the younger celebrants. Inquiry at the larger hospitals of the city, particularly those having an ambulance and an outdoor service, elicited the information that the number of Fourth of July accidents showed an increase of more than 100 per cent. over similar accidents in 1914, and that most of the wounds had been caused by the use of blank cartridges.

**New York State Hospitals Overcrowded.**—Every one of the fourteen New York State Hospitals for the Insane is overcrowded. According to the twentieth annual report of the State Charities Aid Association, these institutions contain in all 33,358 patients, although they were built to accommodate only 27,402 patients. The total overcrowding is therefore 5,956, an average of 21.4 per cent. Manhattan State Hospital, on Ward's Island, has 1,408 more inmates than it has certified accommodations for, an excess of more than 39 per cent. These figures are based on the census of September 30, 1914, and it is said that conditions have grown worse since that time.

**Great Increase in Fatal Automobile Accidents in New York City.**—Figures compared by the bureau of records of the department of health show that during June, 1915, thirty-four persons were killed upon the streets of New York by automobiles, an increase of 70 per cent. over the number of similar accidents in June, 1914. This increase is not at all exceptional; it is, on the contrary, only a reflection of the steady increase in this class of accidents that has been going on for several years, as is borne out by the following statistics: 1910, 111; 1911, 128; 1912, 188; 1913, 293; 1914, 310; 1915 (six months), 152. As the second half of the year always shows higher figures than the first half, the total number of accidents will be considerably higher this year than in 1914. This loss of life entailed an immense economic loss. A conservative estimate is that one person in ten injured dies. Assuming this ratio to have held good in this city during the six months of 1915, there were 1,520 persons injured by automobiles.

**Special Qualifications for Health Officers.**—Under new regulations recently adopted by the Public Health Council of New York State, local health officers appointed after November 1, 1916, must be specially qualified for their work. This affects nearly 1,200 positions throughout the State. The council believes that public health work has many features distinct from the practice of medicine; and that it requires scientific preparation not usually obtained in medical school courses. Realizing that it is difficult for physicians to secure the necessary training by resident attendance at a school for health officers, the council has provided an approved correspondence course, with only one week of resident work in practical demonstrations in laboratory and field work. The qualifications which will be required of health officers are as follows: They shall be graduates of medicine of not less than three years' standing; they shall when appointed be not less than twenty-four nor more than sixty-five years of age; they shall have complied with one of the following requirements: a. They shall have taken a correspondence course in public health of one year with at least one week of practical demonstrations in laboratory and field work, both correspondence course and demonstrations to be approved by the Public Health Council, with examinations and a certificate; or, b. they shall have taken a course in public health of at least six weeks including practical laboratory and field work with lectures and reading at an educational institution, such course to be approved by the Public Health Council, with examinations and a certificate; or, c. they shall have submitted evidence satisfactory to the Public Health Council of special training or practical experience in public health work, with examination if required by the council. It is provided, however, that under special conditions specified in writing by the local board of health or other appointing power or by the health officer, any of these qualifications may be waived by the Public Health Council. A supplementary resolution was also passed by the council recommending to boards of health that in appointing health officers previous to November 1, 1916, they specify that the appointee agrees to conform to the requirements within the first year of the new term.

## Pith of Current Literature.

## PRESSE MÉDICALE.

## CORRESPONDENZ-BLATT FÜR SCHWEIZER AERZTE.

**Actinomycotic Purulent Meningitis**, by C. Wiegand. Wiegand reports in detail the case of a young man, eighteen years old, died from acute purulent meningitis, the cause of which was traced on autopsy to a small abscess in the lung. More briefly he describes another case, of a woman, aged thirty-six years, who suffered in the same way, and was found on autopsy to have actinomycosis of the right upper jaw, Eustachian tube, and middle ear as well, all ascribed to an abscess connected with a carious tooth. The actinomycotic process seems to extend mainly by way of the perineural lymphatic tracts, and to attack the base of the brain and the membranes of the spinal cord.

**Serum Prophylaxis of Traumatic Tetanus**, by J. Dele. The case reported is that of a young man, aged seventeen years, who had a compound fracture of the arm, was given two injections of prophylactic serum, the first about an hour after the accident; yet he had an attack of tetanus five weeks later, from which he died.

## BULLETIN DE L'ACADÉMIE DE MÉDECINE.

**Extraction of a Projectile from the Right Ventricular Cavity**, by Beaussehat. The case is reported of a soldier who had been wounded by the explosion of a hand grenade, one shot entering the right thigh, another, the left deltoid region, and the third, at a point one fingerbreadth below and to the left of the ensiform appendage. Hematemesis and a copious hemorrhage from the epigastric wound followed, and for four and a half months after the injury extreme dyspnea on the least exertion and even on talking, with facial pallor, was noted. Repeated x ray examination appeared to reveal an intrapericardial foreign body. At operation eight cm. of the left fifth rib and cartilage was removed and the pericardium explored and found empty. Palpation of the heart showed the projectile to be free in the cavity of the right ventricle. The heart was now drawn out of the parietal pericardium, guy threads were placed in the right ventricular muscle, the foreign body was coaxed down to external border of the ventricle near the apex and held there with the fingers, and an attempt made to secure it with forceps through a small incision between the guy threads. At the second attempt the foreign body, irregular and measuring 1.5 by one by 0.3 cm., was extracted. Silk sutures in the heart were inserted. Intense dyspnea and a weak, irregular pulse were observed for a few days, and two attacks of pulmonary embolism followed later; one month after the operation the patient had completely recovered. Auscultation was negative, and electrocardiography revealed merely a predominance of the left ventricle over the right.

**Traumatic Arterial Thrombosis**, by Raymond Gregoire. In four cases of injury to the leg on its posterior aspect in which, although conditions were apparently good, the orifices of entrance and exit of the bullet being small, hemorrhage slight, local circulation seemingly normal, and the bones unbroken, necrobiosis of the tissues similar to that caused by ligation of the main arterial supply set in at intervals of ten, fifteen, and forty-eight hours and eight days, respectively, after the injury. There were no evidences of gas bacillus infection. In both of the cases, reported in detail, a clot was found in the posterior tibial artery upon examination of the amputated gangrenous part. In one case rupture of the inner layers of the vessel wall was noted. Stress is laid on the fact thus demonstrated, that whereas direct opening of arteries is a frequent accompaniment of rifle bullet wounds, occlusion without complete rupture may result in a few instances, presumably through a sudden stretching of the vessel or a violent increase in the hydraulic pressure at a given point, causing rupture of the intima and thus preparing the way for thrombosis.

**Extraction of Projectiles by Means of the Radioscopic Table**, by Léon Bérard. The frequency of failure in attempts to locate and remove bullets or shell fragments from the tissues with the aid of ordinary x ray examination or even stereographic radiography is referred to. The author's recent experience with a localizing procedure devised by Wullyamoz, of Lausanne, leads him to recommend it highly in preference to customary methods. The apparatus required consists of a radioscopic operating table or x ray couch; a light fluoroscope provided with an elastic strap, to permit of its being attached to the operator's head; forceps with a right angle band at some distance from the tips of the jaws; and bulldog forceps. The depth of the projectile in the tissues is first determined by means of two x ray exposures on a single plate (stereographic radiography) or by two x ray examinations made at a right angle the one to the other. The exact point beneath the skin at which the foreign body is situated is determined by passing the bent extremity of the forceps over the surface until the shadow of its point coincides with that of the foreign body. The forceps are then rotated up, with the point as centre, until the bent extremity disappears from view. The bent extremity is now pointing directly, like a gun, at the foreign body. The bulldog forceps are fastened at this point and the incision made in contact with its tip. The exact direction and depth of the foreign body from the surface being known, its exposure and extraction are easily effected. About forty cases were thus treated with success. At times five or six cases could be dealt with in an hour and a half to two hours. Repair was accelerated owing to the less extensive injury to the tissues in the search for the foreign body, compared with the methods hitherto employed.



## RIFORMA MEDICA.

June 15, 1918.

**Typhoid and Antityphoid Vaccination in the War**, by M. Ascoli.—During the present war the typhoid cases seen showed atypical temperature curve and diffuse and varied cutaneous manifestations. True septicæmia with marked delirium and petechial eruption is common. Complications as phlebitis, parotiditis, orchitis, arthritis are frequently seen as well as otitis media, pyæmia and adenitis. Relapses are numerous, and the ambulatory type is quite prominent. Long journeys greatly aggravated apparently mild cases. The Widal reaction has been of great service in the diagnosis of the atypical forms of the disease; this test being, however, useless in those subjects who had been vaccinated against typhoid, whose serum always agglutinates typhoid bacilli. The great frequency of paratyphoid in vaccinated individuals is a strong argument in favor of the use of Castellani's combined typhoid-paratyphoid-cholera vaccine.

**Agglutinating Power of Serum after Use of Castellani's Tetravaccine**, by F. Porcelli-Titone.—Experiments demonstrate that the agglutinating power of the blood serum is as potent against each of the microorganisms involved as when vaccination is practised with each one singly.

**Ether as a Suprarenal Stimulant**, by G. Marchetti.—Experiments show that ether given as an anesthetic maintains and increases the tonicity of the organism by reflexly stimulating the function of those organs as it is the suprarenals which are concerned principally in the maintenance of vasomotor tone.

**Resection of Ileum, Ascending Cecum, and Transverse Colon, with Recovery**, by R. Minervini.—This case was one of irreducible intussusception at the ileocecal junction which necessitated this extensive resection amounting to seventy-one cm. or two thirds of the large intestine. There was a remarkable absence of intestinal function following the operation, showing that the descending colon and rectum can carry on the function of the whole large bowel.

## REVISTA DE MEDICINA Y CIRUGIA PRÁCTICAS.

June 7, 1918.

**Salvarsan and Affections of the Visual Apparatus**, by S. S. Mansilla.—Ocular conditions contraindicating salvarsan are optic neuritis, atrophic choroiditis, diabetic retinitis, retinal hemorrhage, and embolism of the central artery of the retina, as well as glaucoma. The effect of salvarsan on syphilitic eye conditions is excellent in acute iritis and paralysis of the ocular muscles, but disappointing in keratitis. The tertiary nature of ocular syphilitic lesions explains the unsatisfactory action of salvarsan in most cases. In the ulcerative lesions of the eyelids its action is marvellous. Many eye lesions occurring after one, or more often, two injections of salvarsan are not due to the drug but rather show that the number of spirochetes in the system is very great, and that greater activity is required in treatment either by mercury or more sal-

varsan. Lesions of the optic nerve yield much more readily to mercury as does hereditary keratitis. As a matter of fact, salvarsan and neosalvarsan are valuable medicaments in ocular syphilis in the secondary stage whereas mercury and iodide of potassium are of more service in the tertiary forms. The beneficial results of combined use of salvarsan, mercury and the iodides are well established in ocular syphilis as well as in other forms of the disease.

## HYGIEA.

January 25, 1918.

**Diabetes insipidus of Probable Hypophyseal Origin**, by G. Krikortz.—In a girl of six years formerly well, polyuria was noticed beside languor, anorexia, rapidly increasing weakness, and vomiting and headache; she was soon bedridden, with added diplopia, photophobia, exaggerated patellar reflexes, and stiffness of the back of the neck. Lumbar puncture showed no increased tension. Cerebrospinal fluid showed negative Wassermann and absence of tubercle bacilli. Vision diminished until absolute blindness of both eyes ensued—no pupillary reaction—fundus oculi negative. With a slight rise of temperature, there appeared in the third month a varicellalike eruption, especially on the hands and feet, the latter continuing at the time of this report. Partial return of vision in the left eye occurred in the fourth month, showing a condition of temporal hemianopsia, and later the right eye showed a very slight improvement. At the same time, strength gradually returned, so that the patient could walk considerably with a slightly spastic gait. Intelligence was normal. As to the diagnosis, the visual disturbances would point to a disease process in the region of the chiasm near the sella turcica and hypophysis cerebri, which would explain the polyuria. As to the nature of the process, a tuberculous basal meningitis, in this case tending to recovery, would seem most probable, the meningeal lesion being so situated in the interpeduncular space as to press upon the chiasm or optic tracts, preventing the hyaline secretion of the posterior hypophyseal lobe from mingling with the cerebrospinal fluid in the third ventricle; in this way diabetes insipidus was caused.

## SVENSKA LÄKARESÄLLSKAPETS FORHANDLINGAR.

January 25, 1918.

**Diffuse Dilatation of the Esophagus**, by Otto Sandberg.—The case was observed intermittently during a period of twenty-one years, the patient being a man aged fifty-six years at the time of this report. There was no organic stricture of the cardia. The symptoms were dysphagia, pain and vomiting. Sounding and measurement of the contents of the esophagus, also percussion of the full and empty esophagus, disclosed the condition and the fluoroscopic view defined it with more exactness. The treatment consisted in lavage, passing of bougies, feeding by tube and faradization. A functional disturbance of the innervation of the esophagus was considered the probable cause. The case is noteworthy for its long duration without seriously impairing the health of the patient.

## LANCET.

**The Etiological Factor in Cerebrospinal Fever,**

by R. Donaldson.—Two cases are described; the one in a young woman ill with symptoms of pyemia and pneumonia with some headache, vertigo and occipital pain. In the second a man was ill with symptoms of cerebrospinal meningitis complicated with an otitis media. From the lesions and tissues of both these patients, Donaldson isolated a pleomorphic diphtheroid bacillus, which he describes in detail. In some of the stages of its cultivation, it presented an appearance like Hoffmann's bacillus. From a series of about seventy cases of typical cerebrospinal meningitis the author has also been able to isolate two or more types of this same organism in addition to the common Gram negative diplococcus. The common factor in all these cases was the presence of diphtheroid rods together with Gram positive and Gram negative diplococci. From these observations the author suggests that the causal agent of cerebrospinal fever is really a pleomorphic diphtheroid organism, closely related to the bacillus of Klebs-Loeffler. Such a view also fits with the fact that meningitis is capable of spreading long distances, which is difficult to explain when the delicate meningococcus of Weichselbaum is held to be its cause. It is possible that the common meningococcus is merely a phase in the life history of the diphtheroid organism, and this would account for the observation that the antimeningococcus serum of Flexner sometimes fails to benefit cases of meningitis. If this diphtheroid organism should prove to be the causative factor, an antidiphtheroid serum or vaccine, or even an antitoxin might be found serviceable. These observations of Donaldson's seem to agree in certain respects with similar recent observations made on meningitis by Hort and his associates, but the author is insistent that his present experience is merely suggestive and requires extensive investigation before it can be accepted or condemned.

**Intractable Syphilis Treated with Hectine,** by E. G. French and C. H. Mills.—The case was one of resistant tertiary syphilis which was not benefited by either mercury or salvarsan. Hectine, which is sodium benzosulphoparaaminophenyl arsenate, was given in doses of 0.2 gram daily or on alternate days. Three courses of ten such doses each were given with the most favorable results, including the healing of the lesions and a very marked and rapid gain in weight. The drug was administered by subcutaneous injection and produced no local irritation or discomfort.

**Vaccines in the Treatment of Respiratory Diseases,** by Robert J. Rowlette.—The main difficulty in the use of vaccines in respiratory diseases is the element of uncertainty entering into the bacteriological diagnosis of the conditions. There is no clinical respiratory disease entity which is known to be caused by only a single type of organism, and so many types of possibly virulent organisms are always found in the respiratory tract that it is exceedingly difficult to make sure which one is the causative agent in a given case. The technic is described by which the causative organism or organisms can, however, be isolated with a considerable

degree of certainty in diseases of the upper respiratory passages as well as of the lungs and bronchi. Using these methods the author has prepared vaccines from a number of cases and has used them with considerable success. Fourteen cases were thus treated and ten of these gave very satisfactory results. In one of the others there was some temporary improvement while in the remaining three no improvement at all was evident. Three of five cases with Micrococcus catarrhalis infection were cured; two pneumococcal cases were also cured, two of three with streptococcus and one of staphylococcal infection became well; and two cases with both streptococcus and staphylococcus were also cured. Many of the cases treated had already been proved quite resistant to other forms of treatment.

## BRITISH JOURNAL OF CHILDREN'S DISEASES.

June, 1915.

**Sex Distribution of Rickets,** by John Priestley.

—It has been found that rickets is present in a marked degree in from 1.4 per cent. to 1.7 per cent. of children examined. In a large series of cases examined, it was found that the proportion of rickets in boys compared to girls is almost two to one. The same proportion holds good when all degrees of rickets are considered. It should be included in the diseases which are influenced to a considerable degree by sex.

**Tuberculosis of the Auditory Apparatus,** by C. E. West.—In this case, the patient had pain and discharge from the left ear. The left side of the face was completely paralyzed. A radical mastoid operation had been performed on the right side three months previously. Several days after admission a radical mastoid operation was performed on the left side. The tympanic part of the facial nerve was lost in a mass of granulations. Later a faciohypoglossal anastomosis was performed on the left side without any effect on the paralysis. Complete hemiplegia of the right side with signs of chronic meningitis, squint, retraction of the head and unconsciousness, followed shortly. These symptoms eventually disappeared, but the hemiplegia remained. Several months later the child developed convulsions, mostly right sided and again became unconscious. Operation was performed and a large part of the squamous portion of the temporal bone was removed. A cyst formed anteriorly and it was found to be an enlarged lateral ventricle. It was punctured and the fluid allowed to run off slowly. Temporary improvement followed and then the bulging began to increase. Fits occurred later, at which time the bulging part was burst by a needle armed with silk. There was considerable discharge of fluid along the threads. The child has since improved and gained some power in the right limb. The bacteriological examination which was carried out on guineapigs showed that the type of tubercle bacillus was human and not bovine.

**Ovarian Sarcomata in Children,** by T. Twistington Higgins.—Three cases are reported. The first involved the left ovary and a laparotomy was performed. No secondary deposits could be found. Following the operation x ray treatment was employed and recovery was complete. The pathologi-

cal examination showed a mixed cell sarcoma, the one showing a preponderance of small round cells, the other consisting almost entirely of round cells. The etiology of these tumors is unknown. They are probably analogous to renal sarcomata, but are less frequent. The disease usually proves fatal and the chief symptoms are colicky pain in the abdomen, constipation, and a lump.

**Atonic Form of Cerebral Diplegia**, by E. G. Fearnside.—When six weeks old a child was noticed to be "soft." He was placed under treatment but developed slowly. When he was slightly over two years old a nasal discharge occurred which was later followed by otorrhea. A half year later he showed the typical symptoms of amyotonia congenita. There was no change in the electrical stimulation and deep reflexes could not be elicited. Two years later he was put into a double Thomas splint and at the present time, one half year later, he appears bright and happy but somewhat backward. He had a curious hesitating speech and a nasal twang. The muscles of the extremities were hypotonic, all the ligaments relaxed so that the child could be flexed upon himself. At the present time the tendon reflexes are exaggerated and this raises the question of diagnosis which lies between amyotonia congenita and the atonic form of cerebral diplegia. The exaggerated tendon reflexes would tend to rule out the former diagnosis so that the latter is likely.

#### JOURNAL OF LARYNGOLOGY, RHINOLOGY AND OTOTOLOGY

June, 1915.

**Tuberculosis of the Middle Ear Cleft in Children**, by A. Logan Turner and J. S. Fraser.—Cases of tuberculous otitis media may be divided into two groups; one in which infants and young children have been fed in whole or in part on unsterilized cow's milk, which contains the tubercle bacilli; and the second type in which the disease occurs in advanced stages of phthisis pulmonalis. It has been generally agreed that the route of infection is by the way of the Eustachian tube and the blood stream. Experiments show that tuberculous otitis is more severe than ordinary purulent otitis media, that the labyrinth is more often involved, and that the invasion of the labyrinth occurs by the way of the windows. The prognosis of this condition is not favorable.

#### PRACTITIONER.

June, 1915.

**Insufficiency of Quadriceps**, by Joseph E. Adams.—A patient may seem to have internal derangement of the knee joint, when the joint itself is normal, but the muscles controlling it are deficient in power; so the writer gives the following standard by which the functional condition of the joint may be estimated, putting aside cases in which the eye can detect gross changes and in which there is an obvious limitation of movement. In making the examination, passive movements must be used as active ones may be limited by lack of muscular power. A healthy knee exhibits: 1, Extension up to an angle of 180°, i. e., until the leg is in the same line as the thigh. 2, Flexion so that the calf comes in contact with the posterior surface of the thigh. 3, No lateral mobility when the leg is in a position of com-

plete extension. 4, Some degree of rotation when the leg is flexed at a right angle. 5, No lateral mobility of the patella when the quadriceps is strongly contracted. 6, The hardness of the quadriceps, especially the vastus externus fibres, should be equal on both sides. 7, The circumference of the thighs at a fixed point, say four inches above the upper border of the patella, should be equal on both sides. If these requirements can all be met it is practically certain that the knee is sound, but if any one of them exhibits deficiency, the functional value of the joint will be impaired, and the knee may easily be blamed for the insufficiency of the quadriceps. Adams believes that the treatment of injured joints by rest has been overdone, and is not inclined to enforce it.

#### Cerebrospinal Fever

by Ernest Milligan.—While the symptoms of acute cerebrospinal fever are largely meningeal, they are not always so. Acute toxemia may be produced by infection from meningococci. The careful examination, bacteriologically if possible, of patients suffering from acute toxemia is therefore recommended, especially when the fever is epidemic. It may possibly be found that the name cerebrospinal is as misleading as the title spotted fever. Some cases are so mild as almost to escape notice. The infection is spread through the agency of the secretions of the upper respiratory tract, and some persons act as carriers. Mild cases are a source of danger. The commonest portal of entry is through the upper respiratory tract, the nose, nasopharynx, and tonsils. These become infected and the infection passes into the blood, or perhaps directly to the brain and spinal cord. Possibly the respiratory secretions are swallowed and the infection may be spread through the intestines into the blood and spinal canal. It is also highly probable that infection may be spread by lice, fleas, and other vermin, the disease germs getting directly into the blood. The spinal injection of Flexner's serum is urged to be made as early as possible. The bacteriological diagnosis should not be awaited, for by the time the report arrives the patient may be dead, but lumbar puncture should always be done and the fluid examined bacteriologically. Prevention includes swabbing with antiseptics, supervision of the noses and throats of all contacts, isolation of carriers with disinfection of their belongings and clothes, observation of all persons exposed to infection and suffering from colds, sore throats, or gastroenteritis, with all cases of acute toxemia or sudden and severe bronchitis during an epidemic to be looked upon as cerebrospinal fever until proved to be of another nature, abundance of fresh air for patients and contacts, inspection for vermin among troops, destruction of food exposed to infection, the warning of carriers not to swallow their own sputum, but to have it burned, and an energetic search for mild and missed cases.

#### CHINA MEDICAL JOURNAL.

May, 1915.

**Emetine in Various Diseases**, by W. A. Tatchell.—Up to the present the author has employed emetine in twenty-three hospital cases. Thirteen of the patients, when admitted, were either in *extremis* or in a very advanced stage of phthisis of both lungs, with hemoptysis. In six, one lung was



extensively involved, and in the remaining four there was circumscribed involvement. He commenced the treatment by means of the hypodermic injection of one third of a grain of emetine once a day, and was disappointed with the result. He then increased the daily dose to one grain, with very satisfactory effects. In a few cases he administered one grain twice a day; in no instance was more administered in twenty-four hours. Generally after the first injection, and certainly after the second, there was a marked arrest of hemorrhage. His method has been to reduce the dose to two thirds of a grain, and later to a third, until the hemorrhage is completely arrested. No patient has needed or received, during the whole course of treatment, more than seven grains. Of the twenty-three patients, two died; one the day after admission and one in five days. Five have been under frequent observation since their discharge; the longest period being eighteen months, and the shortest, three months. Not one of them has had a recurrence of hemorrhage; the diseased areas of the lung have completely consolidated. The remaining sixteen patients have not been seen since their discharge from the hospital. Emetine not only acts as a hemostatic, but also possesses some unknown properties of a recuperative character. Whether it is in any degree a specific for phthisis, the author is not prepared to say, but certainly in the few cases which he has been able to keep under observation, the examinations for tubercle, which were positive at the commencement of treatment, were negative during the latest microscopical tests. Of course, the patients were kept under hygienic conditions, with plenty of good food and such sedative drugs as were required. It may be that emetine will prove of therapeutic value in such affections as gastrointestinal hemorrhage, epistaxis, and pneumonia, as well as in cholera and sprue.

**Death of Child Probably Due to Emetine,** by I. A. Saxe.—The patient, a girl of five years, suffering from amebic dysentery, was given, in all, 10.6 grains of emetine during a period of twenty-one days. A peculiar rash and a neuritis occurred; paralysis of the muscles of deglutition was the immediate cause of death.

**Treatment of Cutaneous Anthrax,** by W. Phillips.—During the past sixteen months the author has treated eighteen consecutive cases of malignant pustule without a death. In his treatment the pustule is surrounded, at a distance of about half an inch, with a ring of hypodermic injections of five per cent. phenol solution, deep into the subcutaneous tissue; from forty to eighty minims of the solution, in all, being employed. This is repeated each day for three or four days, when a fomentation of powdered ipecac (about one dram moistened with a little warm water) is applied and covered with oiled silk. The fomentation is repeated daily until the black slough begins to separate, after which wet boric acid dressing is applied to expedite healing.

BOSTON MEDICAL AND SURGICAL JOURNAL.

**Water Drinking,** by Ellbridge G. Cutler.—The result of clinical observation, supported by laboratory research, is that it is advisable for people in ordinary health to drink water as desired at meals,

or to the extent of from two to four or more tumblers at each meal; we may expect a continuance of good health in so doing, or an improvement even, provided that the food is thoroughly masticated.

**The Starvation Method and Gradual Carbohydrate Reduction in the Treatment of Diabetes,** by Henry A. Christian. The starvation method of Allen, in addition to being safe, has shortened materially the time required to get a patient sugar free, and so permits a large part of the patient's stay in the hospital to be devoted to building up his tolerance for carbohydrates. In other words, it saves for both the patient and the hospital one or two weeks of time.

July 1, 1918.

**Luetic Bursopathy of Verneuil: A Case of the Congenital Type,** by William Pearce Coues.—There are two forms of gummatous bursitis, which may exist in congenital as in acquired syphilis, one by extension of specific disease from neighboring parts, the bones and joints, the other primary in the bursa itself. Syphilis of the bursæ probably is often unrecognized. The disease must be differentiated from subperiosteal abscess near the joints, and from congenital specific arthropathies. Radiographs will be of great aid in differentiating this trouble from true specific bone disease. The Wassermann test may be negative. An x ray of the shin bones should always be taken, lateral view, when there is a question of a specific bursitis, and this will often give more valuable information than the Wassermann test. Traumatism brings the condition to activity. An indolent bursitis in a child, particularly about the elbow or knee, with or without traumatism, and with or without obvious signs of congenital specific disease, should arouse suspicion that we are dealing with the luetic bursopathy of Verneuil, and lead to further study of the case.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

July 1, 1918.

**Digestion in Adults and Infants,** by J. F. McClelland.—The acidity of the stomach and reaction of the duodenal contents were measured by means of the hydrogen electrodes, while indicator papers were calibrated so that clinicians might determine hydrogen ion concentrations approximately. The results showed that after a normal meal the acidity of the adult stomach reaches its maximum in from two to three hours, the rise in acidity being more rapid the lighter the meal. The height to which the acidity varies with the individual, the highest observed in a normal individual being 0.1 normal (about 0.4 per cent. of pure hydrochloric acid). The hydrogen ion concentration of the duodenal contents is 0.0000002 normal. This is slightly alkaline, since that of pure water is 0.00000011 at 25° C. (77° F.). The acidity of the infant's stomach rises slowly after the milk begins to leave it, and four hours after nursing may be the same as in some normal adult stomachs. That of the gastric juice of the newborn is 0.005; of the duodenal contents of the infant 0.0008, and hence it is probable that both peptic and tryptic digestion takes place in the intestine of the infant. Pepsin was always found, and was apparently more active than the trypsin.

**Autoserum Therapy in the Treatment of Psoriasis and Other Skin Diseases**, by J. S. Willock. As a result of treating carefully, and observing the effects closely, ten typical cases of psoriasis, Willock concludes that autoserum therapy is of no great value in this condition; nor has he been able to confirm the claims made by other authors as to the increased efficiency of weak chrysophanic acid ointments after the patient had received a series of autoserum injections. Other patients, treated with one or two per cent. chrysophanic acid solution alone, did just as well as those receiving the combined autoserum and chrysophanic acid; while the time necessary in giving the injections was thus saved. In one very chronic case of eczema, which had been treated without the serum with poor results, the patient practically recovered when the serum injections were used; though the improvement began only after the local treatment was changed. Bathing was especially efficacious in this case. Three patients with dermatitis herpetiformis improved markedly after one or two injections, but all sooner or later relapsed while under treatment. As this disease is considered a nervous manifestation, the early improvement may possibly have been due to mental suggestion. In one case each of chronic urticaria and lupus erythematosus no results were obtained. Although this series of cases is small, each case was carefully watched over a considerable period, and it would therefore appear that autoserum therapy cannot have any very permanent effect.

**Treatment of Burns of the Extremities**, by C. A. Parker.—The burns considered are those of the third degree which, beside destroying more or less extensively the skin over the affected region, leave the deeper structures comparatively intact and ready to resume their function when the surface is healed. In burns involving the whole thickness of the skin, there is a slough to be thrown off before much healing can occur. This stage, which may require two or three weeks, or even longer, cannot be greatly shortened, as the separation comes from beneath as a natural reaction of the tissues; but a plain wet dressing may be employed to facilitate the process. When the slough is removed, it is the author's practice to treat the wound, an ulcer, with adhesive plaster strips until it is finally healed. This does not interfere with skin grafts, which can be laid under the strips if desired, but the method is used chiefly where grafting is inefficient or cannot be employed. The adhesive plaster on convex surfaces absolutely prevents the development of exuberant granulations, thus allowing a continuous growth of epithelium from the margins, and it also probably controls to some extent the amount of secretion by its direct pressure effect on osmosis. The plaster is changed about twice a week. The burned areas show little or no tendency to contractions previous to healing or epidermization, but contractions rapidly develop with epidermization, and may be extensive and deforming by the time the whole area is healed. These contractions may be prevented by holding the limb in the proper position constantly during the stage of healing and for several months afterward, and, in addition, fixation is one of the most important factors in securing rapid healing. As a rule, limbs should be

held with all joints in extension. A circular plaster of Paris splint is applied with the limb in the desired position, and when the plaster is hard, it is cut into halves or in such a manner that it can be removed for dressing; after which it is reapplied, and is thus used throughout the treatment.

#### MEDICAL RECORD.

**Advances in Our Knowledge and Treatment of Cancer in the Last Thirty Years**, by F. C. Wood.—This review includes the observations of Jensen, who first showed the possibility of the continuous transplantation of tumors from one animal to another through repeated generations, and the subjects of carcinosarcoma, tumor immunity, heredity, explants or tissue cultures, chicken sarcoma, nematodes as a cause of cancer, and theories of neoplasia. Despite the most painstaking experimental study, the garnering of thirty years' work shows a surprisingly small harvest—not at all comparable with the amount learned during the same time concerning bacterial and tissue immunity. The problem seems much more difficult owing to the many variables always to be considered in working with so highly specialized and susceptible a cell as that of mammalian cancer, and because reactions following the implantation of tumor cells into the tissues are wholly different from those following the introduction of bacteria or simpler cells, such as red blood corpuscles. In fact, the striking phenomenon is that they do not produce any of the ordinary immune reactions, perhaps because they grow only in a host of the same species. A few words suffice to sum up all that we know regarding the treatment of carcinoma. No simple chemical or complex organic body seems to have any permanent influence on tumor growth. Colloidal metals, autolysates, and bacterial toxins have not the slightest curative power in carcinoma, either of man or of animals. A combination of selenium and eosin, widely vaunted by Wassermann, has failed to fulfill its promise. Physical agents, such as rays and radium, have some actual power, but only in the superficial or less malignant forms of tumors. That early operative excision is still the best therapeutic procedure is shown both by animal experiments and clinical experience.

**The Transition of Gastric Ulcer into Carcinoma and of Gastric Carcinoma into Ulcer**, by J. C. Hennmeter.—Hennmeter is of the opinion that ulcer of the stomach may be a possible cause of cancer; it is a rare cause; in Billet's experience, not over once in 116 cases of gastric ulcer, and in his own experience, in three cases out of 232 cases of gastric ulcer. In the report of his observations, Billet refuses to regard as secondary cancer a cancer that developed ten years after the history of the healing of an ulcer. This conception appears rational; for ten years is too long a time to permit the argument that cancer might be due to the ulcer which had healed a decade previously, or to a scar. It is just as likely that the cancer was a primary one which developed independently of the scar. The proof of an etiological connection between the two conditions can be clinically given in only a small number of instances.

**A Plea for the Rational Treatment of Cancer,** by L. D. Bulkley.—The apathy of surgeons to medical suggestions of distinguished members of their own number, past and present, is very surprising; but not less so than the practical disregard of cancer by physicians. One finds the strongest expressions in regard to the constitutional relations of cancer by Lambe, Abernethy, Willard Parker, Astley Cooper, Paget, Esmarch, Lane. In his president's address before the American Surgical Association, W. J. Mayo asks: "Is it not possible, therefore, that there is something in the habits of civilized man, in the cooking or other preparation of his food, which acts to produce the precancerous condition?" Yet there has been relatively little serious attempt to investigate this line of thought, or to test the principles underlying the metabolic theory of cancer in its relation to diet and mode of life, as influenced by so called civilization. While the microscope and laboratory work on animals have advanced the science of medicine prodigiously, they seem to have reached their limit in regard to cancer. Their negative conclusions, however, have paved the way for the medical man, through clinical study and physiological chemistry, to reach the real basic cause of the disease in the activities of the system as a whole, as influenced by diet and mode of life. This plea is made, therefore, with the hope that the matter may be thoroughly investigated and tested, and that this may result in a more rational treatment than the present one of attempting to remove only the product of the disease, the local tumor, while the cause of the formation of the evil growth remains still active. Only by a rational treatment of the cause can we hope to restrain the steady increase of cancer and to reduce its frightful mortality of ninety per cent.

AMERICAN JOURNAL OF OBSTETRICS AND DISEASES  
OF WOMEN AND CHILDREN.

May, 1915.

**Scopolamine and Morphine Amnesia as Employed at Long Island College Hospital,** by Polak.

As a result of the study of some 1,300 cases, Polak believes that *Dämmer Schlaf* has come to stay; that in view of what it has accomplished it can no longer be considered a fad. It is, of course, not without danger, but neither is any other form of narcosis. Its use has distinct limitations particularly in abnormal cases, but it must be used with judgment at all times. It appears to be indicated in nervous primiparæ who are not physically fit. It is in this class that scopolamine gives the best results. The author holds that it is specially valuable in the first stage of labor and should not be used if labor is far advanced. In regard to the effect upon the child, the author believes that the unpleasant results reported are not due to any fault of the method but to faults in its employment.

**Twilight Sleep; Report of One Thousand Cases,** by Beach.—The author gives a brief description of the method and lays stress upon the necessity of individualization in its employment. He considers that the memory test is the important point and that it should be repeated frequently. Although there are certain disadvantages yet they are more than compensated for by advantages to both mother and child. As close attention must be given to the

fetal heart sounds the obstetricians are observing more carefully the details of labor and for that reason are becoming more skilled. Beach emphasizes the point that as yet this method of treatment is essentially a hospital one except among the wealthy. In time it may spread to the greater number who are delivered in their homes.

**The Use and Abuse of Pituitrin in Obstetrics,** by Norris.—From his experience, the author draws certain aphorisms, some of which are given. "Never use pituitrin without exhausting your abilities in obstetric practice. Healthy multiparæ with relaxed birth canals offer the widest and safest fields for its use. The uterus, after pituitrin's tumultuous visitation usually needs the steady hand of ergot. Half doses are more often to be employed than full doses." Norris believes that 0.5 c. c., a dose equivalent to half the usual dose, would be more useful and less dangerous.

ARCHIVES OF INTERNAL MEDICINE.

May, 1915.

**Secondary Hypertrophic Osteoarthropathy and Its Relation to Simple Club Fingers,** by Edwin A. Locke.—A study of five typical cases of secondary hypertrophic osteoarthropathy over a period of years is given, including x ray observations, and an analysis of cases previously reported. Conclusive evidence was secured that hypertrophic osteoarthropathy is always a secondary disease. Among primary conditions, pulmonary tuberculosis seemed to be the most important, though it rarely induced the extreme bone and joint changes seen with bronchiectasis. A definite correspondence between the clinical course of the primary diseases, the process in the bones, and the pain, tenderness, and swelling in the soft parts was noted. Joint changes were found to be a constant and important feature of the disease; in the later stages, erosion of cartilage, lipping about the joints, and even moderate ankylosis were commonly noted. Occasionally the bone and joint affections progressed even after cure of the primary disease. A considerable percentage of cases of Hippocratic clubbed fingers showed under the x rays early proliferative changes in the periosteum of some of the long bones exactly like those of hypertrophic osteoarthropathy. Locke considers these two conditions identical, the former merely representing an early stage of the latter.

ARCHIVES OF OPHTHALMOLOGY.

May, 1915.

**Discrete Lymphoid Infiltration of the Orbit,** by George Coats.—The case reported is a rare one, as only two others seem to be recorded. It raises also some interesting speculations relative to the obscure groups of the lymphomatoses. A man aged thirty-seven years had had for ten months a proptosis of the right eye forward and slightly upward and outward. Its movements were practically full. Firm resistance was felt to backward pressure. With the ophthalmoscope some enlargement of the retinal veins and a blurring of the outline of the disc could be seen. There was a great soft edema of the lids with much venous congestion of the conjunctiva, especially below. An elastic tumor was felt in the upper inner angle of the orbit, which was



not movable and appeared to be attached to the bone. The vision was practically normal, the patient had never suffered from pain or diplopia. A röntgenograph showed no abnormality. Physical and blood examinations were negative. The orbit was exenterated, and the orbital tissues were found to be strewn throughout with numerous isolated nodules of lymphoid tissue, situated chiefly in the fibrous trabeculae and along the larger vessels. These nodules were composed not only of leucocytes, but also of fully developed lymph follicles. There was no special concentration of the changes in the vicinity of the fornix or lacrimal gland. No microorganisms were demonstrable. Seven years later a similar affection commenced on the left side. The nature of this case is very obscure. The bilateral incidence, even after a long interval, would seem to point to a general dyscrasia, but we cannot guess its nature in a man who had apparently always enjoyed perfect health, and in whom not even the beginnings of any constitutional disease could be detected after a period of observation of seven years. Other questions that arise are why the follicle formation should occur in the orbits and apparently nowhere else in the body; or may similar small scattered follicles have been present elsewhere without producing visible signs?

**Lymphoma and Lymphosarcoma of the Conjunctiva**, by George Coats.—It is an open question whether the diagnosis of simple lymphoma is ever justified, but if it is, it may be applied properly to the small tumor of the plica semilunaris, the histological description of which is given by Coats. He has been able to find only four similar cases, from which this tumor seems to appear in young people and to grow slowly. It was found in all five on the inner part of the conjunctiva, three times on the plica, once near the limbus, and once outside the caruncle. His case of lymphosarcoma was seen in a woman twenty-nine years old. A pedunculated, pale red growth arose from the whole extent of the upper fornix, with several tuberculated masses in the lower tarsal conjunctiva. Repeated recurrences took place after removal, and finally the growth extended back into the orbit. The blood examination was negative. Microscopically the tuberculated masses from the lower conjunctiva showed in general the structure of lymph follicles, but with certain minor differences. The main tumor consisted of similar cells in larger masses, with more tendency to a diffuse infiltration and invasion of the surrounding tissues. In one respect he notes a difference from most descriptions of this disease, extension appeared to be in part by metastasis and not wholly by local invasion.

**Plasmoma of the Lacrymal Sac**, by F. H. Verhoeff and G. S. Derby.—A man aged thirty-eight years had a solid tumor filling the lacrymal sac, which was removed and found on examination to be a plasmoma. So far as the writers can determine this is the first case of the kind to be reported, but it is probable that other cases have escaped recognition because of the infrequency with which the lacrymal sac is examined microscopically.

**Ciliary Ganglion Anesthesia for Removal of the Eyeball**, by Harry S. Gradle.—Gradle believes that anesthesia of the eyeball for the purpose of re-

moval is best obtained by injection of novocaine into the neighborhood of the ciliary ganglion. It is without danger to the patient and contraindicated only in individuals liable to intense mental shock, while it does not interfere with the operator. After the conjunctiva has been anesthetized by cocaine, a hypodermic needle five cm. long is passed through the conjunctiva at the outer canthus slightly above the median line along the upper border of the external rectus horizontally backward until the equator has been passed. The needle is then turned sharply inward in the same plane, so as to form an angle with the backward prolongation of the anteroposterior axis of the eye of about forty degrees, and then pushed on into the orbit until its tip touches the inner orbital wall above the optic nerve. The hilt of the needle is then almost in contact with the conjunctiva and its tip near the ciliary ganglion. During the entire procedure a small amount of fluid should be injected in advance of the needle. The best fluid for injection is a one per cent. solution of novocaine with a small amount of adrenaline added. In the ordinary adult two c. c. of this mixture should be injected. Cocaine must not be used. Another injection should be made beneath the conjunctiva of the lower third of the globe to anesthetize the middle branches of the trifacial nerve. After about five minutes the patient is ready for operation. In thirteen of the 146 cases the anesthesia was only fair, in eight it failed, and these cases seem to indicate that moderately inflamed, or uninfamed eyes do not seem to respond to ganglion anesthesia as perfectly as those that are highly inflamed.

#### SURGERY, GYNECOLOGY AND OBSTETRICS

*April, 1915.*

**The Kinetic Theory of Peritonitis**, by G. W. Crile.—In experimental researches, infection produces in the brain, the suprarenals, and the liver histological changes which are identical with the changes which are characteristic of exhaustion from any cause, such as running, fighting, trauma, etc. Exhaustion from any cause is invariably accompanied by widespread histological changes in these three organs—the brain, the suprarenals, and the liver—these changes, according to the degree of exhaustion, varying from slight hyperchromatism through stages of chromatolysis to a final stage of disintegration. Experimental researches have shown also that deep morphinization prevents the histological changes which are characteristic of the excessive conversion of energy, that is, of exhaustion. Not only is the conversion of energy excessive in cases of peritonitis, but the intake of energy in the form of food fails, so that the stores of energy are depleted with great rapidity, while the action of the kinetic system is still further impaired by the loss of water equilibrium. These facts point the way to two prime requisites in the treatment of peritonitis: The conservation of energy by the use of morphine and the maintenance of the water equilibrium by the Murphy rectal drip. In cases of appendicitis with spreading peritonitis, the surgeon should never, in the whole scheme of treatment, lose sight of this primary need of protecting the kinetic system from exhaustion. The administration of morphine should therefore begin at once. Nitrous oxide is the in-

halation anesthetic of choice, as ether, by dissolving the lecithin in the phagocytes, causes a weakening of the body's defense, which may last from twenty to twenty-four hours—a break in the defense which may cost the life of the patient. The operation is performed under anociassociation, the local field being blocked as far as the zone of actual infection. Morphine is continued during and after operation, as is required to conserve the patient's energies.

**Thrombosis and Embolism,** by A. McLean.—Endothelial damage on which so much stress is usually laid is not, itself, a cause of thrombosis. Infection and necrosis or the toxins derived from an infectious and necrotic process are probably the most important factors in the production of a thrombus. A slowing of the blood stream is a contributory cause, but will not cause a thrombus to form.

## Proceedings of Societies.

### PHILADELPHIA NEUROLOGICAL SOCIETY.

Special Meeting, Held Friday Evening, April 23,  
1915, in Cadwalader Hall, College of Physi-  
cians' Building.

The President, Dr. S. D. LOEWEN, in the Chair.

**The Psychology of Stammering.**—This paper, by Dr. G. HUDSON MAKUEN, appears on page 117.

Dr. J. HENDRIFF LLOYD said that there were several ways in which a neurologist might approach this subject. In the first place, Doctor Makuen's theory that stammering was a form of auditory amnesia was an interesting, and to the speaker, a rather novel one. He was in full accord with Doctor Makuen's idea that the auditory centre was the primary speech centre, and in a former paper before this society he had put forward this view. Bastian's idea of a "primary couplet," composed of the auditory centre and the motor or glossokinesthetic centre, as the primary speech zone, was in accord with his opinion, and of these two centres he thought the auditory was the more important. It is in that centre that they acquired their first knowledge of, and their strongest hold on speech. It was in that auditory centre that the child learned its mother tongue. Moreover, the auditory centre exercised a peculiar control over speech. Its integrity was absolutely essential to the exercise of the function of speech. This was especially so in the child while it was learning to talk, and it continued so all through later life, for motor speech depended upon their memories of auditory speech: it was simply a process of reproducing auditory memories by vocalizing them.

If stammering resulted from a defect in the auditory centre, they might suppose that in the stammering child, that centre for some reason had failed to undergo complete development, and that the auditory speech memories were defective. They were not entirely deficient, but they were sluggish. The child was unable to summon them into consciousness with the rapidity and precision that were requisite in uttering speech, and stammering resulted. One difficulty in the way of accepting this theory might be

that in the adult, who from disease acquired sensori-motor aphasia, they did not see stammering reproduced in its typical form; nevertheless, the speaker thought that in some sensorimotor aphasics they saw something very much like stammering. This for him remained a subject for further investigation; and in the future he intended to observe more carefully whether in these sensorimotor aphasics, in whom the auditory as well as the motor centre was involved, he could detect a true condition of stammering. It must be borne in mind, however, that an undeveloped organ did not act precisely like a developed organ that had been injured, hence there might not be a perfect analogy between the two conditions, i. e., in the stammering child and in the aphasic adult.

The query has arisen in the speaker's mind, could stammering ever be due to a lenticular lesion? The lenticula, as they knew, was now very much in the limelight. Kinnier Wilson held that lenticular lesions caused a sort of jerky action in the pyramidal fibres. Doctor Mills thought the defect was in a tonic series of fibres. There seemed to the speaker to be a possible analogy in stammering, although it was rather remote. As stammering usually began in childhood, they should have to suppose that the lenticula had in some way gone wrong in early development. As he believed that the lenticula was largely a vestigial organ, he should have no difficulty in supposing that it was capable of promoting disorder, rather than of serving any good purpose, but he was not prepared to say that it was a universal cause of stammering. He threw this out only as a suggestion.

It must not be overlooked in this connection, moreover, that a very bad form of stammering was sometimes seen in connection with organic or developmental disorders in the nervous system. There were certain obscure forms of ataxia, call them cerebellar or what they pleased, in which there was widespread disorder of the motor functions in the limbs, and in which they saw grave speech defects, not unlike stammering. The same could be said of cerebral diplegia, in which a grave defect in the enunciation of speech, very like an exaggerated stammering, was seen. In some of these organic stammerings, however, the defect was entirely motor: it could not be ascribed to an auditory amnesia; it was due to the same lesion that had impaired to a large extent the whole of the pyramidal system. Nevertheless, some of these patients were entirely aphasic. He therefore concluded that there might be various forms of stammering, not all of them explainable by one cause.

Finally, a word about the psychical or emotional states seen in many stammerers. Doctor Makuen had called attention to them, and had pointed out their important influence in confirming what they might call the stammering psychosis. These were especially states of apprehension, fear, and mortification. He would liken them to morbid fears, or phobias, seen in certain states which they called psychasthenia. In the stammerer they had to do exclusively with the exercise of the organs of speech, hence they were kinesthetic; or more properly *kinetic*; they belonged to the morbid fears which were evoked by the ideas of certain movements.

Such morbid fears of movement were seen in other conditions than stammering. Moebius had described a motor disorder which he called *akinesia alagra*, which depended apparently upon an inhibitory imperative conception. The patient dreaded to move for fear of pain, which, however, was entirely imaginary. The affection was allied probably to the intention psychoses, such as claustrophobia, agoraphobia, etc. The speaker had formerly suggested that the word *kinesiphobia*, fear of movement, better expressed the mental state in these patients, as there was no real pain, but only a morbid fear of pain to be caused by the movement. It was a fear of pain analogous to the fear of contamination, called mysophobia, and was as mixed in the one case as in the other. His term, however, had never gained currency, although he still thought it not a bad one. In stammerers there was a similar inhibitory idea, the fear not of physical pain, but of mental pain, such as mortification; but the two kinds of pain, physical and mental, were strictly analogous in the psychical sphere; and they might act in an identical way to cause morbid phobias.

Doctor Makuen, he thought, was entirely right in ascribing to this phobia a controlling influence in stammerers, and he had shown a true insight into the psychology of these cases when he stated that cure must begin by correcting the psychosis.

Dr. CHARLES K. MILLS said that the subject greatly interested him, particularly in connection with the recent discussions of tonic innervation and a cerebral tonectic apparatus. Some cases of stammering were analogous to that affection of which he had shown an example there two or three meetings since, and of which he had seen other instances, namely, the so called perseveration. This man shown at the meeting referred to had now almost complete preservation of power in his arm and leg, and yet on grasping, either when commanded or spontaneously, the entire musculature of his arm often became so contracted or hypertonic that the limb would not relax for a long time. Muscular sense and all forms of sensibility were normal. The patient was incapable because of some very special lesion which was probably destructive and in the frontal portion of his brain, of properly innervating the tonectic apparatus, or this was over innervated.

Although Doctor Makuen's idea of auditory amnesia as an explanation of the stammering was interesting and ingenious, it did not seem to the speaker to be sufficient. There was probably, in at least some of the cases of stammering, an inability rhythmically to innervate with muscular tone the motor apparatus for speech. Many stammerers seemed to be perfect so far as any auditory perception and the peripheral organs of speech were concerned. Therefore, the speaker thought the case was not made out for the theory of transitory auditory amnesia as the cause for stammering. Not a few of these patients had perfect articulatory and phonatory organs. It might be that the vocal cords were sometimes spasmodically closed or too much relaxed, but this was because they were aberrantly innervated. That they possessed motor power was proved, not only by the results of training, but by their fluent incidental use of language.

Psychic influence—under the view of aberrant tonic innervation as a cause of stammering—as might be expected, played an important part. Emotion interfered with volition in cases of this sort.

With regard to the part played by the lenticula, the speaker believed that this would not always be determined. The cerebral tonectic apparatus, according to his view, was a mechanism intercalated between the afferent or sensory pathway and the motor projection system. Its business was to adjust or correlate sensory stimuli and motor discharges, giving to the latter rhythm or tone. This tonectic apparatus was both midfrontal and striate, and therefore lesions or functional disturbance either of the cortex or lenticula might give rise to the phenomena of stammering. Indeed, as tone was primarily dependent upon sensation, although it might be secondarily upon idea, an affection of the sensory pathway or of the pyramidal motor apparatus might of course give a form of stammering, a form of disturbance of phonation, articulation, and enunciation. Thus far the view as to the part played by transitory auditory amnesia might have some force; nevertheless, he did not think it was the important matter in most cases of stammering.

Dr. FRANCIS X. DERCUM said that there was danger in being carried too far afield by speculation and thus losing sight of important clinical distinctions. Personally he cared less for explanations than for concrete facts. In his mind there was not the slightest resemblance between an aphasic patient and a stammerer. There was not the slightest loss of word memory in the stammerer. The latter read and wrote in spite of his speech difficulty. One of the striking features of the motor aphasic was the associated alexia. Again there was no resemblance between the speech of cerebellar disease and the speech of the stammerer, and this was equally true of the speech of the diplegic. Especially was it true of the speech of bilenticular disease or of the other forms of pseudobulbar palsy, among which bilenticular disease used to be grouped. The stammerer suffered from a neurasthenic-neuropathic affection, a psychasthenia, and presented all the earmarks of the phobias, tics, and anomalies of will and inhibition commonly observed in psychasthenia. The defective inhibition was doubtless to be explained in terms of the ties. In other words the phenomena presented by the stammerer were psychasthenic. In keeping with this the young lady whom Doctor Makuen had shown that evening, presented a tic involving both shoulders; at irregular intervals her shoulders were suddenly raised or heaved upward and forward, while the young man presented a tic of the right arm consisting in sudden irregularly recurring adductions of the arm to the side. Similar movements, though less decided, were also noticeable in the left arm. In other words, the patients presented by Doctor Makuen are not stammerers alone, they also presented the phenomena of tic, or better still, *tic convulsif*. Doctor Makuen's well known success in the management of stammerers depended, fortunately, not upon theoretical explanations, but upon his sound practical methods of training. Still the difficulties were at times insurmountable. They knew how difficult it often



was to cure certain cases of tic, but the existence of tic in those cases proved that there were factors at work similar to those in psychasthenic cases.

Doctor MAKUEN regretted that he had neither the time nor the ability adequately to reply to all the points raised in the discussion. He had seen many interesting examples of the condition to which Doctor Lloyd had referred, namely, that of fear in stammerers. He had a man under his care now who was thirty-eight years of age, a mining engineer, bright, and but for his affliction a splendid business man. He came to Philadelphia and went directly to a hotel, where, tired and hungry, he ordered a dinner in a quiet corner of the café, and a man happened to come in and take the chair opposite to him, whereupon he was thrown into such a paroxysm of fear lest the man should try to engage him in conversation that he left the table before his dinner arrived. Moreover, he said that he had gone hungry for days during business trips, because of his desire to avoid experiences of a similar nature. He said that those who did not stammer could scarcely appreciate the feelings of those who did under circumstances such as the speaker had described.

In reply to Doctor Mill's remarks with reference to the causation of stammering, he thought that the tonetic theory or the theory of tonic innervation could scarcely explain all the various phenomena of the affection. For example, the young woman presented at the opening of the meeting, could talk perfectly well under certain conditions. She could talk in concert with her teacher without any trouble whatsoever, but as soon as she was obliged to arouse her own auditory images of the inflected sounds of speech, she failed completely. There seemed to be something more than the lack of tonicity or tonic innervation, and this appeared to be that without which no vocal sound was possible, namely, the prompt recall of a clear auditory image of the character of the sound to be emitted.

The conscious volitional recall or reintegration of the auditory image under certain disturbing mental or emotional conditions seemed to be quite impossible, the patient being unable to focus his attention upon the images with sufficient steadiness to enable him to externalize certain important elements of speech.

Referring to Doctor Dercum's remarks, Doctor Makuen thought that causes and results were often confounded in considering the etiology of stammering. There were, to be sure, psychasthenic symptoms in all those cases, and stammering itself was one of them, but might not many of these symptoms be the results of the stammering rather than causal factors? This ground seemed to be all the more tenable, because many of the pathogenic symptoms, such as the various tics, tended to clear up as soon as the patient was relieved of his stammering. Moreover, only a small proportion of psychasthenics or neurasthenics stammered, and the problem seemed to be to find a condition that was common to all those who did stammer.

It was not held that stammerers had verbal amnesia, but only a transient amnesia for the purely auditory or vocal elements of speech, as distinguished from the kinesthetic elements of which many of the consonant sounds were examples. The

sounds of speech that were registered as kinesthetic memories, gave the stammerer but little difficulty, but those which were registered as auditory memories, and especially those like the short vowel sounds that might be supposed to have but little tangibility in their registration, were the ones that seemed not to be forthcoming at the required time.

The stammerer could read and write, to be sure, but he usually stammered when reading aloud, and there were those who had a condition akin to that of stammering in writing. For example, a distinguished neurologist confessed to him that he had had great difficulty in writing his name in a hotel register when the clerk was looking over his shoulder.

#### AMERICAN GYNECOLOGICAL SOCIETY.

*Fortieth Annual Meeting, Held at White Sulphur Springs, West Virginia, May 18, 19, and 20, 1915.*

The President, Dr. THOMAS J. WATKINS, of Chicago, in Chair.

(Concluded from page 114.)

**Types of Carcinoma of the Uterus.**—Dr. LAWRENCE W. STRONG, of New York, said endometritis did not appear to be an etiological factor in carcinoma uteri. The condition itself was ill defined and no causal relationship had been proved. It was customary to call a carcinoma which adhered to the glandular form an adenoma destruens and to speak of the secondarily solid one as adenocarcinoma. This led to the idea that an adenoma destruens was not a carcinoma in the true sense, while in reality it was a carcinoma from the start. Adenocarcinoma was a poor term because it suggested a combination of adenoma and carcinoma. Carcinoma glandulare was the best designation for this type. Benign adenomata of the uterus did not exist, except in the form of adenoma polyposum. Glandular tumors not on the surface were carcinomata from the start. The general teaching of the present was that tumors grew exclusively from their own cells, never by the conversion of the normal cells at the margin or elsewhere into tumor cells.

In looking over the figures of the hysterectomies at the Woman's Hospital, New York, in the last three years, it was somewhat surprising to find eighty-six cases of cervical carcinoma against forty-six of the body, roughly, two to one. This had no broad significance, for the operability of corporal carcinoma was far greater than that of collum carcinoma. However, the proportions found in his laboratory suggested certain things. It might be that in examined cases some carcinomata of the body were overlooked on account of their lesser accessibility to the eye. Then also, accidental microscopic discoveries of corpus carcinomata were more frequent than of collum carcinomata. It might be that the corpus carcinomata would appear to have an increased prevalence in the future when curettings were more systematically examined.

A wedge shaped excision including normal tissue was to be preferred for a diagnostic specimen in suspected cases of carcinoma colli. A frozen section was not desirable in collum carcinoma, since a suitable piece might be removed without anesthesia a

few days prior to the operation, allowing careful imbedding. No likelihood of implantation metastasis would result in the few days intervening. The objections to frozen sections at operation in suspected collum carcinoma were those to frozen sections in general. In the case of curettings from the corpus, a frozen section should never be attempted. The tissue was too frail for manipulation, and gross inspection was a reliable factor in interpretation.

Dr. JOHN G. CLARK, of Philadelphia, said as they realized the enormous changes the endometrium underwent during the twenty-eight cyclic days, the variations were so extreme and so closely simulated in many instances pathological processes, that the mere question of a hasty diagnosis while the patient was on the table, by frozen section was a hazardous one, and he believed would do as much harm as good. Doctor Strong had pointed out the importance of not laying too much stress on the frozen section, and that of itself was of great practical value.

Dr. FREDERICK J. TAUSSIG, of St. Louis, said in the cases at the Barnard Cancer Hospital in ten years they had had 150 cases of cancers of the female genital tract. Of that very large percentage, fully three fourths or four fifths were invariably late cancers. They did not find more than two or three cases in which the tumor lay primarily in the corpus of the uterus. They had had cancers of the cervix which had gradually extended up into the fundus, but of cases that started in the fundus and made a large tumor and broke into the peritoneal cavity, they had not had more than two or three.

Dr. HERMAN J. BOLDT, of New York, said the unreliability of frozen sections was brought home to him by a well illustrated example three or four years ago, when he suspected the presence of carcinoma, and sent a piece of the tissue to the laboratory. The report of the laboratory came back to the effect that he had a benign condition to deal with, and the result was he did not do anything except the plastic work which was necessary. A week or ten days later, the laboratory sent a report with an apology for having made an error in diagnosis, based on the fact of the frozen section, and that it was not reliable. The condition was malignant, and he had to do a more difficult operation than he would have done at the start.

**Technic and Experimental Application of Hard Rays for Deep Röntgen Therapy.**—Dr. LEWIS GREGORY COLE, of New York, in the treatment of desperate cases of cancer which were bound to be fatal, had increased the amount of the highly penetrating screened ray until he was giving twelve to sixteen Hampson units or three to four times the standard erythema doses through each port of entry. When these large doses were given, care must be observed that the areas should not overlap, and scar tissue should be protected from getting the full force of the ray. In one case, which had been diagnosed as mediastinal sarcoma, he gave twenty treatments through twenty ports of entry, each one being three and a half inches square on the surface. Each treatment was given with an eight inch parallel gap, ten ma. circuit, six inches distant from the skin, four minutes' time, dose twelve to sixteen Hampson units.

**Röntgen Therapy in Uterine Fibroids and Uterine Hemorrhage.**—Dr. GEORGE E. PFAHLER, of Philadelphia, drew the following conclusions: 1. Röntgen therapy must be looked upon as a very efficient adjunct to the armamentarium of the gynecologist, and, while he believed that the ray should be applied by the röntgenologist, they should at the same time work hand in hand with the gynecologist. 2. Deep Röntgen therapy stopped the hemorrhage associated with uterine fibroids. This was followed by a gradual disappearance of the tumor. This atrophic process might extend over several years and continue long after the cessation of treatment. 3. The treatment of metropathic hemorrhage was almost uniformly successful. 4. Uterine hemorrhage occurring at the menopause, when not due to malignancy, would usually respond very quickly. There should be an increase in weight and an improvement in the blood condition following the treatment, and when this did not occur suspicion of malignancy should be aroused. 5. Some good results could be obtained in inoperable carcinoma. The deep Röntgen therapy should be especially recommended as postoperative treatment in call cases.

Dr. HOWARD C. TAYLOR, of New York, wished to know if in the treatment of idiopathic hemorrhages which occurred in young women Doctor Pfahler was sure there was not some permanent injury done to the ovaries. It seemed to him that with an organ as delicate as the ovary, there were a certain number of cases in which pregnancy had subsequently taken place, and on account of some injury the offspring had not been as perfect as in other instances.

Dr. JOSEPH BRETTAUER, of New York, said as to the future of young girls in whom he had tried the x ray treatment, the result had been beneficial. There was no cessation of menstruation, but in one case there was delayed menstruation. Instead of menstruating every two weeks, the girl menstruated every five or six weeks in a very moderate amount.

Dr. JOHN G. CLARK, of Philadelphia, was definitely in favor of x ray treatment in women over forty years old, and particularly in those approaching the menopause. Cases with hemorrhage of the menopause had been singularly satisfactory cases to treat, and the patients had been extremely grateful for having been saved the hazard of an operation.

Dr. THOMAS J. WATKINS, of Chicago, wished to ask if there was any evidence to show that the x rays produced intraperitoneal adhesions.

Doctor PFAHLER said, with reference to possible subsequent injury to the ovary, he confessed that he could not answer absolutely. He knew, however, that the ovary, like the testicle, had wonderful power of regeneration. With regard to intraperitoneal adhesions, he did not know that they would be produced by the x ray, but according to investigations that had been made, many of them had become absorbed, and the uteri had become freely movable.

**Postoperative Renal Infection.**—Dr. GEORGE GRAY WARD, of New York, said that many cases of obscure and apparently unaccountable elevation of temperature, with concomitant symptoms of septic absorption occurring later in the course of a postoperative convalescence, were cases of renal infec-

tion, and were much more frequent than was formerly believed. In the majority of cases these renal infections were of hematogenous origin and were due to the colon bacillus. In studying the reports of cases of this disease one was struck with the frequency with which they followed some operative procedure. This was not strange when one remembered the probable causative factors and the mode of infection. The preponderance of evidence, the result of both clinical and experimental research, tended to prove that the large majority of such renal infections were hematogenous in origin, although some might be caused by an ascending infection, either by way of the periureteral lymphatics or by extension up the lumen of the ureter.

There were three types of infection, depending upon the degree of virulence. They were: 1. Cases mild in character; the patient was not severely ill and yielded to the thorough flushing of the kidneys by the ingestion of water, formaldehyde, proper diet, and rest. The virulence naturally varied according to the particular organism, the condition of the kidney, and the general bodily resistance of the patient. 2. Cases in which the kidneys contained numerous septic infarcts, and minute or microscopic foci which were superficially situated in the cortex of the organ. Decapsulation or incision with drainage usually resulted in recovery. 3. The fulminating type, which was characterized by a profound toxemia, and which was rapidly fatal unless a nephrectomy was done. Fortunately this type of the disease was usually unilateral.

Nephrectomy should not be done unless there were indications for it, as shown by the appearance of the kidney. A decapsulation or nephrectomy with drainage was sufficient in many cases, as shown by numerous reports, especially in the colon bacillus infections. He had had one case of severe colon bacillus infection which evidently first attacked one kidney and then the other, and in which decapsulation with drainage resulted in a complete recovery.

### Book Reviews.

As far as space permits, we review those in which we think our readers are likely to be interested.]

*Early Diagnosis of Heart Failure, and Other Essays on the* (Edin.), F.R.C.P. (Lond.), B.Sc. (Edin.), Senior Physician, General Hospital, Birmingham, Lecturer on the Diseases of the Heart, University of Birmingham. With Illustrations. New York: William

Summary of their contents, make up this rather lengthy volume. Although the title of the work would lead one to think that it was a treatise upon the subject of heart failure it is actually far from being such, as the author deals with the symptoms, signs, and physical signs of the failing heart. The greatest stress is laid upon the mechanism and clinical significance of several of the little known physical signs associated with a decrease in the capacity of the heart to carry on its normal functions. Among such signs are the elevation of the diaphragm, a rise in the area of gastric resonance, diminution in the area of liver dullness, and the importance of distensibility, or lack of it, on the part of the different portions of the cardiac ventricles. These, and other equally obscure physical signs, are discussed at great

length and in minute detail, and much space is devoted to argument in support of the author's contentions as to the mechanism by which the various phenomena are brought about and the importance of the signs in diagnosis and prognosis. Some of the author's physiological concepts are not in harmony with modern views and can scarcely be accepted as proved by his arguments. Others, while well supported by the work of physiologists, are elaborated by the author to such an extent as to make their ultimate bearings almost incomprehensible to the clinician. In spite of these defects, which are almost certain to be associated with any extensive line of original work in a purely clinical field, the work contains much of value in extending the scope and increasing the precision of the usual methods of physical examination. But little reference is made to work done with instruments or to the newer means of graphically recording the circulatory changes in the heart and peripheral vessels, and none at all is made to the results of electrocardiography. Where Wilson does subject polygraphic records to analysis, his work is most thorough, and he seeks to explain the significance of all the minor waves—some sixteen or more—recorded in his tracings. It should be mentioned that some of these essays go back to 1892, and one is impressed with the critical acumen of their author, for he certainly made remarkably accurate deductions from the knowledge in his possession at that time. The book's appeal must be strong both to those interested particularly in disturbances of the heart and to those who revel in ultra refinement in physical diagnosis, but, unfortunately, the arguments are often so long and repetition is so frequent that probably none but the most devoted student will be willing to dig his way through them for their real messages.

*A Practical Medical Dictionary of Words Used in Medicine, With Their Derivations and Pronunciation, Including Dental, Veterinary, Chemical, Botanical, Electrical, Life Insurance, and Other Special Terms; Anatomical Tables of the Titles in General Use, and Those Sanctioned by the Basle Anatomical Convention; Pharmaceutical Preparations, Official in the United States and British Pharmacopoeias and Contained in the National Formulary; Chemical and Therapeutical Information as to Mineral Springs of America and Europe, and Comprehensive Lists of Synonyms.* By THOMAS LATHROP STEPMAN, A.M., M.D., Editor of the Twentieth Century Practice of Medicine, of the Reference Handbook of the Medical Sciences, and of the Medical Record. Third Revised Edition. Illustrated. New York: William Wood & Co., 1914. Pp. xi-1059. (Price, \$5.)

Constant use of the third edition of this excellent dictionary has only confirmed our good opinion of its accuracy and comprehensiveness, even if it has emphasized our regret that it is not technically perfect in such details as the use of Greek letters for Greek words. That so complete a work should be embodied in so handy a volume is a triumph of clever editing. To be sure, we should like to see further editions of Foster's vast encyclopedic dictionary, but, after all, that is a compilation for medical scholars, while Stepman's book meets all possible needs of student and practitioner, and will also see the scholar far upon his way into the more recondite paths of medical science. We foresee further editions of this most convenient dictionary.

*The Hypodermic Syringe.* By GEORGE L. SERVOS, M.D., Editor of Nevada Medicine, Member of the Nevada State Medical Association, Fellow of the American Medical Association. Newark, N. J.: Physicians Drug News Company Publishers, 1914. Pp. 317. (Price, \$2.)

Now and then a book appears which has so interesting a subject that it seems to matter little how it is treated. To this order belongs Doctor Servos's book. It creates an air of interest and special knowledge, and though both are exaggerated, it is hard to find the heart to criticize the author. His attempts to produce the reality of expert and technical knowledge, are, however, perfunctory. The greater part of the book is devoted to antitoxins, serums, and bacterins. It is impossible to understand why we should be so long detained by reports, extracts, summaries, with which we are more or less familiar. The references are careless, often too brief, noting only the title of a journal, without page or year. It is obvious that these memoranda were hastily put together. There are other



chapters on anesthesia, shock, syphilis, scopolamine, and morphine; these, in our opinion, are the best parts of the book.

*Christian Science Under the Searchlight.* By Rev. N. B. COOKSEY. Nashville, Tenn.; Dallas, Texas; Richmond, Va.: Smith & Lamar, 1915. Pp. 106.

The medical profession ought to be grateful for this book, which sets forth the orthodox objections to the theories of the late Mrs. Eddy. The concerted opinion of the pulpit here, after all, has an influence almost as great as the *ex cathedra* thunders of the middle ages, and many people who have been dabbling in Christian science without knowing that they were becoming involved in a dangerous heresy, may withdraw when they have heard the arguments of Mr. Cooksey. To a man unfamiliar with history, particularly the history of delusions, it may seem strange that a spurious miracle working system, at absolute odds both with science and orthodox religion, could obtain so remarkable an ascendancy over the minds of the multitude as Christian science once did. Those who have read Oliver Wendell Holmes's comments on phrenology and similar pseudosciences, will understand. To the Autocrat's crushing discussion, we may add that Christian science could never have gone far if our educational methods were better. The great mass of people are not trained to think logically and are ignorant, not only of scientific modes of thought, but of the fundamental dogmas of their own religion, either of which should prevent a reader from finding anything in *Science and Health* but a farrago of nonsense. Mr. Cooksey's arguments may be summed up in his statement (page 32), that divinity always heals instantaneously and never fails to heal. It seems to us, too, that Mr. Cooksey proves conclusively that Christian science is no more Christian than it is scientific—in fact, that it is, to a really religious mind, blasphemous in its assumptions and conclusions.

### Interclinical Notes.

The *Evening Sun* for July 6, 1915, discussed editorially Dynamite and Dope. Comparing the ease with which the late Frank Holt got hold of dynamite with the difficulty physicians experience in securing the actual tools of their trade, that journal said: "This is an inexplicable state of things. We have an elaborate system of espionage and arbitrary arrest to keep weak women and weaker men from getting a pinch of cocaine or a whiff of opium. We are devoting the energies of a large squad of spies to tracing up the sources of such dope and we are tearing up the 'Bill of Rights' to stamp out its use. Yet gangs of murderous scoundrels all over the city can procure and keep dynamite and other high explosives, fuse, fulminating caps—all the necessary material of devastation and death—in large quantities and use them with the greatest frequency, and no serious effort seems to be made to check them. Are dynamiters so much more cunning than dope fiends and so much less dangerous?"

\* \* \*

One of three trunks belonging to Holt contained:  
134 sticks of dynamite, 60 per cent. strength.  
3 large tin cans for packing bombs.  
2 boxes electric fuses.  
Box No. 6 fulminating caps.  
White powder package.  
Large package of picric acid.  
Box of sulphur.  
Package of gravel powder.  
Coil fuse.  
Piece of fuse.  
Dry battery No. 6, Columbia.  
Piece of rolemónico (used in bomb manufacture).  
Box of powdered resin.  
Box of fulminate of sulphur.  
Box of fulminate of mercury.  
Box of fulminate vicias.  
Bottle of hydrochloric acid.  
Soldering outfit.  
Can or tin cutter.

Holt committed suicide, so we do not know what penalty he might have incurred by having the foregoing explosives in his possession. If he had had, in addition, how-

ever, three grains of morphine, he might have got into serious trouble.

\* \* \*

Leslie's for July 8, 1915, reprints from its issues of Civil war days pictures showing the havoc done at Mobile by the Union forces, which compares very favorably, we think, as to completeness, with what is being accomplished now in France, Belgium, and Poland. The picture of over 200,000 troops marching up Pennsylvania Avenue, Washington, after the war, is more cheerful.

\* \* \*

The *Nurse* for July, 1915, begins with an article on typhus in the war zone; it shows pictures of conditions in Serbia whence we have received considerable direct information. There is an admirable paper by Dr. William Brady on Training *versus* Professionalism, in which he gives some needed advice to nurses. Other physician contributors are Dr. Barbara T. Ring and Dr. Frederick C. Warnshuis. The whole issue is, as usual, extraordinarily useful, as well as entertaining and attractive pictorially and typographically.

\* \* \*

*Current Opinion* for July, 1915, thinks Mr. Bryan's resignation the most remarkable occurrence of the past month, but it devotes more space to the European war. In our line, we learn that Dr. Wildon Carr, in the *Athenaeum*, has dethroned the brain as the seat of memory; this spoils a very good line in Hamlet about memory holding a seat in this distracted globe, globe being Elizabethan for bean or head. A play upon words introduces us to the German supersubmarine. There is a study of the new fighting gases used in the war. We hear that the eugenists now demand more eccentric types of character, and that it is a good thing that many young men get through college without learning anything. There is a tremendous outcry against the new American god, efficiency. If we are not mistaken, we were the first or very near the first to raise an editorial voice about efficiency being totally against Nature. There is more than we can even hint at in this issue, which is unusually full of fascinating reading.

### Official News.

#### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending July 7, 1915:*

**Anderson**, John F., Surgeon. Directed to proceed to Baltimore, Md., to investigate a suspected case of typhus fever; also directed to make not to exceed six trips to Ellis Island, N. Y., during the present fiscal year, to obtain infectious material, and for observation of contagious diseases now being investigated. **Billings**, W. C., Surgeon. Granted one day's leave of absence, June 26, 1915, under paragraph 193, Service Regulations. **Browne**, R. W., Acting Assistant Surgeon. Granted two days' leave of absence from July 1, 1915. **Collins**, G. L., Passed Assistant Surgeon. Designated by the Secretary of the Treasury as a member of a Coast Guard Retiring Board, to meet at the Treasury Department, July 12, 1915; granted five days' leave of absence from July 6, 1915. **Goldberger**, Joseph, Surgeon. Directed to attend the conference of municipal and parish health officers to be held at New Orleans, La., July 15-16, 1915. **Jones**, W. M., Assistant Surgeon. Designated by the Secretary of the Treasury as a member of a Coast Guard Retiring Board, to meet at the Marine Hospital, San Francisco, Cal., July 20, 1915. **Mathewson**, H. S., Surgeon. Leave of absence for seven days from June 20, 1915, amended to read "three days' leave of absence from June 22, 1915." **Moore**, Dunlop, Surgeon. Granted one month's leave of absence from July 27, 1915. **Stimpson**, W. G., Assistant Surgeon General. Designated by the Secretary of the Treasury as a member of the Coast Guard Retiring Board, to meet at the Treasury Department, July 12, 1915. **Tuefel**, Walter C., Assistant Surgeon. Granted ten days' leave of absence from July 1, 1915. **Von Ezdorf**, R. H., Surgeon. Directed to attend the conference of municipal and parish health officers, to be held at New Orleans, La., July 15-16, 1915. **Woodward**, R. M., Surgeon.

Department of the Secretary of the Treasury as a member of the Finance Commission, Reporting Board, to meet at the Marine Hospital, San Francisco, Cal., July 20, 1915.

### United States Army Intelligence:

*Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the week ending July 10, 1915.*

**Bradley, John H.**, First Lieutenant, Medical Reserve Corps. Relieved from duty at Fort Barry, California, and proceeded to his home; relieved from active duty upon the expiration of his leave of absence. **Clayton, Jere B.**, Major, Medical Corps. Relieved from duty at Fort Sam Houston, Texas, and proceeded to his home. **Cummings, C. J.**, First Lieutenant, Medical Reserve Corps. Ordered to proceed from Columbus, New Mexico, as soon after July 1st as practicable, to El Paso, Texas, for temporary duty. **Davis, A. D.**, Captain, Medical Corps. Granted two months' leave of absence. **Falisi, J. Vincent**, First Lieutenant, Medical Reserve Corps. Ordered to active duty to take effect July 20, 1915, and will report at Fort Logan H. Roots, Arkansas, for duty during the absence on leave for two months of First Lieutenant John M. Hewitt, Medical Reserve Corps, upon whose return to Fort Logan H. Roots, First Lieutenant J. Vincent Falisi will stand relieved from active duty in the medical reserve corps. **Fort, Harry G.**, Captain, Medical Corps. Ordered to report in person to the commanding general, Western Department, for temporary duty until September 6, 1915, when he will revert to a status of absence with leave. **Gill, George P.**, First Lieutenant, Medical Reserve Corps. By direction of the President is honorably discharged from the service of the United States, his services being no longer required. **Hagood, Rufus H., Jr.**, First Lieutenant, Medical Reserve Corps. Granted ten days' leave of absence. **Lloyd, William H.**, First Lieutenant, Medical Reserve Corps. Ordered to Camp Fort Bliss, Texas, from El Paso, Texas, for temporary duty. **Manly, C. J.**, Major, Medical Corps. Granted two months' leave of absence. **Porter, Louis B.**, First Lieutenant, Medical Reserve Corps. Resignation of his commission has been accepted by the President, to take effect June 26, 1915. **Schoenleber, Alvin W.**, First Lieutenant, Medical Corps. Ordered to sail for the Philippine Islands on or about November 5, 1915, instead of September 6, 1915, as heretofore ordered. **Sherwood, John W.**, First Lieutenant, Medical Corps. Granted one month's leave of absence. **Smith, Herbert A.**, First Lieutenant, Medical Reserve Corps. Ordered to active duty to take effect July 13, 1915, and will report at Fort Porter, New York, for duty until July 24, 1915, when he will return to his home and stand relieved from active duty in the medical reserve corps. **Smith, William A.**, First Lieutenant, Medical Reserve Corps. Ordered to active duty on each of the following dates, and will report to the commanding officer, Fort Moultrie, South Carolina, for duty: July 5th to 14th, July 19th to 20th, August 4th to 13th. **Snow, Frank W.**, First Lieutenant, Medical Reserve Corps. Resignation of his commission has been accepted by the President, to take effect June 30, 1915. **Souter, William N.**, First Lieutenant, Medical Reserve Corps. Ordered to active duty, to take effect on July 1, 1915, and will then proceed to Fort Constitution, New Hampshire, for duty for a period of one month. **Williamson, Llewellyn P.**, Captain, Medical Corps. Granted one month's leave of absence, to take effect on or about July 5, 1915.

Each of the following named officers is relieved from duty at the Army Medical School, Washington, D. C., to take effect July 5, 1915, and will then proceed to the post specified after his name and report in person to the commanding officer thereof for duty: First Lieutenant Harry D. Offutt, Fort Slocum, New York; First Lieutenant George D. Chunn, Columbus Barracks, Ohio; First Lieutenant Augustus B. Jones, Jefferson Barracks, Missouri; First Lieutenant Charles M. O'Connor, Jr., Walter Reed General Hospital, Washington, D. C.; First Lieutenant Frank H. Dixon, Fort Sam Houston, Texas; First Lieutenant Herman G. Maul, Texas City, Texas, Second Division; First Lieutenant Rufus H.

Hagood, Jr., Fort Ethan Allen, Vermont; First Lieutenant David D. Hogan, Fort Snelling, Minnesota.

*Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the week ending July 10, 1915.*

**Fife, J. D.**, Captain, Medical Corps. Granted one month's leave of absence, effective about July 5, 1915. **Hagan, David D.**, First Lieutenant, Medical Reserve Corps. Granted ten days' leave of absence, to take effect upon being relieved from duty in this city. **Hart, James W.**, First Lieutenant, Medical Reserve Corps. Ordered to active duty, and will report in person on that date to the commanding officer, Washington Barracks, D. C., for duty until August 8, 1915, and will then stand relieved from active duty in the Medical Reserve Corps. **Jones, Augustus B.**, First Lieutenant, Medical Reserve Corps. Granted ten days' leave of absence, to take effect upon relief from duty in Washington, D. C. **Mills, Frederick H.**, First Lieutenant, Medical Reserve Corps. Relieved from station and duty at Jackson Barracks, Louisiana, and is assigned to station and duty at Fort Apache, Arizona. **Qualle, Guy L.**, Captain Medical Corps. Relieved from his present duties and will report in person to the Governor of the Panama Canal for duty. **Scott, Raymond E.**, First Lieutenant, Medical Reserve Corps. Granted ten days' leave of absence, to take effect on expiration of temporary duty at Swiftwater, Pa. **Tenney, Elmer S.**, First Lieutenant, Medical Reserve Corps. Relieved from duty at Fort Liscum, Alaska, and ordered to rejoin Fort Baker, California. **Upshur, Alfred P.**, Captain, Medical Corps. Ordered to proceed to the Canal Zone, and report to the commanding general, United States Troops, for assignment to duty. **VanKirk, H. H.**, First Lieutenant, Medical Corps. Granted two months' leave of absence, to take effect about August 19, 1915.

### Births, Marriages, and Deaths.

#### Born.

**Patterson.**—In Beaver Falls, Pa., on Tuesday, June 29th, to Dr. and Mrs. Robert M. Patterson, a son.

#### Married.

**Breitling—Aberneathy.**—In St. Johnsburg, Vt., on Wednesday, June 30th, Dr. Joseph C. Breitling, of Lunenburg, Vt., and Miss Leone Aberneathy. **Fauss—Sybow.**—In Nottingham, Ohio, on Thursday, June 24th, Dr. Ralph W. Fauss, of LaGrange, and Miss Elsie Sybow. **Folsom—Cronin.**—In Manchester, N. H., on Wednesday, June 30th, Dr. Charles A. Folsom and Miss Mary E. Cronin.

#### Died.

**Ellsworth.**—In Boston, Mass., on Wednesday, June 30th, Dr. Victor A. Ellsworth, aged sixty-nine years. **Hamer.**—In Los Angeles, Cal., on Thursday, June 24th, Dr. Thaddeus F. Hamer, aged seventy years. **Hamilton.**—In Marion, Ind., on Saturday, June 26th, Dr. A. Augustus Hamilton, aged sixty-four years. **Harris.**—In Galesburg, Ill., on Sunday, June 27th, Dr. William Thomas Harris, aged seventy-four years. **Nesbit.**—In Waterloo, Iowa, on Friday, June 25th, Dr. George M. Nesbit, aged fifty-two years. **Randall.**—In Springtown, Texas, on Thursday, June 24th, Dr. Leroy J. Randall, aged seventy-six years. **Redfeare.**—In Marlboro, Mass., on Thursday, July 1st, Dr. Joseph F. Redfeare, aged sixty-five years. **Rhodes.**—In South Haven, Mich., on Thursday, July 1st, Dr. Leslie G. Rhodes, aged sixty years. **Roselle.**—In Spencer, S. D., on Monday, June 28th, Dr. Joseph F. Roselle, aged forty-eight years. **Shaw.**—In Cassadaga, N. Y., on Sunday, June 27th, Dr. Orrin C. Shaw, aged sixty-seven years. **Sword.**—In Huntington, Long Island, on Friday, July 2d, Dr. George P. Sword, aged fifty-two years. **Timmerman.**—In Hastings, Mich., on Saturday, June 26th, Dr. Frank R. Timmerman, aged sixty-two years. **Tovey.**—In Galesburg, Ill., on Wednesday, June 23d, Dr. Peter Edwin Tovey, aged sixty-one years. **Warfield.**—In Lisbon, Md., on Tuesday, June 29th, Dr. Reuben Orlando D. Warfield, aged seventy-two years.

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### Original Communications.

#### BLOOD PRESSURE IN GENERAL PRACTICE.\*

BY EDWARD H. GOODMAN, M. D.,

Philadelphia,

Associate in Medicine, University of Pennsylvania.

The principal questions to be answered by those who essay to talk on the value of blood pressure estimations are: What importance has a routine blood pressure examination for the general practitioner? Can he expect significant aids in diagnosis, prognosis, and treatment? Does the sphygmomanometer enable him to practise medicine with keener insight than without its assistance? These are all pertinent questions and must receive thoughtful consideration, for unless it can be definitely shown that the sphygmomanometer is a scientific aid in medicine, the general practitioner is perfectly justified in being skeptical about its advantages, and regarding it merely as a toy of no great value.

**Instruments.** The most important step in the study of blood pressure is the selection of an instrument. Sphygmomanometry is not alone a question of the large clinic or the consulting room, but is also a question of the bedside, hence the instrument must be portable, and its portability must not be at the expense of its serviceableness. Two great classes of instruments are now being advocated, the spring manometer and the mercury manometer. For brevity's sake, the writer may dogmatically say the mercury instruments are the best, and furnish the most satisfactory results, and of these, one of the most useful is the Nicholson instrument. This combines accuracy with compactness and seems in every way to fulfil the requirements of a portable instrument.

**Technic.** Regarding the technic of estimating blood pressure, little that is new can be said. The readings should be made uniformly, that is, the position the patient assumes, the position of the arm, and the time of day the blood pressure is taken should be as nearly uniform as possible. In office work the sitting posture is preferable, and at the bedside the recumbent position is the one of choice. The position of the arm makes a difference in some individuals, as can easily be determined by comparing the figures obtained with the arm in full extension, in semiextension, and at right angles. The relation of the time of estimation of the blood pres-

sure to the time of meals and other physical and psychological factors, should be observed, and, as nearly as possible, all these factors should be carefully controlled.

As far as the method is concerned, the auscultatory or auditory is the one of choice. The cuff being applied to the upper arm, air is pumped in until the pulsation at the bend of the elbow ceases to be felt. At the bend of the elbow, slightly to the ulnar side, a binaural stethoscope is placed, without pressure, the air is allowed to escape by means of the release cock, and one listens for the sounds which appear when the pressure in the cuff reaches that within the artery. Systolic pressure is indicated by the first sound which reaches the ear. Normally, the first sound is a thump, or tone, but in some cases it is a murmur, at all events, the first sound, provided that it is from the vessel itself and not from a possible creaking of the cuff, is the systolic or maximum pressure. As the pressure becomes less within the cuff, owing to the release of air, certain sounds, tones, murmurs, synchronous with the heart beats reach the ear; first the tones, then murmurs, then tones, then a sudden dulling of the tone, and then all sound ceases. I believe the length and character of the various so called five phases—meaning thereby, the first phase, tones, the second phase, murmurs, the third phase, tones, the fourth phase, dulling of the tones, and the fifth phase, silence, have a certain significance, a view lately confirmed by Swan, but for our purpose, we shall consider the fourth phase, or the first dull sound, in contrast to the previously heard clear cut sounds, as the significant one in connection with the sound indicating systolic pressure. This fourth phase is the point of lowest pressure, diastolic pressure, and requires much more care to determine than does the systolic pressure. "The difference between the maximum pressure exerted by the kinetic energy of the blood column and the minimum pressure or potential energy exerted by the vessel walls is the pulse pressure. It represents the intermittent burden of pressure imposed on the arteries by the heart's energy in systole, in order to force the blood toward the periphery and maintain the circulation. The pulse pressure may, therefore, be defined as the amount of pressure exerted by the heart during systole in excess of the diastolic pressure. It measures the excess of dynamic over potential energy. The systolic and pulse pressures represent myocardial values, while the diastolic pressure represents arterial resistance. Incidentally, it may be mentioned, that the pulse pressure is that part of the heart's

\*Presented before the Twenty-first Ward Medical Society, March 2, 1915.



energy which produces the distention of arteries which is recognized as the pulse" (Stoner).

The estimation of diastolic pressure appears to me to be of as much, if not more, value than the systolic pressure, and deserves as much attention. It is by far the more constant, and is less susceptible to the many physical and psychical factors to which the systolic pressure is subject. Systolic blood pressure is by no means the only feature of blood pressure and will often lead one astray if the attention is concentrated on it alone, to the neglect of the diastolic pressure.

*Hypertension.* By hypertension should be meant any permanent increase in blood pressure above the normal. This definition would include any rise in systolic pressure above 130 mm. Hg., and any rise in diastolic pressure above 90 mm. Hg. I do not believe that normally there is a physiological rise in blood pressure in a person past fifty years of age, and I contend that when a pressure of 150 or more is encountered, it indicates, exclusive of disease of the central nervous system, chronic nephritis or cardiovascular hypertensive disease (hyperpiesis). Not that hypertension does not occur in certain other diseases, notably Graves's disease, but generally speaking, hypertension, systolic as well as diastolic, indicates one or the other of the two foregoing conditions. Nephritis should be thought of first when a patient has a permanent high blood pressure, and should be readily diagnosed by the presence of positive urinary findings, eye, and heart changes. Hyperpiesis is to be diagnosed only when there is no polyuria with the urine of low specific gravity, no albumin, and no casts, no eye changes, and no disease of the peripheral arteries. There may be slight cardiac hypertrophy with the resulting accentuated second aortic sound.

In acute nephritis such a dogmatic statement of blood pressure cannot be made. Many clinicians believe that the pressure is normal, or only slightly elevated, but the majority hold that hypertension is the rule. The cases I have seen have been hypertensive. On July 10, 1913, I saw an Italian boy who had had edema of the face for four days. Heart signs were normal, blood pressure was 175-120, and the urine contained much albumin, many granular casts, and leucocytes. On July 15th, edema was greater, there was a lower amount of urine, the blood pressure was 170-100, and the heart was hypertrophied to one cm. outside left line, and the second sound was accentuated at the aortic area, and at the apex. From July 25th, condition improved, the blood pressure reached 114-60; on July 31st, the cardiac outline became normal and the urine was negative.

The question often arises, Does arteriosclerosis of itself produce hypertension in the absence of a co-existing renal disease? If it does, it is uncommon, and not the rule. It is stated that there may be extensive sclerosis of the splanchnic vessels, and yet the peripheral arteries may be soft, but this local degeneration does not produce left sided cardiac hypertrophy, which would certainly be the case if the sclerosis was accompanied by high blood pressure. If the sclerosis involves the finer capillaries or in any way narrows the lumen of the vessels, one of the

prime causes of increased pressure, i. e., increased local resistance, arises, and hypertension is the result. But according to Sawada, only 12.3 per cent. of arteriosclerotic patients show a slight increase of pressure. A notable instance of a failure to find hypertension in arteriosclerosis is in a patient of mine, a man aged seventy-one years, with a pressure of 98-43.

The systolic pressure in nephritis is very variable, there being diurnal variations as great as 60 to 80 mm. Hg. The psychical changes, which in health produce changes in blood pressure, in this disease have an exaggerated effect. Thus, menstruation, which generally causes a fall of pressure, induced in a patient of mine a rise from 180 to 220 on the first day of menstruation, falling again to 180 toward the end of the period. Slight exercise in this same patient produced an unwarranted rise. Acute infections in the course of nephritis cause an increase in tension. Influenza in another patient sent the pressure from 168-100 mm. Hg. to 205-110 mm. Hg. The diastolic pressure is but slightly affected by diurnal or other factors, hence a rise in systolic pressure should not be viewed too gloomily, provided that the diastolic pressure can be maintained at a low figure.

What is the prognostic significance of this symptom, *hypertension*? When nephritis or hyperpiesis is the cause of the increased pressure, the prognosis is necessarily guarded. Guarded, not because of the height of blood pressure, for it is partly compensatory, its function being to increase cardiac work so that the circulation of the kidney can be maintained, but guarded because of the well known progressive nature of the disease and because of the patient's lowered resistance to infectious agents. The degree of kidney inflammation cannot be determined by the degree of hypertension, any more than the noise of an automobile horn indicates the horse power of the machine. I have seen advanced cases of nephritis with a low pressure, and have seen patients in uremia with normal pressures, although it must be confessed these are medical curiosities. On the other hand, reduction of blood pressure below the patient's normal level, which may now be high (165-180), under the changed conditions may be followed by dangerous symptoms of collapse. High blood pressure, of itself, minus the renal factor embraced in the syndrome called hyperpiesis, is no cause for alarm and is no guide in prognosis. So long as the left ventricle is able to carry on its increased work, all is well, but when it falters, gradual cardiac insufficiency results and causes death in as high as twenty-nine per cent. of the cases. Although hypertension is compensatory and salutary, it is not without danger, and cannot be absolutely ignored.

*Hypotension.* Of hypotension, or pressures below 120 mm. Hg., less can be said. There is a group of patients who are hypotensive, and who have one or all of the following symptoms: Headache, vertigo, impaired powers of concentration, mental and physical tire. In the patients I have seen with these symptoms, rise of pressure has been followed by improvement. Of hypotension in acute infections and in other diseases, nothing will be said, as space does not allow. Not nearly so much is known of hypotension as is known of hypertension, but it is none the less worthy of as much study and conjecture.

**Cardiac disease.** In cardiac disease an attempt has been made to utilize blood pressure as an index of the degree of work the heart can do, or as an index of the degree of disease of the myocardium. I have suggested that by determining the percentage of the pulse pressure formed by the different phases, and by adding the sum of the second and third phases, and the first and fourth phases together, a proportion could be obtained which would indicate the relative cardiac strength and cardiac weakness factors—normally C.S.:C.W.=55.5:44.4. The length of the second phase alone has some significance.

Stone has devised a cardiac load and overload factor, obtained by dividing the diastolic pressure by the pulse pressure. Normally it is fifty per cent. In decompensated myocardial disease, the load is seventy-six per cent., an overload of twenty-six per cent.

Barach's energy index is obtained by multiplying the systolic, diastolic, and pulse pressures by the pulse rate in one minute, which represents the total effort exerted in one minute by the cardiovascular system.

Tigerstedt's formula is obtained by dividing the pulse pressure by the systolic pressure.

Norris and Davies have studied the Stone and Barach factors, and Swan has studied the Goodman-Howell, the Stone and Tigerstedt equations. Norris and Davies found nothing significant, while Swan favors the Tigerstedt factor and the length of the second phase. The cardiac strength-cardiac weakness ratio, when the cardiac weakness is greater than the cardiac strength, is indicative of disturbance of the myocardium. Swan believes that the overload factor of Stone indicates peripheral resistance rather than myocardial inefficiency.

The estimation of the functional capacity of the heart is a matter which is far from being as simple as it appears. It is a question of the greatest importance, as it is vital to a patient to know just how much work he can do, and in what form of exercise he may indulge without drawing too deeply on the reserve power of the heart. Although all the tests described are suggestive, it is questionable, after all, if cardiac function can be expressed in a mathematical formula.

Apart from aortic insufficiency, there is little to be learned from blood pressure readings in valvular disease of the heart. As a rule, in aortic insufficiency the systolic pressure is high and the diastolic low, thereby increasing the pulse pressure. The persistence of the fourth phase is a common phenomenon, although it is not a pathognomonic sign, having been heard in other conditions, while in some cases of aortic insufficiency there is no persistence of the aortic sound. Nevertheless, when the diastolic pressure is recorded below fifty mm. Hg., aortic regurgitation should be suspected. I have observed a rise in diastolic pressure when the cardiac function improved. Another useful sign is the great difference between the systolic pressure in the leg and in the arm when the patient is recumbent. Normally, there should be no change, but in aortic insufficiency, the pressure in the leg is much higher than in the arm. The following figures contributed by Leonard Hill illustrate this condition.



**Blood pressure in infections.** The diagnosis of any acute infection by blood pressure is out of the question, but the recognition of certain untoward complications may be very much facilitated by the judicious use of the sphygmomanometer. In Philadelphia, and in many of the larger cities, typhoid fever has become rare, and does not possess the same significance for the general practitioner as it formerly did. Nevertheless, complications are ubiquitous and should be watched for as closely as before. Typhoid fever is essentially a hypotensive disease, the tension rising *pari passu* with the degree of toxemia. There is probably no condition, with the exception of shock, in which careful blood pressure readings are prognostically more significant.

And here let me make a plea for frequent estimations, not once a day, but as frequently as the temperature, pulse, and respiration are registered. An intelligent nurse may soon be taught the technic of sphygmomanometry, and the taking of blood pressure should be made part of the nurse's duties as well as the registration of other clinical data.

This is a consummation devoutly to be wished, as the significance of blood pressure in typhoid fever and in many conditions can be appreciated only when one has had previous daily or three hourly records with which to make comparison. Isolated readings are valueless, as individual variations occur here as they do in health.

Two of the dangerous complications of typhoid fever are commonly associated with blood pressure changes. Hemorrhage with a fall, perforation with a rise, although I have lately seen two contradictory instances, a hemorrhage, fatal, with no drop in blood pressure, and a perforation with a fall from 124 to 110 mm. Hg. Hypotension is not always a safe indication that there is no perforation, but a rise, sharp and well maintained, is a very valuable sign.

In pneumonia, much has been written concerning the well known rule, that if the blood pressure expressed in mm. Hg. stays above the pulse rate expressed in beats to the minute, the case has a favorable prognosis, while an unfavorable outcome is to be expected when the pulse rate rises above the blood pressure. I have attempted repeatedly to make use of this ratio in estimating the prognosis, and although in many cases the results were in accordance with this rule, in many other cases the reverse was seen. That is, patients may die who have a higher blood pressure than pulse rate, and patients may recover when the pulse rate is continuously above the blood pressure.

Those who depend on this rule for guide in therapy and prognosis, among them Gibson and Gordon, fail to recognize the fact that nephritis or some condition of itself raising blood pressure, may be present in the subject suffering from pneumonia, and hence raise the patient's pressure far above nor-

Such patients with a pressure of 140 or more are in far less danger from collapse as those with lower pressures, and treatment is as urgently indicated. What is said of systolic pressure may be applied to diastolic and to pulse pressure, both of which have little or no significance.

In obstetrics, the blood pressure should be closely watched. "If the blood pressure remains persistently under 100, it is fair to assume that the patient's general condition is below par, and steps should be taken to improve it. At the time of labor the patient should be watched carefully and guarded as far as possible against exhaustion, since the patient with an unduly low blood pressure not infrequently develops shock and collapse to a marked degree following labor. If the pressure is over 130, the patient should be kept under close observation, even in the absence of other symptoms, and a rising pressure should receive most careful attention. A pressure of 150 has been commonly called the danger line, but a persistent rise of pressure from a low point, even though it may never reach the arbitrary danger line, calls for most careful attention. . . . Persistent high blood pressure, in the absence of other signs, is not necessarily a dangerous symptom, whereas a rise in blood pressure from a low point is not infrequently followed by the appearance of albumin and the development of symptoms of toxemia and is more significant than a high pressure throughout" (Newell).

Thus far we have endeavored briefly to trace the diagnostic and prognostic significance of blood pressure as it affects conditions commonly seen by the general practitioner. I have purposely avoided mention of blood pressure in surgery.

As far as the value of blood pressure readings in connection with treatment is concerned, our remarks must be confined to cases of hypertension. No physician should attempt the reduction of blood pressure without controlling at every step his medication by the sphygmomanometer. In the treatment of hypertension, an important fact must not be lost sight of, namely, that high blood pressure is often a necessary accompaniment of altered function and structure, and were it not for this raised blood pressure, life could not be carried on with these functional or organic changes. Cardiac strength and peripheral resistance are necessary for the maintenance of blood pressure at a certain level. This is true in health, and is true in disease, with this added feature, that hypertension, if permanent, creates a new physiological limit, not 130 and not 180, but perhaps 200. One can never say what this physiological limit is for any given individual, but it must be determined, and below it blood pressure cannot be reduced with safety any more than can blood pressure in health be reduced below the normal physiological limit. In a patient of mine the blood pressure was normal for him at 220, or in any case, he was subjectively best at that pressure. On his first visit, the pressure was 260 plus, and following the use of nitrites it fell to 202. At this time the patient felt played out, had no ambition for physical or mental effort, and was much distressed. Nitrites were discontinued and pressure rose to 220, at which point he felt well.

It is a common error to believe that the physiological

limit is not only not indicated, but is bad therapy, hence it must be reiterated that when using cardiac depressor drugs or vasodilator methods, blood pressure must be constantly watched and repeated estimations made.

I trust that what has been said will be viewed as a picture painted for a certain sized frame. Volumes have been written on the subject of blood pressure, and it is not an easy task to decide what features of sphygmomanometry must be discussed in a short paper to prove to the general practitioner the value of blood pressure estimations. I have attempted cursorily to point out some important uses in general medicine, and I leave in the reader's hands the answer to the third question propounded at the beginning of this paper: Does the sphygmomanometer enable the general practitioner to practise medicine with a keener insight than without its assistance?

248 SOUTH TWENTY-FIRST STREET.

## PSYCHOTHERAPY.

By OTTO LERCH, A. M., PH. D., M. D.,

New Orleans,

Professor of Medical Diagnosis and Prognosis, Post-Graduate School,  
Tulane University.

It is difficult to define force, only known by its effect. Foster (*Encyclopedic Medical Dictionary*) speaks of *Vis medicatrix nature* as a remedial force or impulse: German, *Naturheilung*, the remedial impulse of Nature, the self recuperative power of the bodily system, independent of medicine. The *Standard Dictionary* calls it the capability of living tissue, animal or vegetable, to remedy or remove disease or to repair injuries inflicted upon it, and Frank's *Medical Dictionary* defines it as the healing power of Nature. I have heard it often quoted by clinicians and teachers to explain improvement in patients not thought to be due to treatment. It is a force that acts through the blood. The blood represents it. It carries nourishment to every cell of the body to select from for its own proper use and in return carries away waste matter to be excreted by way of lungs, kidneys, and skin. It contains the means of defense against an invasion of micro-organisms and toxins, and when injury is done, it carries the means of repair wherever they are needed.

Bearing this in mind, it is clear how we can assist Nature in her endeavor to cure disease. We have to free the blood from impurities, microbes, and toxic substance and regulate its distribution, so that it can flow with ease where needed. There can be no treatment successful without this object in view, and no result can be obtained unless it is at least partially accomplished, no matter what disease we are called upon to treat, acute or chronic, organic or functional.

Three indications present themselves in every case: To remove danger to life, to relieve pain, and to cure disease. Each method of treatment now in use meets those indications more or less, and all act in the same way, that is, they assist Nature to purify the blood and influence blood distribution: They produce a greater purity in the blood and re-



store a disturbed equilibrium between the venous and arterial circulation in one particular organ or in the whole organism. Pure blood and a perfect circulation remove danger to life, stop pain, and restore an injured organ to healthy function, if that is still possible.

Only a correct diagnosis can be a guide to employ therapeutic means in a rational way. We have to know the character of the impurities, and we have to know the particular microbes in order to employ specifics. Drugs, vaccines, antitoxins, serums, organic extracts, and the physiological methods cannot be used without a correct diagnosis. All organs, the sexual organs included, make blood, purify it and distribute it, and we have to know which fails to help.

Therapeutic methods act mainly upon the nervous system, and skillfully employed will affect certain organs to the exclusion of all others, increase their function or slow it, act as stimulants or sedatives upon the whole organism or upon single organs. They free organs of excessive blood and waste, and create an active or passive hyperemia where needed to cure disease.

There exists at present a great disagreement among clinicians. Some laud the treatment with drugs, others put little faith in it, some put their claims forth for the physiological methods and deny the efficiency of drug treatment and others, again, rely on one particular method they have especially studied. The view that the only curative agent we possess is the blood and that all therapeutic methods must serve to free it from impurities and bring it where it is needed, permits and forces the employment of several or of all to get the best results in the treatment of the sick. The diagnosis will indicate in each case the best combination.

Psychotherapy relies solely on the *vis medicatrix* nature. Not the least important of our methods of treatment, it is but little understood by the general practitioner and has fallen largely into the hands of the quack. It is practised often unconsciously, rarely and by but a few with a purpose.

If a patient suffering from an acute or chronic affection is assured that he will recover and believes it, he is in the best position to assist Nature in her effort to cure. The higher centres are in abeyance, and cannot interfere with the lower centres that sustain life and protect the organism. Circulation and respiration are carried on with uninterrupted regularity, vessels contract and dilate to send waves of blood where needed, organs function well, "strengthened and stimulated by hope, quieted and soothed by the absence of fear and morbid apprehension." Toxic products are neutralized, pathogenic micro-organisms are destroyed, and waste is eliminated.

The purified blood flows in large quantities to the seat of disease to cure. Pain stops, sleep is promoted, appetite returns, and the patients recover. Unfortunately, there are many instances where Nature is not equal to the task, and where in her efforts to cure she does too much or too little, and the patient may succumb.

The mind presides over every function of the body, over every process of life. Mind is brain activity, it is living brain; without brain there is no mind. There is not a single cell, the life of which

does not depend on nerve force, there is not a disease that is not influenced by the mind. The function of every organ depends on the integrity of the complex nervous apparatus. The mental phenomena, intellectual, emotional, and volitional, closely connected with each other, may be traced to the lowest form of life. The cells of the body select their food from the blood, according to their needs, they inhale and exhale, they grow, work, and die. A liver cell manufactures bile and glycogen. An epithelial cell of the kidney tubules separates waste, the ciliated epithelium of the capillary bronchi prevents foreign substances from entering the alveoli by a constant outward brushing movement, and a brain cell receives impressions, preserves them, and sends forth motor impulses.

Mind depends on the quantity and quality of the brain. There are no two brains alike, and the brain of the infant differs from that of the adult. In the newborn child the brain is almost smooth, it is more watery, and its cells and fibres are far less in number than in the adult brain. As life advances, and with the use of the brain, cells and fibres increase in numbers, convolutions deepen and the organ becomes firmer to reach its maximum in adult life. When the infant is born, he is the product of heredity, past generations have formed him, a link in an endless chain. Mind and body are impressed with the characteristic features of the race from which he springs and of the nation and family of which he is a member. His brain is thickly sown with tendencies and dispositions ready to react to stimulation for good or evil, nerve paths are ready for impulses to travel, and centres to receive impressions and to become instincts and habits at once, of virtue or vice, whereas others are merely dimly outlined and ample material is present for new pathways to form. The heart beats in the mother's womb stimulated by the circulating blood, the lungs commence to breathe as soon as the air passes into the bronchi, and the digestive organs act when the newly born babe is taken to the breast. They are reflex actions due to brain activity, having their seat in the lowest centres, situated in the medulla, connected and influenced, however, by all, to the highest cortical centres. The pulse is accelerated and slowed, respiration increased or decreased, and digestion promoted or depressed by emotion, and all are more or less influenced by the will. They are automatic functions of brain activity that commence with life.

Man is the product of heredity and environment, and the cells of his body and brain do not act but react to stimulations. All actions are more or less reflex acts. The afferent impulse may be discovered in every act, be it called reflex or voluntary. We are conscious of voluntary actions, subconscious or unconscious of reflex acts, and it is probable that all reflex actions have been voluntary in the beginning and have become reflex acts by practice in the life time of the individual or his ancestors, transmitted to the descendants. Every voluntary, conscious act, is more or less laborious and fatiguing; with practice it becomes less difficult, gradually sinks into subconsciousness, and finally is unconsciously performed; the nerve path is marked, sensory and motor impulses follow the path of least resistance. A habit

is established and, if transmitted to the descendant, it is called an instinct. Walking, speaking, the play of musical instruments, and most actions of every day occupation have become automatic.

The brain is the seat of sensation, volition, and intellect. Volition is the beginning of motion and feeling. In the cortex are situated the highest centres of brain activity, the basal ganglia are the seats of reflex actions and instinct, relieving the work of the cortex; the corpus striatum, that of motion, the optic thalami that of sensation and especially of sight. The cerebellum is the great centre for the coordination of muscular movements, the harmonious adjustment of the working of the muscles which maintain the body in a position of equilibrium; and in the medulla are the important centres that sustain life, respiration, and circulation. The spinal column presides over reflex acts. Man can control some pure reflex acts by the will, showing their close connections with the cortex. Coughing and sneezing may be suppressed and the body kept quiet when the surgeon probes a wound.

After the spinal column is divided by injury or disease, reflexes are no longer controlled and modified by the brain and their excitability is increased below the division. The study of reflex in man is of high importance in the diagnosis of nervous diseases. Disease or injury to any portion of the reflex arc abolishes them. Voluntary acts pass into reflex acts and it can be understood that spinal centres through which the impulses constantly travel from and to the brain, may under certain conditions learn to perform functions usually belonging to cortical centres. The localization of brain centres has been studied and, though far from being perfect, has conclusively proved that the cortex contains the highest cerebral centres and that the basal ganglia are subsidiary to these.

Extirpation, stimulation, and comparison of clinical symptoms with post mortem findings have placed the motor centres in the convolutions around the fissure of Rolando and sensory centres in their vicinity. The centre of vision is situated in the occipital lobe and the angular gyrus. The localization of hearing, taste, smell and tactile centres is not yet absolutely certain, though it may be taken for granted that sensation and volition are closely connected and that the fibres of sensation connect with the beginning of the motor fibres. The motor centre of speech is situated in the third frontal convolution and its sensory centre in the first temporal convolution.

The most simple mental process is a sensation. To produce it, a stimulus, a nerve ending a path to the brain and a sensory centre are necessary. The brain learns by experience to refer the sensation to the seat of stimulation, that is to the stimulated nerve endings. The pain caused by a blow or cut is referred to the bruise or wound, and after amputation pain is still felt in fingers and toes as an irritation of the nerve in the stump, due to the established habit. All our knowledge is made up of such sensations received by the special senses; it is seen, heard, felt, tasted, or smelled, more or less deeply impressed upon the nerve centres, depending on quantity and quality of the brain, on the intensity of the stimulation, and on the repetition of the

process. These impressions, if deep enough, are indestructible and lasting and may be recalled many years after they have been made; they are engravings made with indelible ink and form a part of the personality. They are the principles of thought, conscience, and character, and may be received consciously or unconsciously.

Simple sensory impressions are the elements of perception. They combine in groups, firmly linked together, and form entities that are perceived. Every object we recognize is a perception, from an orange or apple, made up of color, form, taste, smell, and all its other qualities to the more complex ones, tree, house, man, etc. Grouping, linking, and associating of perceptions form conception. We recognize apple and orange to be fruits and to belong to the vegetable kingdom, a dog to belong to the animal kingdom. Once perceptions and conceptions are formed, printed upon the brain cells, they are lasting and permanent, constantly received consciously and unconsciously strengthened by repetition, modified by new stimuli, or fading. And just as perceptions are the elements of conception, so are these the elements of complex ideas. Grouping, associating, and discriminating of conceptions is reasoning, which depends on quantity and quality of the brain of which they are a part, on the environment that has made them, and furnished the stimulation that prompts the reasoning influenced by the state of the whole organism. Simple impressions, perceptions, and conceptions all are deposited in the cells of the cortex, gradually to be referred to lower centres, basal ganglia, and spinal centres, as is evidenced by experiments in man and animals. They are then said to be subconscious and unconscious; we are not conscious of them, though they may rise at any time unconsciously, or by the effort of the will into consciousness, stimulated by impulses that have produced them originally, or by association. There is not one of the physiological acts that cannot be instantly corrected by a mental act. That is, acts that have become habits and instinct by constant repetition, and are based upon inheritance, even those that carry on and sustain life, are still influenced by the cortex. It presides over every function; and absorption, secretion, and excretion, vascular tone, circulatory changes, and metabolism are all regulated by cortical action.

A lesion due to cerebral hemorrhage, embolism, or softening, will cause atrophy and paralysis of muscles, disturbed sensation, and temperature changes on the opposite side. Lower centres that have become in the course of time the seat of these functions, are still presided over by the cortex and cannot continue to work without its influence. By destruction or stimulation of cortical centres we can cause either paralysis or muscular movements of certain muscles or groups of muscles, cause loss of visual memory, of speech, of hearing, etc.

The sympathetic is in intimate relation with the central nervous system, with its large number of ganglia along both sides of the spinal cord; its plexus of ganglia distributed in the thoracic and abdominal cavities and those scattered in the heart, in the gastrointestinal tract, the walls of the arteries, etc., receive their stimulation through the

central nervous system and carry on vasomotor, secretory, and excretory processes. The important processes that sustain life, respiration, circulation, and digestion, are completely guided by them, presided over by medulla and cortex, and our sensations of bodily welfare and distress are due to their activity. They are the functions that commence to act at birth, and others, for instance, the sucking movements of the lips as soon as touched, the clasping of the fingers around any object that is put into the hand, and many others are all reflex acts inherited, that is path and centre, ready to react to the special stimuli. Occasionally, when organic functions are disturbed, we become conscious of them, though of some we are never conscious; pupil reflex and a few others we cannot control. They are automatic acts, the results of instinct and habit. New reflexes are added as the child grows, winking and sneezing, and at the age of fourteen years, all are present which we find in the adult. These reflexes based upon inherited pathways, form the stock with which the child commences his work in life. Generally we are conscious of objects and not of sensations. Through the association of a number of sensations received by the special senses, we know an object and see it as past experience has taught us it ought to be. We see, hear, taste, and feel with the impressions that have been stored away, associated with the object. On this account the danger of false testimony is very great, especially so in children.

We are conscious of illusions and hallucinations, we perceive objects as we have observed them to be, by association and dissociation, synthetic and analytical processes. Consciousness is a quality of the mind, not the mind itself; it is neural activity concentrated upon one particular spot of the cortex. Consciousness is not inherited, it is acquired, it is not present for days after birth and is very vague for weeks. Not till impressions of sensations and perceptions have accumulated, does consciousness become clearer. One perception, the last and newest one, is more strongly felt than the rest; it is attended to, we are conscious of it. Attention and consciousness are synonyms. "Consciousness always has a focal point, which reveals the momentary activity of the mind." It has been compared with the spectrum, the visible rays gradually passing into the ultrared and the ultraviolet rays; with the visual field clearest at the sensitive spot of the retina, gradually fading toward the margin, and like a stone's throw into still water that causes the highest ripples where it has dropped, becoming less and less as they pass on. Consciousness is never stationary, it is always shifting. It may be active or passive, voluntary or involuntary. Infants are not capable of voluntary attention. Involuntary attention is spontaneous, the response to sensory stimulation with preference to the most intense, to objects that produce pleasure; persons and animals and things generally that excite emotions. Voluntary attention is selection, a product of association and experience; it is a derivative of spontaneous attention, opposing a tendency of division, and there is no difference whether attention is fixed upon things external or upon ideas. The mind never can attend to but one thing fully. An injury may be

received in a crowd, the mind occupied, we do not feel pain till we see the blood flow or discover the bruise on undressing; the student does not hear the clock strike in his room, and so on. Attention is followed invariably by muscular movements, whether it is sensory, responding to external stimulation, ideational, a response to internal stimulation caused by changes in the cerebral circulation.

In visual attention the sensory motor circuit causes conversion of the eyes to obtain the best vision; a sound turns the head; to taste anything we have to bring it in contact with the tongue; to smell we have to inhale; and to feel we have to touch the object. The body or the extremities may be moved in response to ideas originating in the cortical centres, and the muscles of the face have been called the muscles of the mind. Habits of thought are expressed upon face and body, we recognize good and bad people by the expression of their face and by their gestures, we recognize occupations by the same means. Consciousness is the most important factor in the formation of new habits and in the adaptation of the organism to its environment. It is caused by cortical stimulation and does not essentially differ from any other act.

Memory, the faculty of the mind to recollect past experiences and events, depends entirely on the retentiveness of the brain. Every impression made upon it during life, has changed and modified it, and though a larger number of them, on account of disuse or being less deeply engraved than others, will gradually become faint, all will more or less influence our actions in life "as tendencies and dispositions." We have seen that the various impressions as they are received by way of the special senses, are stored away in certain cortical areas, the destruction of which obliterates the memory of these engravings, and certain cortical lesions will deprive the individual of the power to recollect visual or auditory images, others those of taste and smell, or cause partial or complete amnesia. In age, when due to the progressive and general decay, memory fails; it does so according to certain laws. Recent events are sooner forgotten than past, owing to tissue change lessening its capacity to retain. The memory of current names is early lost, and the more concrete the ideas, the sooner the loss of words for them. The deeper the impression of images, the more closely connected with others, the more lasting the memory. The early impressions of childhood, of religion, the words of the mother tongue, and the scenes of home are lasting. All this proves the physical basis of memory.

An image impressed upon the brain cells depends on their sensitiveness to receive it, on the intensity of the stimulation or its repetition and on the concentration. It differs, therefore, widely with individuals and some are abnormally sensitive to certain stimulants. The mathematical and musical prodigies are well known. To memorize well, we have to make a deep impression and associate it with as many others already present, as possible, to affect a larger area. Concentration of attention and repetition will accomplish it, immediate practical use of the new experience by writing or talking about it or using it in some mechanical way will best serve this purpose, as it gives natural outlet for



time, impulses that invariably follow sensory stimulation. A stimulus that has produced the original impression or one that is similar to it, external or internal, will reproduce the image so that we again become conscious of it. The more vivid and acute, the deeper the impression was made originally, recognizing at the same time that it represents a part of past experience, an incident in our former life. Memory depends upon association, upon habits formed.

Memory is a quality of the mind early acquired. An infant soon remembers the face of the mother, the taste of the food and various objects due to re-excitation of pathways over which previously the same or similar impulses have traveled and of centres upon which previously the same or similar impressions have been made. It is the recognition of those conscious processes with which memory commences, accompanied by movements, that become coordinated and form habit, which sink into the subconscious and unconscious.

Such habits formed guide us unconsciously in life, and with them we respond to the constant stimulation of the environment. It is thus that we can perform the numberless and very complicated acts of an every day routine life, automatically, without tax on the cortex.

There exists some important difference between memory and imagination, though they have much in common, and both are based upon the registration of perceptions upon the cortical centres. There are as many kinds of images as there are special senses, of which the visual and auditory are more readily and more accurately reproduced by most persons. Memory is reproductive imagination or representation, that is, a simple recollection of a past event. Imagination proper or, as it is called, productive imagination, combines past experiences, sensations, and perceptions that have been stored away, in the most manifold and fanciful ways. It creates something new out of old material. There is nothing essentially different in imagination and memory from any other brain activity. It is based upon previous perceptions and allows us to use past experiences in the present and for the future. It is diminished by disuse and age, not inherited, but acquired and increased by practice.

Perceptions linked to one another form conceptions, and when attended to, that is when appearing in consciousness, convey meaning. The first vague identification of one experience with a previous one in the consciousness of the infant, represents the beginning of this brain activity.

Conceptions form chains and systems, ideas constantly modified, constantly changed by the environment and by the state of the organism itself in health and disease. Ideas are things real, just as the sensations, perceptions and conceptions of which they are composed, and like these, they are a part of the personality and determine its destiny. They represent images, visual, auditory, motor, etc., and they convey meaning. We employ them all and different ones on different occasions thinking about the same event, today visual and tomorrow perhaps largely auditory. Language corresponds to images, words are motor expressions of sensory impulses and serve as perceptions and conceptions to the

hearer. The material of which language is made up, are the sounds that are instinctively produced by fear, anger, and various other emotions invariably accompanied by gestures. We can observe this in animals, and in the infant who expresses his disgust and approval, his fright and his anger, his pleasure and his want in this way, and not till he has reached the age of eighteen months or even later has a sufficient stock of words for this purpose. The method by which language has been developed is that of imitation. These sounds are imitated to indicate to others the condition which produce them. The language of gestures does not differ in character from verbal language and the deaf mutes depend upon it entirely. Conceptions commence to form in early infant life, they develop and change with the need of the individual as he advances in years, and our educational systems try to provide for future needs.

The first vague conceptions of infancy form the root of all others, one is derived from the other, and all are related to one another. New conceptions contain new stimuli upon the same centres, some old material and modifications of old conceptions appear as new ones. A conception is a rudimentary judgment, and with the increase in numbers and richness of conceptions, judgment develops. It involves all the fundamental activities of the brain; sensation, perception, memory, imagination, and conception.

Knowledge is like a tree that springs from a seed, or like the human organism itself with its myriads of cells all closely connected and depending on one another for development and growth and all springing from the fertilized "ovum in which are imbedded the potentialities of the future." If a child is told that something it does is bad and is punished for it, it soon will remember the consequence of such actions; cause and effect are connected and judgment commences. Judgment does not add to the stock of knowledge we possess, it is based upon it and brings order. It is a process of pulling apart and putting together, a process of analysis and synthesis, and a series of judgments constitutes reasoning. It assists the organism to adapt itself to changing environment and develops with need. It commences early in the life of the infant and depends upon the demand made upon the child by its environment. It gradually becomes more complex. Reason depends upon all other mental activities, sensation, perception, conception, memory, imagination and association of ideas, on the quantity and quality of the brain at each particular time, and the number and richness of conceptions. They have been called halfway stations between stimuli and reactions, which permit us to summon movements from past experience adopted to a new surrounding. Every conscious mental act may or may not be accompanied by feeling. Two such feelings are known, one of pleasure and one of displeasure, rising occasionally to a sensation, almost of pain. And just as pain is a protective measure, so are the feelings that from extremes may pass gradually one into the other and be entirely neutral. They aid the motor responses that the organism has constantly to make to suit itself to the ever changing environment; they are a part of consciousness, com-

mence and develop with it, and tend to make it continue or discontinue an act. Affections are forms of organic sensations, and as they accompany activities useful or harmful to the organism, they cause pleasure or discomfort, determining the whole mental state. They lead at once to motor reaction, advance or retreat, and have been called mental attitudes. They act as pain does, which due to injury forces us to discontinue the present occupation, whereas the affections indicate danger more remote or inform us of our well being. Pleasure stimulates; it heightens vital activity. Pain and discomfort depress. Metabolism, respiration and circulation, secretion and excretion all are influenced by affections, and it has been demonstrated that pleasure dilates the peripheral vessels, slows the heart beat, and increases the depth of breathing, and that discomfort has the opposite effect. As our daily life is routine in character and most actions are automatically performed, consciousness is but little required, and that is why acute pleasure and displeasure are not more frequently felt. At the root of every affection and of every emotion is a mental representation.

Affections commence in early infancy. When a baby is hungry, it becomes conscious of this disagreeable sensation, it cries and struggles to release motor impulses that have not yet made tracts for regular movements adapted to this condition; the first acts of consciousness. As stated, some motor coordination commences with life itself. The action of all the vital organs, the reflexes involved in sucking, crying, etc., are sufficient to sustain life. Development of coordinated movements is very rapid. At the end of three years the child is in possession of all reflexes of the adult, with the exception of the sexual. A reflex act is a motor response to a sensory stimulation of which we are only rarely conscious. The pathways are inherited. Sneezing and coughing appear early, next winking, etc., as time progresses they become firmer and more securely established with practice. All serve the organism to adapt itself to the environment and increase its efficiency.

Instincts do not essentially differ from reflex acts and no line of demarcation can be drawn. They appear like reflexes with the development of the nervous system and represent the experience of the race; they are racial habits. But even in the lower animals they are influenced and modified by individual experience caused by the changing environment that demands such modifications. They have been established consciously or unconsciously or partly consciously to protect the individual against dangers that surround it, and may have become so firmly fixed that they continue occasionally long after they have become useless. Fear, anger, shyness, curiosity, affection, sexual love, jealousy and envy, revelry, sociability, sympathy, play imitation, constructiveness, secretiveness, and acquisitiveness are the human instincts generally accepted; walking and talking are added by some writers. Most of this number of instincts show the characteristic features of emotions, conscious feelings, whereas the act is prominent.

The instincts are impulsive in character, that is, they are executed on the spur of the moment with-

out reflection, though we are, or become conscious of them during the act, they vary in strength as to the cause that provokes them and they vary in different individuals. When they make their first appearance, they are unknown to the individual and are recognized only by experience. The first spell of anger that overtakes the child and the first infatuation of youth illustrate this feature well enough. Emotions form a part of the instincts they accompany, instinctive acts, and resemble feelings that accompany conscious, subconscious and unconscious acts. Setting free a number of incoordinate muscular movements, respiration, circulation, and digestion all are more or less affected and in their turn cause the emotion. It is thought that emotions depend on sensory motor activities going on in the body affecting and modifying consciousness. The emotional stimuli are followed by definite motor reactions in which the whole cortex shares, molecular waves radiate in every direction. The stimulation is excessive, creating new situations to cope with, motor impulses cannot drain off in accustomed channels, and the obstruction causes the pent up impulses to pass off in a paroxysm of incoordinate movements, partly to involuntary and partly to voluntary muscles, giving rise to the emotion and restoring the equilibrium. Emotions vary in intensity and quality with the nature of the cause; they are inherited and have been gradually developed in the life of the race. They are due to a number of reactions, all of which at least at some former time have been useful, called forth by various objects, all at one time, and the consciousness of the conflict that ensues before any one gains the upper hand, characterizes the emotion. The motor reactions relieve the tension that precedes, and while they may not be useful under present conditions, they certainly have been so in the ancestral life. Predispositions for certain emotions are called moods when transitory, and temperaments when permanent. We speak of sanguine and phlegmatic temperaments, etc. Friendship, love, enmity, etc., characterize habits of cultivated thought. Man's control over muscular movements is designed to adapt himself to his environment. Sensations, perceptions, and ideas, impulses, affections, and emotions, memory and imagination, judgment and reasoning all acting, make up the will. All influence man's acts and determine his movements. He is conscious of a small focus and dimly notices ideas as they appear in the margin of his consciousness, linked and associated with the vast store of impressions made upon his brain during his life of which he is totally unconscious, depending partly on inherited tendencies and dispositions and partly on the environment in which he has grown up.

The training of the will is a training of all the faculties of the mind, and any method that does not recognize it must completely fail. All the important decisions are made by the adult with the use of such habits automatically, writing, reading, walking, in fact there is not an act that cannot finally be traced to acquired habits. They form a part for good or evil and we can observe daily how futile it often is to replace bad habits with good habits, the only means to counteract them. The instinctive action of imitation, conscious and unconscious, is

one of the most powerful incentives to produce habits. The sounds made by the mother are imitated by the baby, the child tries to duplicate his elders, the schoolboy imitates his comrades and the adult his associates. How fortunate those who grow up in favorable surroundings! Training of the mind goes on forever as long as life lasts, and those advanced in years have been sought in council since time immemorial on account of vast experience, knowledge stored away, which can only be acquired in years. Though we are impressed with the freedom of our will, it can be readily seen that this depends on the state and composition of the brain at each particular moment when made. Each voluntary act takes place in consequence of the heredity and personal history of the individual. There are not two persons who will react in exactly the same way to the same stimulus.

(To be continued.)

### THE TREATMENT OF ETHMOIDITIS.\*

BY SAMUEL McCULLAGH, A. B., M. D., F. A. C. S.,  
New York,

Professor of Laryngology, Post-Graduate School of Manhattan Eye,  
Ear, and Throat Hospital.

Our knowledge of the protean symptomatology and pathology of ethmoid disease is still far from being complete, and much of it is of very recent date. As a consequence, operative indications have not yet definitely crystallized. My object in choosing this subject is that what I have to say may serve as a basis for discussion—a taking stock, as it were, of our progress—to the end that this crystallization may, perhaps, be hastened. A review of the anatomy of this region is entirely unnecessary; I should like to recall, however, a few points of surgical interest. The most important is that the ethmoid labyrinth is one of the most variable structures in the body. The comparison of the ethmoid cells with those of the mastoid process is a perfectly fair one, especially as regards the wide variation through which both range and the practical impossibility of determining that range until operation has been undertaken. The perfection of x ray technic has made our knowledge of the extent of the mastoid cells more accurate, but a skiagraph of the ethmoidal labyrinth is still of little operative assistance. The position of the ethmoid in the centre of the accessory sinuses makes it very prone to secondary involvement. It is in intimate relation with many important structures. If we are to undertake surgical work in this region it is absolutely essential that we have a thorough working knowledge of the anatomy—not book knowledge, but actual working knowledge. I fully agree with Mosher in his statement that “anyone who does work on the ethmoidal labyrinth without proper anatomical and surgical preparation simply has no surgical conscience.”

A consideration of the physiological function of the ethmoidal cells is, of course, a necessity in advising treatment. It is also unnecessary to go into this subject, but we must always have that function before us, giving it due weight in all procedures we

may advise. If no function were present or it were of as little positive value as that of the tonsils, our treatment would be much simplified—a removal of diseased tissue being indicated in all chronic cases. The harassing and often serious conditions that follow a radical removal of intranasal structures, however, forbid the destruction of any mucous membrane unless there is a definite and positive indication for that destruction. Someone has said that every surgical operation is a compromise. It is fair to regard it as such, therefore we should be as conservative in our nasal surgery as is consistent with the best interests of the whole body economy. There are times when radical procedures are indicated and, in such cases, we are equally guilty if we hide timidity under the cloak of conservatism and defer such measures as are necessary until the time when benefit might have been expected has passed. The day has gone by when the opening of the mastoid antrum alone was the proper treatment for mastoiditis. The day has also passed when the removal of polyps alone was the proper treatment for chronic advanced ethmoiditis. The concealed site of the latter structure and the lack of necessity for dressings and bandages has made the progress of rational treatment slower than that for mastoiditis. The recognition of the deleterious effects of foci of infection and the more accurate understanding of the dependence of eye conditions of marked gravity are factors of no mean importance in hastening a more thorough study of the most satisfactory lines of treatment.

The treatment to be adopted will naturally so vary with the type of disease with which we are dealing that I will briefly detail the clinicopathological divisions. The simplest division is into the suppurative and non-suppurative types. It is the recognition of this latter type that represents the advanced knowledge of recent years, and it is the failure to recognize it, especially in its incipency, that leads to many of the cases that, later, demand radical operative measures for their relief. For purposes of discussion it is more practicable to divide them into acute and chronic types, with perhaps an intermediate transition stage which we will call subacute. Acute cases may be catarrhal or suppurative. Chronic cases may be hypertrophic, atrophic, suppurative, specific, or tuberculous.

*Acute catarrhal ethmoiditis.* This is by great odds the most common type of inflammation of the ethmoidal cells. In practically every case of acute nasal infection the ethmoids are involved, and their response is in direct proportion to the virulence of the causative agent and the resistance of the patient. The symptoms of the acute catarrhal type are so much a part of those attributed to the primary condition that generally no attention is paid to the ethmoids. As this involvement is self limited in the vast majority of cases, and as a coryza is regarded as one of the ills to which the flesh is heir, to be borne without medical attention, we see only a few of those affected in proportion to the number that actually occur. No treatment directed primarily to the ethmoids is necessary in these cases. If drainage is kept free, prompt resolution will occur. If the drainage is not adequate, an acute suppurative



condition may supervene or it may pass into the subacute stage.

*Acute purulent ethmoiditis.* As already stated, the degree of involvement of the ethmoidal cells will depend upon the virulence of the causative agent and the resistance of the patient, so that the same degree of virulence that would set up an acute catarrhal condition in one patient causes an acute supuration in another. A large proportion of these cases are self limited also, and resolution takes place as the general nasal infection subsides. Again our aim must be to provide adequate drainage, otherwise the case will become chronic or complications will arise. The use of adrenaline is very generally advised for the promotion of drainage in these acute cases. I am far from satisfied that the results are wholly beneficial. Undoubtedly its primary action is all that could be desired. The relaxation that follows after its effects have worn off has seemed to me often to outweigh the primary benefit, and this is especially true when it has been long continued or an unnecessarily strong solution has been prescribed. My personal practice is not to order it as a routine measure if I can obtain relief otherwise, and when it is prescribed the weakest solution consistent with the result sought is ordered. This will vary with each patient. When operative procedures are contemplated it is well to bear in mind that the anesthetic power of cocaine is not as great upon an acutely inflamed as upon a normal membrane. There is no doubt that steam inhalations charged with the fumes of menthol are one of the best means of combating congestion in these cases.

Our ability to provide adequate drainage is often severely taxed by another factor. Most cases of ethmoiditis occur in patients with some anatomical variation, which of itself interferes with drainage under normal circumstances and is a predisposing factor in the onset of the disease for that very reason. When the anterior end of the middle turbinate is the responsible factor, I think we all remove it promptly in the confident anticipation of immediate benefit. When the obstruction is a badly deviated septum that prevents approach to the affected region, the question is more serious. To open up a healthy region in the presence of an acute infection in a contiguous area is bad surgery. A septal abscess is followed by a distressing deformity. The relief of the patient is an absolute necessity. Is an extranasal or an intranasal operation indicated? The extranasal operation does not give Nature a chance, as we must remove the cells and not the obstruction. In spite of the danger of septal abscess, I think it wiser to do a submucous resection, making the incision on the uninfected side if the condition is unilateral, and in any case incising the flap at its lowest point along the floor so that the space between the flaps may have unobstructed drainage. No packing is used, and if a complete removal of the deviated portion has been done good, coaptation will occur. All irrigations should be suspended for at least forty-eight hours and intranasal manipulations carried out with extreme care and gentleness. I have never had any unpleasant complications follow this procedure. In all cases of acute ethmoiditis where complications of a grave nature threaten, an external operation is the one of

choice for two reasons; first, it allows inspection of the affected area and, secondly, a more thorough exenteration can be accomplished and better drainage secured. As an external operation the second step of the Killian operation for frontal sinusitis is very satisfactory.

*Subacute ethmoiditis.* This condition is a result of neglected or repeated attacks of the acute catarrhal type. Very often it is difficult to differentiate from an incipient case of the hypertrophic form of the chronic type. A careful history will be of inestimable value in making this differentiation. It is in the subacute form that we can expect good results from vaccine therapy, while our disappointments will come in cases in which we administer vaccines under a wrong diagnosis. Suction is of undoubted value also.

*Chronic hypertrophic ethmoiditis.* This is the type of ethmoid disease that passes undiagnosed most frequently and is most difficult of recognition in its incipency. I feel sure that many cases hitherto described under the head of a neurosis really are cases of this type. Often the diagnosis at an early stage must be made from a consideration of the subjective symptoms, when there are no objective symptoms pointing directly to the involvement of this region. The admission that the group of symptoms characteristic of this disease is pathognomonic will help us to a diagnosis in many puzzling cases. Primarily it is nonsuppurative, though a superimposed infection may at any time alter its character, temporarily or permanently. The failure of the textbooks, except very recent editions of some, to describe this type of the disease and the prominence given a purulent or mucopurulent discharge as the most important and constant symptom of chronic ethmoiditis, have undoubtedly tended to retard its more general recognition and importance.

The pathological changes consist of, first, a polypoid degeneration of the mucous membrane lining the ethmoidal cells, as well as that covering the nasal aspect of the inner wall of the labyrinth, especially that covering the unciform process and the bulla and, according to Skillern, a loss of the hair cells around the ostia. If the disease is unchecked there is destruction of the bony trabeculae dividing the cells by resorption. The resistance of these cells is depressed on account of the faulty drainage brought about by these changes, and infection is of common occurrence and difficult to cure on account of it. If infection occurs and is not checked the case becomes one of chronic purulent ethmoiditis and the further pathological changes incident to that disease occur. This is the usual termination of an untreated case.

The symptomatology of this condition is fairly definite. Constant or frequently recurring colds in the head, paroxysms of sneezing, watery discharge that may be excessive, anosmia, a feeling of fullness between or back of the eyes, lack of ability to concentrate, secondary eye symptoms and reflex phenomena, such as asthma, are the more frequent of the subjective complaints. Objectively there may be but little discernible at the onset, except an hypertrophy of the mucous membrane of the middle meatal region, though careful inspection may reveal beginning local polypoid change here or beneath the

middle turbinate. A long bladed Kilian speculum inserted between the turbinate and the outer wall of the nose often reveals hitherto unsuspected changes. The x ray plate is of some value in these early cases, but too much dependence should not be placed upon it and it should be used for confirmation of a previously made diagnosis and not in lieu of a careful and thorough examination. A series of plates taken at intervals may be of use in noting changes and determining the progress of the disease.

The diagnosis of the advanced cases presents no difficulty whatever, as an examination reveals the masses of polypi filling the middle meatus. Posterior rhinoscopy generally shows the superior meatus full, also. As has already been said, many of these cases have become infected and the picture is one of a suppurative condition, but those still in the non-suppurative class are frequently seen. It is in the advanced cases that eye complications are likely to be encountered.

Naturally the treatment will vary with the stage of the disease. Early, conservatism is the keynote and every effort should be made to promote and maintain drainage and restore the mucous membrane to normal. The surgical relief of anatomical variations such as a deviated septum, hypertrophied middle turbinate, etc., I consider conservative measures, as drainage and ventilation must be secured if we hope to obtain resolution. To me, nitrate of silver in varying strengths seems the most useful single drug in the control of this disease in its incipency. Success will be largely dependent upon our therapeutic skill in meeting the varying indications presented. Among other things, I feel that the home use of watery solutions should be absolutely forbidden in these cases and, in fact, in most of the cases we are called upon to treat. Unless such solutions are isotonic and of a proper temperature, they are irritating and under all circumstances they wash off the protective mucus and render infection more probable. Their use in office treatment is necessary only when it is desired to cleanse the membrane so that applications may be direct. The routine prescription of nasal washes, for which the specialist is more to blame than the general practitioner, as the latter is only following in the footsteps of the former, appears to me to be pernicious and illogical. Their antiseptic value is nil. Frequently repeated assertions have a tendency to become accepted as facts, especially by the unthinking, a bit of psychology of which none are more keenly aware than the nostrum makers. The pity of it is that so many physicians range themselves among the dupes. A proper education of the public to the harm likely to result from nasal irrigations would tend to reduce the profits of the makers of the various washes that help to keep up an hypersecretion of mucus under the guise of cures for catarrh.

In moderately advanced cases when polypoid formations have become definite, removal of these and the bony base from which they spring in addition to the treatment already sketched may control the progress of the disease.

The treatment of the advanced cases where there have been radical changes in the ethmoid bone and its function has been practically destroyed, or where

complications have occurred or threaten, is a radical exenteration of the ethmoid cells.

Cases where the disease is moderately well established, call for nicety of judgment in prescribing treatment. A careful study of the case during a period of "watchful waiting" will often be necessary before final advice should be given. In these doubtful cases, many factors must be considered. The general condition of the patient and his hygienic standards, his occupation, his ability to obtain regular and skillful treatment, the effect upon the general health, the local inconvenience, the rapidity of progress, and the danger of complications must all be taken into account. For instance, it would be folly to attempt conservative treatment upon a worker for a small daily wage, when such treatment demanded his appearance three times a week over a comparatively long stretch of time, involving for him, in addition to carfare, the loss of wages. As a general working rule, I think we may assume safely that when pathological changes are not marked, when the inconvenience is not great, when the patient can report regularly for treatment, and when the progress of the disease is not rapid and shows improvement under treatment, a conservative course should be persisted in. When the social status of the patient is such that no hope can be entertained of his desire or ability to assist in the treatment, when pathological changes have taken place that practically preclude a restoration to normal, or when the effect on the general health is markedly deleterious, it is a waste of time to try the usual conservative measures. A radical operation is the most conservative step that can be taken.

*Chronic atrophic ethmoiditis.*—When the ethmoid cells are frankly purulent in a case of atrophic rhinitis, a radical operation is indicated to limit the crusting. There is no hope of restoring the integrity of the nose in this condition and prompt surgical intervention will usually react favorably upon the general health. Atrophic rhinitis is a self limited condition tending toward cessation with advancing years and the removal of this diseased tissue will help to hasten that end.

*Chronic purulent ethmoiditis.*—This type of the disease has two etiologial sources. It may be due, as has already been stated, to the infection of a chronic hypertrophic ethmoiditis, or it may have been frankly purulent from the onset. Under this heading must be classed also the so called closed empyemas of the ethmoid cells in which, as the name implies, there is no discharge of pus into the nose. No benefit that will be permanent can be anticipated from the conservative treatment of these cases, and a radical operation is indicated. The diagnosis between this condition and a recent infection of an early chronic hypertrophic case, with the inflammatory changes incident to that acute infection, will at times be puzzling and in cases where doubt exists, it is necessary to try a course of conservative treatment, such as suction and autogenous vaccines, until the differentiation is clear.

*Specific ethmoiditis.* In these cases no active surgical procedures should be taken until all active manifestations of the primary disease have disappeared. When this has been accomplished, treat-

ment should be instituted according to the type of disease that persists.

*Tuberculous ethmoiditis.* Personally I do not recall ever having seen a case that was due to the tubercle bacillus, though such cases must be of fairly common occurrence. The treatment would depend very largely upon the general condition of the patient and the influence that the ethmoid infection was having upon the general health.

In this rapid sketch of the high points of treatment of ethmoiditis I have purposely refrained from any differentiation between disease of the anterior and posterior cells or their combination or their association with coincident infection of the other sinuses as being totally unnecessary. I have also omitted reference to the necessity of careful inquiry into, and correction of general contributory factors, not that I consider it superogatory, as I am sure our tendency is to be too narrow of view and to take into account only what we can see through a speculum, but because the limits of such a paper compel the omission of much detail.

The question of eye complications, which must be taken into very serious account as an influence on treatment, is such a large one that it can only be fairly treated in an extended manner. Bryan (*Surgery, Gynecology, and Obstetrics*, June, 1912), in a comprehensive review of this subject, says: "It has been suggested by Friedenbergl that a broad division of the cases may be made under three heads: First, those in which a distention of the sinus with pus or other exudate encroaches on the space of the orbit, causing exophthalmos, limitations of mobility, and interference with sight. . . . The second type is where the inflammation extends to the orbit by lymph or blood channels, and causes orbital cellulitis or abscess, or septic phlebitis of the orbital veins with involvement of the optic nerve. . . . The third type is where there are no orbital symptoms or inflammatory reaction at all, but where the symptoms are subjective, owing to a loss of a small part of the central field of vision, such as a central scotoma. The frequency of eye disturbance in sinus disease cannot be doubted, as is shown by Birch-Hirschfeld, who, in 604 cases of orbital inflammation, found that no less than 409 were due to sinus disease. . . . In general, it may be stated that diseases of the anterior group of sinuses cause affections of the bulb, while those of the posterior group cause retrobulbar disturbances."

In all cases where eye complications of any moment are present, a radical operation seems the rational treatment and should be promptly performed. In the past there has been no nasal operation, perhaps, in which the results of surgical intervention have been, in so large a proportion of cases, so unsatisfactory both to the patient and the surgeon as attempted exenteration of the ethmoid cells. There is much to offer in palliation of this state of affairs. As already noted, the ethmoid region is, perhaps, the most variable in the body, important structures, the injury of which may cause blindness or death, surround it, and the operative field of vision is very restricted and further hampered by the constant bleeding which cannot be entirely controlled. Balenger devised instruments and a method for the removal of the ethmoidal labyrinth *en masse* which

has not found much favor, in this part of the country at least. The general operation performed has been rather a hit or miss procedure that might or might not exenterate the cells completely, but with no definite plan of procedure other than to get them out the best way possible. Very often it was not complete and a cure was not effected, hence there was a tendency to reserve operative interference until a complication arose. The sequence of steps in the operation devised by Mosher, of Boston, has transformed a hit or miss method into a definite surgical procedure designed to meet practically every variation that may occur in this extremely variable bone. It very largely reduces the dangers of invasion of undesired territory if the operator has a good working knowledge of the anatomy of the region. As to cure, the results thus far obtained, as far as I can learn by observation and conversation, are much better than with the old method.

Mosher recommends the use of a general anesthetic, but very satisfactory anesthesia can be obtained with cocaine provided that sufficient time and care are taken in its application. A saturated solution of cocaine in adrenaline on small pledgets of cotton on an applicator is applied to the whole region of the middle and superior meati, being carried up to the base of the polypi and between them. Several applications should be made over a period of about half an hour. A preliminary application of full strength adrenaline to the inferior turbinate and the septal mucous membrane tends to lessen unnecessary absorption of cocaine. The patient, between applications, is kept with the head bowed and instructed to blow the nose at intervals so that any cocaine carried down by the secretions will be expelled anteriorly. A preliminary hypodermic injection of morphine adds to the comfort of the patient.

This method of operation has not eliminated the dangers of ethmoidal exenteration, as Mosher has told me of two cases of postoperative meningitis, not, however, among his own cases. Opening of the orbit with a subsequent black eye is of fairly common occurrence, according to the same author, but unattended with any serious consequences. Pneumatocele may occur from forcing air into the orbit from blowing the nose after this accident has occurred. This rapidly subsides under rest in bed, cold compresses, and prohibition of blowing of the nose.

The principal part of the postoperative treatment of these cases is noninterference with nature. Personally I order no local treatment for forty-eight hours. Undoubtedly we often do harm by our overzealousness—our desire to help out nature. I know my mastoid wounds heal much more rapidly and satisfactorily since I have pursued a policy of noninterference and nonpacking.

Packing should never be used unless hemorrhage demands it or the patient is so situated as not to be within easy reach of skilled assistance if secondary hemorrhage occurs. I say skilled assistance advisedly, as rough or ignorant packing of such a wound is as likely to result badly as operative technique of the same sort. In cases that are packed, petrolatum gauze impregnated with bismuth may be used. It should be removed at the end of twelve



In an operation done under a general anesthetic, I permit the postnasal plug to remain in place until the patient has recovered from the anesthetic. This serves a double purpose; it prevents bleeding at the wound by retraction, and permits an accurate estimate of the amount of bleeding, as a basis for transfusion.

An exenteration of the ethmoid cells is not an office operation. It should be done in a hospital, if possible, otherwise at the patient's home, so that rest and quiet may be obtained immediately upon the completion of the operation. The shock is far from negligible.

If a thorough exenteration has been done, not much aftertreatment other than cleansing will be necessary. Occasionally it will be necessary to remove, with a snare or punch forceps, tags of tissue that have been overlooked.

35 PARK AVENUE.

## DIASTOLIC BLOOD PRESSURE.

### *A Modification of the Method of Taking It.*

By J. S. FERGUSON, M. D.,  
New York.

Since the taking of blood pressures as a routine clinical procedure was popularized by the methods of Riva-Rocci and his followers, much has been learned concerning vascular conditions in both health and disease. The usefulness of the method is generally appreciated by those who have familiarized themselves with the apparatus and mastered its principles.

The early use of the apparatus resulted in much uncertainty as to the value of the information obtained, owing largely to the relative inaccuracy of the methods by palpation and by observation of the oscillations which were then used. With the general adoption of the auscultatory method, systolic readings were much more accurately made and much valuable information has resulted.

There is still much confusion as to the method of determining the diastolic pressure and as to the value of the readings. Doubtless we shall eventually find that this is also due to inaccuracy of observation, and it is for the purpose of presenting a method by which it is hoped that the diastolic pressure can be as accurately read as the systolic, that this paper is presented.

In estimating blood pressure by the approved auscultatory method, the column of mercury is first elevated until the artery is completely compressed and no sound reaches the ear through the stethoscope. The mercury is then gradually lowered until the first sound is heard, a sharp tap; this marks the systolic pressure. Since the point of *first sound* is that which determines the reading, the accurate determination of this point is readily performed by any observer with a little practice. With normal vascular conditions accurate and constant readings are easily made, and even the difference between inspiratory and expiratory readings may be recorded. With abnormal conditions, e. g., myocarditis, the varying force of the cardiac impulse is readily recognized by the corresponding variations in the

height of the column of mercury at which the cardiac impulses produce audible taps, the valves of the instrument being closed, and the height of the mercury varied by gentle pressure with the fingers of the operator placed on the constricting arm band, or by manipulations of the air pump during the observation. The respiratory variations can be similarly determined by recording the point of systolic pressure during both inspiration and expiration.

The point of systolic pressure ushers in the *first phase* of the blood pressure reading. As the column of mercury falls, sharp taps are followed by a succession of blowing murmurs, the *second phase*. These in turn are usually followed by the *third phase* of distinct taps, which finally become dull, "muffled," and disappear. These muffled sounds, when present, constitute the *fourth phase*; the succeeding absence of sound is sometimes called the *fifth phase*.

The point in the fourth phase at which the *distinct taps* change to muffled taps corresponds with the true diastolic pressure. This has been determined by various controls which record the point of maximum oscillation by the Erlanger and other apparatus. The accepted method of determining clinically the diastolic blood pressure has therefore involved the recording of that point of the fourth phase at which the sharp taps pass into muffled sounds. Unfortunately this change is more or less gradual and the difficulty of determining the exact point at which it occurs has led to much confusion. The value of the diastolic readings is thus impaired.

There are certain conditions in which the reading of the diastolic pressure becomes an important diagnostic sign, e. g., in aortic regurgitation the third phase may be continued down even to the zero point, and in minor defects of the aortic valve the degree of elevation of the diastolic pressure above zero may serve as an approximate index of the degree of incompetence of the valve. If the blood pressure is not invariably followed through the fourth and into the fifth phase, there is danger of occasionally overlooking these important signs.

Even with the greatest care in properly adjusting an accurate instrument, errors in reading the diastolic pressure arise through, 1, the difficulty in distinguishing between "sharp" and "muffled" taps; 2, while the several phases are fairly distinct in most cases, yet in certain individuals any or all of them may be greatly modified in duration, in character, or in intensity, or may be merged into the succeeding phase; 3, the third phase is extremely variable in duration, it may cover only three to five mm. of mercury, or it may occasionally be traced all the way to 0; 4, if the fourth phase is not followed to its conclusion, an excessive pulse pressure, a pronounced characteristic of aortic disease, is overlooked.

For these and similar reasons it has been recommended that, in place of reading the true diastolic pressure, the point at which the sharp pass into muffled sounds, we should in practice record the point at which the fourth passes into the fifth phase, viz., the point at which all sound ceases to be heard. While this method undoubtedly results in more constant readings, more readily obtained, and therefore less affected by the personal equation, it is neverthe-

less open to the serious objection that expert opinion places the true diastolic pressure at a point above the fifth phase, hence if the last sound is read the recorded pressure will be lower than the true diastolic; it will be inaccurate and may even be entirely misleading. The point of last sound is also lower when the mercury is rapidly lowered than when slowly. When taken by this method the diastolic pressure therefore varies with the rapidity of the operator.

In the spring and summer of 1914 it was my privilege to examine several hundred persons, all pursuing their regular occupations and in comparative health, on all of whom the blood pressure was carefully taken. In reading the diastolic pressure I found that, if the column of mercury was lowered until all sounds had just disappeared, the valves of the instrument immediately closed, and then with the fingers of one hand pressing on the arm band, the column of mercury was raised until the *first tap reappeared*—I obtained a reading which was as sharply demarked as that of the systolic pressure; and on investigation it proved that the reading thus recorded coincided, often exactly and always closely, with the approximate reading taken as the true diastolic pressure at the point of transition from the third to the fourth phase. It also corresponded closely with the point of maximum oscillation. In order to check my readings and correct so far as possible my own personal equation, I have repeatedly had diastolic pressures in a given patient read after me by other competent observers, and I have found their readings always nearly identical with my own. Also on several occasions, cases were re-examined after an interval of a day or two by other examiners, and in such cases as reached my attention, the second reading was as close to my own as the daily variations of the patient would lead one to expect. The widest variations in any one of the cases checked by the foregoing methods was six mm. on successive days, few of them exceeding two or three mm., and many were identical. The subjects were men of more than average intelligence and were not under mental excitement at the time of the examination.

There have hitherto been in vogue two auscultatory methods of reading the diastolic pressure: 1. By reading the approximate point of transition from sharp to muffled sounds; 2, by reading the last sound heard, viz., the end of the fourth phase. To these I would add a third method, viz.: 3, reading the level of the *first sound* heard on slowly returning from the fifth phase to the higher level of audible taps.

For this third method I would claim the advantage of a sharper point of demarcation than is possible with the first method, and the consequent elimination of a considerable portion of the errors due to the personal equation and the entire elimination of uncertainty as to the exact point at which the sound is to be read. My method has the advantage over the second method in that it much more closely approximates the true diastolic pressure; its readings are usually two to five mm. above those by the second method, i. e., the difference is just about that which usually obtains between the

first and second methods. In the absence of aortic disease, its results nearly always fall within the limits of successive readings by the first method. By its use the characteristic diastolic blood pressures of aortic disease cannot be overlooked. Moreover, it is not subject to variations dependent upon the rapidity with which the observation is performed.

The readings of diastolic pressure by the third method so closely approximate those by the less precise first method, as to suggest that both methods, correctly applied, represent the true diastolic pressure.

Both the first and third methods essentially eliminate a greater or less portion of the fourth phase. I believe that this elimination is advisable because, if for no other reason, the fourth phase is perceptibly shorter when the column of mercury is lowered slowly than when it is lowered rapidly. The lapse of a certain period of time is apparently necessary in order to allow the onflow of blood to re-establish equilibrium within the vessels, as recorded by the column of mercury. The lower the pressure, the longer the interval required for the reestablishment of equilibrium, hence the error due to rapidity of operation is greater with the diastolic than with the systolic pressure.

On suggesting the method of observation, the phenomenon of variation in the length of the fourth phase due to rapidity of observation, has been demonstrated to me both by trained observers and even by novices whom I requested to compare their own readings by each of the methods, one, two, and three. Thus, I asked a medical student, a novice just beginning to use the stethoscope, who had taken the blood pressure no more than fifteen or twenty times, to read my own diastolic pressure with the Nicholson apparatus. He recorded the transition from third to fourth phase as *about* seventy-two mm., the final disappearance of sound at four or five mm. lower, i. e., sixty-seven or sixty-eight mm., the return of sound when pressure was again raised from the fifth phase to the point where the *first sound* was again heard as seventy-one mm. Five minutes later, I secured a first year student who had never used the stethoscope and had never taken a blood pressure nor seen one taken, and under my direction, after a brief explanation of the sounds heard in the fourth phases, he applied the instrument to my arm, taking the following readings by the three methods, thus: 1. Transition from third to fourth phase, about seventy-six mm. 2. Point of last sound heard, seventy mm. (he worked extremely slowly). 3. Point of return of first sound on raising column of mercury, seventy mm.

Thus it is seen that two untrained observers made readings of the same blood pressure, five minutes apart, with the same apparatus, and, except for the personal equation, under the same conditions, and obtained the following difference in readings:

|                     | First Observer | Second Observer | Difference |
|---------------------|----------------|-----------------|------------|
| By method 1 . . . . | 72 mm.         | 70 mm.          | 2 mm.      |
| By method 2 . . . . | 67 or 68 mm.   | 70 mm.          | 2 or 3 mm. |
| By method 3 . . . . | 71 mm.         | 70 mm.          | 1 mm.      |

I have repeated the experiment with some variations several times, comparing my own with the

reading of untrained and trained observers, and always with similar results. The reading by the third method showed the least difference between readings, the first method the greatest, and with the trained observer, the readings by the third method almost more nearly approached those of the first method than did the readings taken by the second method. The readings by the second method varied in their proximity to those of the first method accordingly as the observer worked rapidly or slowly, the fourth phase usually covering four to six mm. of mercury when the observer was rapid and less than that when slow. In the foregoing experiment the fourth phase was practically eliminated by the slow work of the second observer, a wholly inexperienced novice.

In the course of my observations I have confined myself largely to the mercurial rather than the less reliable aneroid instruments, and while I have used various makes, e. g., Janeway-Dressler, Faught, Oliver, etc., the great majority of my readings have been made with either the Nicholson or the Janeway apparatus. In comparing methods so intimately concerned with the personal equation, it has seemed superfluous to multiply my own experiments. If the third method is to be more acceptable than its predecessors, it must be so proved in the hands of others. In my hands, I feel that it has been conducive to increased accuracy and efficiency.

I have in practice applied the same idea of the reading of systolic pressures, as I presume many others have also done, that is by dropping the column of mercury just below the point of systolic pressure and then raising it by pressure on the arm band or by the pump, with the valves closed. I have thus been able to read with increased accuracy the true systolic pressure, and especially to recognize and measure the minor variations in systolic pressure, often of important significance, such as occur with inspiration and expiration, the irregularities of myocarditis, pulsus alternans, etc. Thus, in myocarditis occasional beats are frequently heard ten or fifteen mm. above the point where the systolic taps occur with constant rhythm, due doubtless to the increased output of an occasional systole of greatly increased force and efficiency; moreover, the difference between systolic inspiratory and expiratory pressures is frequently much exaggerated. These are often the earliest signs of failing ability of the impaired cardiac muscle completely to empty the ventricle.

#### SUMMARY.

1. I urge the use of a method of reading the diastolic pressure as accurately as the systolic pressure. The proposed method essentially consists in recognizing as the proper diastolic reading the point at which the first sound is heard on returning from a point just below the fourth phase to that greater height of mercury at which the sounds reappear.

2. I recommend the general use of the method, because of its simplicity, the relative ease with which facility in its practice is acquired, the relative accuracy of its diastolic readings, the clear demarcation of the point to be read, the close proximity of its readings to the accepted indication of the true

diastolic pressure, and the fact that with its routine use, low diastolic pressures and especially the signs of aortic disease can scarcely be overlooked, even by the novice in blood pressure work.

330 WEST TWENTY-EGHTEETH STREET.

### MICHAEL SERVETUS' BOOK ON SYRUPS.

BY CHARLES GREENE CUMSTON, M. D.,  
Geneva, Switzerland,

Private Lecturer, History of Medicine, Faculty of Medicine of the  
UNIVERSITY OF GENEVA, etc.

Servetus, known to the medical world as the discoverer of the pulmonary circulation, is little known as a practitioner of medicine, but, nevertheless, he applied himself to this art for at least twelve years, while at Vienna (France), under the

## Syruporum vni- versa ratio, ad Ga- leni censuram diligenter expolita.

*Cui, post integrā de concoctione disputationem,  
præscripta est vera purgandi methodus, cum ex-  
positione aphorismi: Concocta medicari.*

Michaële Villanouano autore.

Πρὸς τὸν φιλάτρον.  
Εύροα ποιῶσω τὰ τέσσωματα, τὰ τέπεπάνω  
ὦμὰ χυμῶν, τὰύτης δ' ὄγκωτα ἰδίβιβλας.

PARISIIS  
Ex officina Simonis Colinæ.  
1 5 3 7

protection of Archbishop Paulmier of that city. I would also here remark that it was while correcting the proof sheets of the work of the celebrated physician of Lyons, Symphorin Champier, that Servetus decided to study medicine. He went to Paris, where he succeeded Vesalius as prosector to Gauthier d'Audernach, professor of anatomy in the French capital.

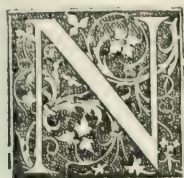
It was while in Paris that he wrote his therapeutic dissertation on syrups which passed through five editions in eleven years, 1537, 1545, 1546, 1547, and 1548, this clearly being an index of the esteem in which it was held by the profession. It was also a precious aid to the partisans of Hippocrates



and Gaden, against the followers of Averrhoes and the Arabian school. This was the cause of a fierce war which raged at this period between the members of the faculty.

The first edition of this very rare work is in the

## AD LECTORES.



**N**ondū erat mihi animus, viri studiosi, grauem hanc, & à multis formidatā provinciam, imbecillis meis humeris gerendam suscipere: nisi studiū iuvādi re medicā, Galenici dogmatis iusta defensio, ipsē in primis Veritatis amor, vel nolentē cōpulisset. Auuabitur autē cādidata medicinā iuuetus, si nō contemnēdā *εργαστηρίου* partē, quæ in præparatoriis potionibus, & purgatoriis phar-  
mācis, solet cōsistere: hoc vnicuique bello ab omni iniuria sibi restitutā, vindicatāq; norit. Hoc in quā libello, quæ morborum sit maturatio, quæ potentia cōcoctricis actio, quæ vera syruporū functio, & qua methodo sit illis vtendum, velut res noua ex veteri dogmate suscitatur. In a.ij.

other orthopedic condition in the writer's experience that is more often overlooked or confounded with other diseases.

In reviewing the statistics of the Hospital for Deformities and Joint Diseases for the past year, I

eo quoq; Galenū mihi ita conciliaſſe puto, vt futurū non dubitē, quin pro nobis ſententia feratur, ſi æquus iudex nobis cōtingat: & ſi quis veri ſtudioſus hæc diligentius perpendat, huius lectionis eum nunq̃ pæniteat. Illud obiter monēdus eſt lector, me nō eſſe illum, quē corrupta quadam in Euchſiū apologia depingit Cāpegius, ſtudioſum Arabū ſectatorē, & digeſtiuorū ſyruporū Campegianū deſenſorem: cū ego Arabas ipſos cū Cāpegio negligēdos, ſyrupos verò nec eſſe improbādos, nec barbaro more admittēdos, potius crediderim. Te nūc in ſuper ſuccos à principio nō eſſe educendos, mihi licēter imponit: cū id nec verū ſit, nec à me vnq̃ excogitatū. Sed illo dimiſſo, Gale. appello. Ad cuius ego cēſurā, tāq; πρὸς τὸ ἔξω καὶ ἀπὸ πρὸς, hāc de ſyrupis tractationē redigere totā cōtēdi. An verò quod ponē ſequebar, ſim aliqua ex parte aſſequutus, veſtrum erit, cādidi lectores, iudicare.

library of the University of Geneva, and I take the occasion to thank my friend, Mr. Gardy, librarian, for his kindness in permitting me to reproduce the title page and the address to the reader.

3 RUE BELLOT.

## THE DIFFERENTIAL DIAGNOSIS OF FLATFOOT.

BY HARRY FINKELSTEIN, M. D.,  
New York,

Assistant Surgeon, Hospital for Deformities and Joint Diseases.

The differential diagnosis of flatfoot is evidently presumed to be so unimportant that hardly a textbook deems it worthy of more than passing notice. For example, Tubby (*Orthopedics*, 1, p. 644) mentions the following conditions under differential diagnosis: Rheumatism, arthritis deformans, tuberculous osteitis, and the rare condition of painful lipoma of the feet. Whitman, although giving a most detailed description of flatfoot, omits differential diagnosis entirely; the same is true of Lovett and Bradford's work, and still there is probably no

found that out of 4,500 new patients who applied for treatment, about 1,400<sup>1</sup> suffered from various affections of the feet as follows:

*Static conditions*, 800 cases: Anterior metatarsalgia, weak and flat feet.

*Arthritis*, 400 cases: Rheumatic (so called), gonorrheal, syphilitic (including Charcot feet), tuberculous, rheumatoid, and gouty.

*Vascular affections*: Obliterating endarteritis principally, pernio (chilblain), congelation (frost bite), Raynaud's disease, and erythromelalgia.

*Miscellaneous conditions*, together with the foregoing, about 200 cases: Morton's toe, plantar neuralgia, hammer toe, hallux valgus (bunion), and fractures—tarsal, metatarsal, and phalangeal.

From the foregoing figures, we can therefore conclude that although flatfoot is seen most frequently, there are a great many other conditions which must be considered before reaching a definite diagnosis in any given case. It is for practitioners of medicine, to whom sufferers from foot conditions usually make their first appeal, that this paper is written. It has seemed best to include only the more common condi-

<sup>1</sup>Does not include club foot, poliomyelitis, etc.

tions and eliminate the rarer diseases, in order to avoid too great confusion. A number of case records have therefore been chosen, each demonstrating some of the important features on which a diagnosis is to be based.

CASE I. Mrs. S. B., aged thirty-seven years, referred by Dr. J. Hyman, April, 1914. Patient married five years, had one child; had never been previously ill. Weight, four years ago, 170 pounds; at present, 200 pounds. Occupation, saleswoman, which necessitated standing on feet all day. Present illness: Patient complained of pains in front

occupation which requires long standing. The contraction of the tendo Achillis is due to continually wearing high heels. This is a very common condition among women, especially after the menopause when they are apt to take on additional weight.

CASE II. P. H., aged thirty-three years, weight 180 pounds, March 24, 1911. His occupation, bartender, required standing on feet fourteen hours daily. He did very little walking. Denied venereal disease. Had never been ill previously. Present history: Complained of pains of dull character on inner side of feet, corresponding to astragalonaviclar joints; also about centre of heel and in great toes, right side. These pains were especially marked on arising each morning and on attempting to walk barefooted. They diminished gradually to again appear toward evening patient could not walk up or down stairs or over cobblestones without experiencing severe pains. He was relieved somewhat by rest.

Examination showed general condition to be good. Nose and throat, negative. Teeth, normal. Gait, clumsy, inelastic; feet pronated, shoes worn out on inner side of soles and heels. Circulation of skin, poor; feet, clammy. Both feet held in marked valgus position; tenderness on pressure over astragalonaviclar joints. Movements, especially dorsiflexion and adduction, limited. Knee reflex, normal. Spasm of peronei. Pulsation of dorsalis pedis, good. Impressions of feet showed marked flattening of posterior arches; the x ray showed flattening of arches. Wassermann and gonorrheal complement fixation tests, negative.

This is a typical case of spasmodic flat feet, seen in persons who must stand for prolonged periods; frequently encountered among clerks, waiters, policemen, bartenders, etc. The continual assumption of an attitude of rest, with feet abducted, at first causes weak feet. If neglected, constant pronation induces contraction of the peronei (spasmodic type), and if condition lasts for a considerable time, it may terminate in rigid flat feet (osseous) with complete loss of motion, both active and passive.

CASE III. I. R., draughtsman, aged twenty-one years, February, 1910. Height, 6 feet 2 inches; weight, 140 pounds. Denied previous illness. Had grown considerably during the past few years. Had always been athletically inclined until two years ago, when he was compelled to discontinue owing to demands of business. He spent most of his time at his desk. Present illness: For the past year, had complained of pains in both feet, marked during the day, and relieved by rest. Had never had fever, chills, nor sweats. Physician diagnosed case as rheumatism and prescribed medicine, but gave no relief. Read an advertisement in the papers, which guaranteed cure in all cases of "rheumatism"; applied for treatment and was given a pair of copper plates, perfectly flat, to be placed in shoes. He was told that they generated electricity and would cure quickly. Paid fabulous sum for treatment, which after several months' trial, yielded no relief.

Examination showed general condition fair. Patient tall and thin. Wore narrow pointed shoes (button). Gait, somewhat stiff; feet abducted and pronated; movements good; astragalus dislocated downward on both sides. Feet lax; arches fair, when not bearing weight, but as soon as patient rose or walked, arches dropped down perfectly flat. Tenderness on inner side of feet. Pulsation of dorsalis pedis, good. X ray, negative; teeth and throat in good shape; blood examination, negative. Impressions showed marked flattening of arches; reflexes, normal.

This patient improved rapidly with a pair of orthopedic shoes, arch supporters, and exercises. This was a typical case of weak feet, due to sudden change from an active to a sedentary existence, in a rapidly growing young man. There was no sign of any arthritic process. A great deal of harm may be



Figure 1. Plantar surface of foot, showing absorption of cartilage and destruction of metatarsophalangeal joints, with absorption of cartilage and destruction.

of foot, corresponding to heads of metatarsal bones, plantar surface. Pain radiated to calf; relieved by rest and aggravated by standing or walking. Examination showed an obese patient, 5 feet 5 inches in height. Wore fashionable shoes with narrow pointed toes, high Cuban heels; walked with feet abducted. There was a hollow over dorsal surface of metatarsophalangeal joints, corresponding fullness on plantar surface; corns over phalangeal joints, and callus on soles of feet. Severe pain produced on plantar flexing feet. Pulsation of dorsalis pedis, good. Movements of toes, normal in every direction, excepting on dorsiflexion, due to contracted tendo Achillis. Impression showed posterior arch normal. Knee reflexes, normal.

This is a typical case of anterior metatarsalgia, in which the front arch is broken down, owing to rapid increase of weight, improper shoes, and an

Impression of feet made as follows: Paint large sheet of paper with fifty per cent. tincture ferri chloride solution; paint feet with five per cent. potassium ferrocyanide solution. Where feet come in contact with paper, a blue imprint results.

done in these cases by prescribing salicylates for prolonged periods of time.

The origin of weak and flat feet may often be traced to childhood. Faulty attitudes are very common at this period. Outward and inward (pigeon toe) rotation of the feet is frequently observed. The latter, although a protection against increasing deformity, may be associated with fallen arches. Turning of the ankles is also a frequent symptom of weak feet.

There are seldom any subjective symptoms in these cases, such as pain, sensitiveness, or interference with active or passive motion. This is explained by the fact that there is no constant occupation, or the burden of an overweighted body, as in adults.

The usual causes are congenital bone formation, rickets, and most frequently, general weakness following the exanthemata and other diseases of childhood, with prolonged sojourn in bed.

CASE IV. M. T., aged twenty years, occupation, bookkeeper; weight, 115 pounds. Applied for treatment, April 14, 1914. Had the usual diseases of childhood; had always been delicate; was anemic; suffered from anorexia; bowels, constipated; very nervous. Had occasional attacks of insomnia. Denied venereal history. Present illness: For the past two years, had had severe pains in both feet,

months, the patient was able to resume his work and walk any reasonable distance; pain had entirely disappeared. It is now seven months since he was discharged. He has gained about twenty pounds in



FIG. 3.—Showing well marked gonorrheal exostosis (spur) on calcaneus.

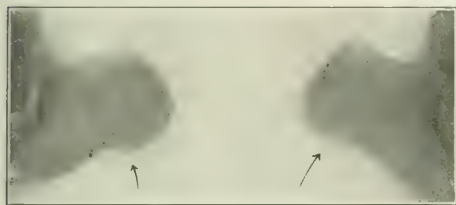


FIG. 2.—Shows recurring spurs; two previous operations failed to arrest process.

most marked in the toes, made worse by standing or walking. Pains had become so marked that patient spent most of the time off his feet. He consulted a physician who diagnosed condition as flat feet and prescribed orthopedic shoes, arch supporters, and exercises, the latter consisting of standing and walking on tip toes with feet adducted. He had to give up these exercises because they brought on excruciating pains for days. Pains worse in damp and cold weather; hands and feet always clammy; perspired easily.

Examination showed general condition, poor; patient pale. Examination of nasal cavity showed hypertrophied turbinates; throat, congested; slight pyorrhea alveolaris, with several decayed teeth. Dr. J. Auerbach, on examination of the nose, diagnosed empyema of antrum of Highmore. Heart sounds normal; no murmurs. Gait, careful, protective, short steps, tendency to heel walking. Feet clammy, muscles flabby, severe pains over metatarsophalangeal joints of third and fourth toes on both sides; third and fourth toes as small as fifth, and much shorter than second. Motion both active and passive, good. On attempting to stand on tip toes, had excruciating pains. Pulsation of dorsalis pedis, good. Impression of feet showed normal arches; Wassermann and gonorrheal fixation tests, negative. X ray showed absorption of cartilage and destruction of third and fourth metatarsophalangeal joints of both feet. (Fig. 1.)

This is undoubtedly a case of metastatic arthritis (so called rheumatism), the source of infection being nose, throat, and teeth. Dr. J. Auerbach diagnosed and treated empyema of antrum of Highmore; Dr. S. Hess treated the teeth. I prescribed shoes with very low heels and high soles, thus taking the weight of his body off the infected toes. Within two

weight; his general health is much improved, and he is able to walk several miles without undue fatigue; pains have not recurred.

The exercises in this case were unwarranted because they merely caused additional trauma to the affected joints; nor were arch supporters of any use, as the impression showed the arches to be perfectly normal.

While on this subject, I wish to mention two forms of arthritis which are distinct clinical entities, namely, gout and rheumatoid arthritis. The former usually occurs in men between the ages of thirty and

fifty years, of the well-to-do class, whose mode of living is high, and who often have a hereditary history. The onset may be very sudden (acute type) affecting the great toe; or slow, insidious (chronic type), requiring many years to develop characteristic lesions. Owing to the presence of tophi (deposits of biurate of soda) this is not apt to be confounded with any other condition.

The latter occurs more often in women of the poorer class between the ages of twenty and forty years. There are two distinct types, atrophic and hypertrophic. The atrophic type is a polyarticular affection, chronic, involving the smaller joints of the hands and feet and then extending to the larger joints, producing destructive changes in the joints and

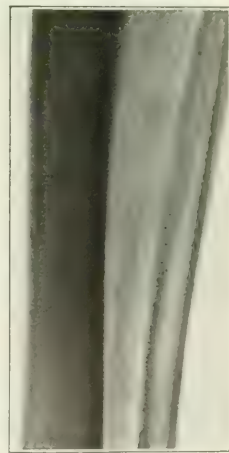


FIG. 4.—Showing calcification of arteries of the leg.



trophy of the bones with marked deformity. The hypertrophic type, usually due to repeated trauma, slow and insidious in onset, and causing disability rather than physical discomfort, is generally self limited, leaving behind bony enlargements which may interfere with the movement of the joints. Since these two affections rarely affect the feet exclusively, there is seldom any difficulty in diagnosing them.

CASE V. M. S., aged twenty-three years, occupation, millwright, and farmer, married and had three children, all healthy. Wife had no rheumatism. At the age of twenty years, patient had hard chancre; received six months' treatment by means of internal medication. Present history: About three years ago began to complain of

This was a case of locomotor ataxia associated with flat feet, not an uncommon occurrence. Unless one were in the habit of making routine examinations in all cases, this one could very easily have been overlooked, as the patient had no ataxia<sup>2</sup> and only swayed a little with eyes closed. The contracted pupils drew my attention to the condition, and the absence of knee jerks and blood examination clinched the diagnosis. It is just a stray case such as this which impresses one with the necessity of making routine examinations in all cases. Before giving a favorable prognosis, all such complicating diseases should be excluded.

CASE VI. C. H., aged twenty-three years, occupation, chauffeur, December, 1914. Patient had Neisser



FIG. 1. Spacing between normal and rheumatic foot.

pain beginning in the foot and extending toward the knee. Pains were sharp and lancinating in character, more marked at night while resting, but also present most of the day. He applied to his family physician who diagnosed the case as flat feet, prescribed shoes and plates and gave a very favorable prognosis. Patient was not relieved by this treatment.

Examination showed patient very pale; walked exceedingly erect, with shoulders squared. Feet showed usual appearances of fallen arches, but on making routine examination, I noticed that his pupils were contracted to a marked degree and did not react to light; a further examination revealed absence of knee reflexes; Romberg, slight; no ataxia. Wassermann, positive; x rays, negative.

infection at the age of fourteen years; was operated on for gonorrheal spurs at the age of eighteen years; again operated on for same condition one month later, pain having continued. After second operation, pains ceased for four years. Present history: About two months ago, on getting out of bed, experienced severe pains in heels on trying to walk barefooted; pains continued to increase in severity until patient was compelled to discontinue his work. Applied to the Hospital for Deformities and Joint Diseases, service of Dr. Henry W. Frauenthal, in December, 1914.

Examination showed skin mottled; pulsation of vessels,

<sup>2</sup> Six patients, however, had marked ataxia and all symptoms were associated.

good. Patient walked on tiptoes; marked tenderness over heels and over malleoli. Arches, weakened; movements, limited, especially dorsiflexion and adduction. Knee reflexes, present. Cicatrices over both heels from previous operations. Still had morning drop. Urine, cloudy; gonococci, present. Wassermann, doubtful, on two occasions. Complement fixation test for Neisser, positive. X ray (Fig. 2) showed fresh outgrowth over area previously operated upon. Fig. 3 showed well marked spurs (gonorrheal).

This is a typical example of gonorrheal feet. The reason for the reappearance of spurs after two operations is that the gonorrheal process is still active; and before another operation is attempted, this chronic inflammation must be cleared up, otherwise, there may be another recurrence. It is highly probable that the last attack was caused by an acute exacerbation of the chronic urethritis, because the patient had been having a discharge on and off for a long time.

Gonorrheal feet are seen very frequently. This statement can very easily be corroborated by referring to the most recent literature on the subject. Dr. W. B. Bierbach, of Worcester, Mass., in an article published in the *Boston Medical and Surgical Journal* for February 11, 1915, states: "In reference to pelvic infection caused by gonorrhea, Price claims ninety per cent.; Morris, eighty per cent.; Pozzi and Frederic, seventy-five per cent.; Morris and Bridgman, fifty-five per cent. Drose, Saenger, and Eberhard have shown that on examination of 1,361 gynecological patients, 12.7 per cent. were infected with gonorrhea." Further on he states that in 1901, inquiry was made of 4,750 physicians in New York city, in reference to venereal disease, the results of which showed that there were 200,000 active venereal cases about the streets.

The Committee on Prophylaxis of Venereal diseases of the Washington State Medical Association reports that eighty per cent. of all men in large cities have had gonorrhea once or several times; forty-five per cent. infect their wives; eighty per cent. of all operations upon women for diseases of the uterus and annexa are caused by this disease. Bierbach states that there are in New York city, today, at least 800,000 persons suffering from gonorrhea. Morrow believed that there are 250,000 married women suffering from gonorrhea, and that 1,500,000 men contract gonorrhea annually.

When we consider the fact that from two to five per cent. of all gonorrheal cases are complicated by joint affections, of which the knee, ankle, and foot are most frequently involved, it is not at all surprising that gonorrheal feet are so frequently encountered in orthopedic clinics. A great many of these cases are overlooked by the general practitioner, who evidently considers the condition to be rare.

CASE VII. M. L., aged thirty-three years, referred by Dr. C. Rosenheck, February 3, 1915. Born in Russia, in United States nine years; single; occupation, salesman. Previous history: Patient had scarlet fever in childhood. Had pleurisy six years ago, with which he was ill for two months. Personal history: Drank two to three glasses of beer daily; smoked ten cigarettes daily. Denied venereal history. Masturbated for five years, three to four times a week. Present history: In October, 1912, experienced pain in great toe, right foot; continued work until December, 1912, then took to bed. Was examined by physicians who prescribed potassium iodide and said circulation in foot was poor. Was ill until March, then improved and continued with work. In February, 1913, experienced pains

in little toe of left foot; all the toes were congested and condition lasted six weeks; felt well the entire summer. In October, 1914, began having pains in left leg; calf felt swollen, pains cramplike in nature. In November, little toe of left foot became again affected. Pains were more severe than in previous attack, and continued to date. Could not sleep at night unless feet were hanging down. There was a little ulcer of the toe which was healing.

Examination showed general condition to be fair; slightly anemic; slight pyorrhea alveolaris, many fillings and crowns. Heart and lungs, negative. Pulse, regular, good quality, increased tension 135. Abdomen, negative; varicocele left side. Veins over thighs, dilated. Left foot congested, circulation poor, valgus position. Right foot, normal color; arches good. Movements of foot, fair, good.

Pulsation: Dorsalis pedis, left, absent, right, weak; posterior tibial, left, weak, right, good; popliteal, left, good, right good. Left foot, cold and clammy; ulcer on little toe nearly healed. Right foot, cool but dry. Knee jerks, active. Wassermann taken twice, both negative. X ray examination showed calcification of left dorsalis pedis artery.

This type of case, seen frequently in orthopedic clinics, is known as obliterating endarteritis. It oc-



FIG. 6.—Harter's disease, showing distention of tarsal artery; tarsus, remains of which are seen as detritus in the joint.

curs usually in Russian Jews. The etiological factors are not definitely known, but most cases give a history of either rye poisoning, syphilis, or excesses in tobacco or alcohol. There is usually a previous history of chilblains; the prognosis is poor, as most cases go on to gangrene.

Unless the pulsations of the dorsalis pedis, posterior tibial, and popliteal vessels are examined in all cases, one is very apt to overlook this condition in the early stage. In a well marked case the diagnosis is almost self evident.

In every case of paronychia, it is advisable to feel for the pulsations and also note the surface temperature of the foot, because if it occurs in obliterating endarteritis, gangrene almost invariably follows operative intervention. This has resulted in several medicolegal suits. The x ray is of considerable value in these cases; should there occur a calcification of the bloodvessels the condition is easily demonstrated. (Fig. 4.)

CASE VIII. I. M., aged twenty-three years, unemployed, December 18, 1914. Family history, negative. Pa-

ment had scarlet fever at the age of twelve years. No venereal history. Weight, 130 pounds. Present history: At the age of seventeen years, began to have slight pains in right foot and ankle, gradually increasing in severity, and worse at night. Suddenly woke up on several occasions with severe pain; no cough, night sweats, or fevers. Unable to walk about. Consulted physician who advised operation. Was seen later by Dr. R. H. Sayre, who treated him at the orthopedic clinic of Bellevue for six weeks, and then referred him to the Hospital for Deformities and Joint Diseases, in February, 1909. Two abscesses were opened, in front and behind inner malleolus. In the latter part of 1909, Doctor Sayre prescribed a brace, which he wore for two years, and pain had completely disappeared. Patient's general condition improved, and he continued with his work. He walked for two years without support. In 1913, tripped while walking down stairs and injured same foot. Although a Detroit physician who examined him said there was no damage done to the bones, the x ray picture taken at a somewhat later date showed a fracture of the posterior portion of the astragalus. Patient returned to New York and again applied for treatment at the Hospital for Deformities and Joint Diseases (service of Doctor Frauenthal).

Examination disclosed that the patient walked with a distinct limp, favoring right foot. Had two cicatrices over areas previously operated on. There was marked atrophy of the leg and a white fusiform swelling involving the ankle and foot. Muscular spasm prevented any movement whatever. Tenderness over all of tarsal bones; most marked over astragalus.

Measurements: Right calf, 10½ inches; left calf, 13½ inches; right ankle, 11 inches; left ankle, 10 inches; right foot, 9½ inches; left foot, 9 inches. Pulsation of dorsalis pedis, good. Knee reflexes present. Patient lost about 10 pounds in weight. Wassermann, gonorrheal complement fixation test, negative. X rays (Fig. 5) showed a marked rarefaction of all the tarsal bones, and a contrast between the normal and tuberculous foot.

This was a typical case of tuberculous osteitis involving the tarsal bones of the right foot. The diagnostic features are: Gradual onset, pain, especially at night (night cries), atrophy of limb, muscular spasm, cold abscess, and the x ray findings (marked rarefaction of bones).

CASE IX. A. B., aged twenty-seven years, occupation, agent, July 28, 1913. Previous history: Gonorrhea three and one half years ago; otherwise, had never been ill. Denied lues. Other members of family in good health. Present history: For the past three years, had pains in right foot, affecting the whole tarsal region, worse at night; did not interfere seriously with his work. Area involved swollen and tender; symptoms not aggravated by changes in atmosphere.

Examination showed right tarsal region swollen, tender; arch high (pes cavus). No interference with active or passive motion. No limp on walking. No atrophy of limb compared with opposite side. Pulsation, good. Knee reflexes, normal. X ray examination showed periostitis, otherwise negative. Blood examination (board of health) gonorrheal complement fixation test, negative; Wassermann, positive. Since patient denied lues, another examination of blood was made by Doctor Kaplan (Neurological Hospital), which confirmed the findings. General condition, good. A careful examination of the rest of the body failed to show any lesions in skin, nose, throat, etc.

Under salvarsan and mercury, the condition improved within six months. The Wassermann was then negative and has remained so. This is therefore most likely a case of syphilitic arthritis. In its various manifestations bone syphilis may resemble other forms of arthritis, rickets, tuberculosis, osteomyelitis, sarcoma, osteitis deformans, etc. Unless we obtain a history of hereditary taint, venereal lesion, or secondary manifestations, our only other trustworthy aids are the Wassermann examination and x rays.

It has been customary at the Hospital for Deformities and Joint Diseases to subject all doubtful

cases to Wassermann tests. The great number of positive returns prove that either the Wassermann test is unreliable as a diagnostic aid, or that there is much more bone syphilis than we suspected. And while on this subject mention should be made of Charcot's disease of the foot (Fig. 6), a very rare condition; patients usually give a history of lues and there is often an associated tabes. It is characterized by a rapid absorption and destruction of the cartilage and bone, leaving in time an enlarged, flail-like joint, with few subjective symptoms.

#### SUMMARY.

This paper is recognized as being far from complete, but it is intended to be suggestive rather of some of the more frequent conditions that may offer difficulties in differentiation.

The former practice of limiting all foot conditions to either flat feet or rheumatism has fortunately died out. It is not sufficient to give a name to a group of symptoms and be satisfied that the diagnosis is made; nor is it sufficient to consider the foot apart from the rest of the body; foot trouble is very often merely a single expression of a more distant morbid process, detection of which may be of far greater importance than the local condition. A careful routine examination of the body is therefore an absolute essential in all doubtful cases.

Certainty of diagnosis has made a decided advance in recent years with the advent of the x ray and the newer improved methods of microscopical, chemical, and bacteriological examination. Constantly accumulating experimental and clinical research work has given us a better insight into the etiological factors in diseased conditions. With this wonderful expansion of the means of unraveling the mysteries of disease, errors in diagnosis should be few and far between.

In conclusion, I wish to acknowledge my indebtedness to Dr. Henry W. Frauenthal for his kindness in permitting me the use of clinical material and case records from his service, and to thank Doctor Hirsch and Miss MacMillan for preparing the x ray prints used in this paper.

236 WEST SEVENTIETH STREET.

## PAINFUL HEELS DUE TO EXOSTOSIS OF THE OS CALCIS.

### *A Report of Cases with Radiographs.*

BY ADOLF L. WAECHTER, M. D.,

New York,

AND H. D. SONNENSCHNEIN, M. D.,

New York.

(From the Orthopedic Department, Greenwald Hospital Dispensary.)

We present a few cases of exostosis of the os calcis, gonorrheal and not gonorrheal. In the light of our experience with this class of cases we believe it is advisable in all cases of persistent pain in the heel to examine the feet with the x ray, irrespective of whether the patient gives a venereal history or not. The patients reported below all had weak feet. They wore plates and had the usual treatment for weak foot with perfect restoration of the arches, but the pain persisted until the spurs were removed.



CASE I. M. P., aged twenty-three years, elevator runner, complained of pain in his feet, especially in the heel for the past two years, and was forced to give up his work. Gonorrheal urethritis five years ago, gonorrheal rheumatism, and marked weak foot which improved under proper treatment. Pain in the heel and at the insertion of the tendo Achillis into the os calcis was very marked. X ray showed a spur under the Achillis tendon and one on the

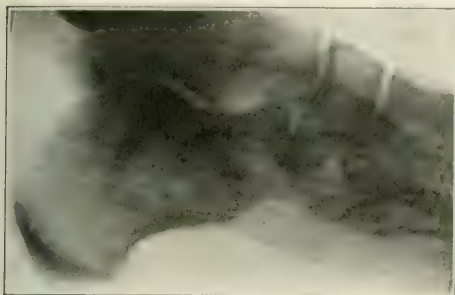


FIG. 1. Gonorrheal exostosis of os calcis (Case I).

under surface of the os calcis. Spurs were found on the other foot in exactly the same positions. Was treated with a felt pad for several months, but with no improvement. Admitted to the German Hospital and operated upon by Doctor Torek.

Incising the sole of the foot was avoided; the incision was begun on one side of the heel and from there around the back of the heel to the other side. The incision is U shaped, the U lying in a plane parallel to the sole of the foot. This places the scar where the patient does not stand on it. Patient is now free from any pain, is not bothered by the scar, and has returned to his work, which requires standing from eight to ten hours a day.

CASE II. W. P., waiter, aged twenty-eight years, single. Gonorrheal rheumatism of foot and ankle two years ago. Recovered. Patient also had double weak foot, which improved under appropriate treatment. For last four months, complained of sharp pain in the heel on walking and standing. Pain was present on palpation. X ray showed a

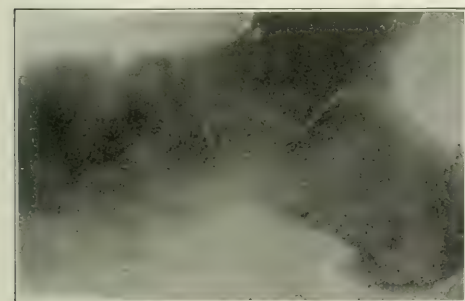


FIG. 2. Spur very marked and distinct (Case III).

distinct exostosis of the os calcis (Fig. 1). Patient admitted to the hospital and exostoses removed by means of the U shaped incision. Patient returned to his work entirely free from pain.

CASE III. M. M., porter, married, no children, history of having spent most of life in South Africa and of having had yellow fever, cholera, and malaria. Complained of pain in the heel. This pain was marked on standing

and walking. Was treated for rheumatism and weak foot. Examination revealed no evidence of rheumatism, but a slight weak foot. X ray showed exostosis of os calcis. Patient was operated upon by Doctor Waechter, using a straight incision over the spur; this was chiseled away and patient had no trouble since. This spur was evidently due to a chronic inflammatory process as the venereal history was absolutely negative, also the clinical and laboratory findings. The scar in this case, being on the sole of the foot, would be expected to cause annoyance, but in the four years since operation patient never suffered any inconvenience from the position of the scar.

CASE IV. A. S., clerk, married, three children; for ten years suffered pain in the heel on walking and standing. Was treated for rheumatism. X ray showed spur on the os calcis. Operation with straight incision over the spur and spur chiseled away. In this case, as in the preceding one, the gonorrheal history was absolutely negative, also the clinical findings. The scar was very small and never occasioned the patient any inconvenience. This spur was also probably due to a chronic inflammatory process.

We have several similar cases under observation, which are being treated with a pad to relieve the pressure from the spur. A circle is cut from the felt just over the spur. This felt pad is worn in

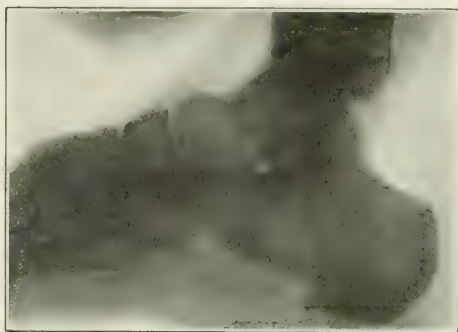


FIG. 3. Very distinct spur on os calcis (Case IV).

the shoe, and in the majority of cases will relieve the patient for the time being, but it is our belief that it is best to operate in these cases, as the felt pad does not always remain in position, and the patients invariably come in for operation later on.

1348 LEXINGTON AVENUE.

## THE DIFFERENTIATION BETWEEN FUNCTIONAL AND ORGANIC CARDIAC DISEASE IN CHILDREN.

By MURRAY H. BASS, M.D.,  
New York.

Adjunct Attending Physician, Willard Parker Hospital, and of Clinic, Pediatric Department, Mount Sinai Hospital, New York.

The correct differentiation between organic and so called functional cardiac conditions is a matter of extreme difficulty, and, as it is also one of great importance, I believe it is worth while to review briefly the various points to be considered in arriving at a diagnosis. There are indeed few common conditions in which the deciding of a question one way or another is fraught with more consequences in the subsequent life and living conditions of the child. Given a child showing cardiac symptoms or signs, it rests entirely upon the responsibility of the

physician whether this child should be considered as capable and forced to lead a more or less sedentary existence, separated from other children and hampered in its work and play, or whether it should be permitted to romp along with its healthy companions. Moreover, the physician is called upon to

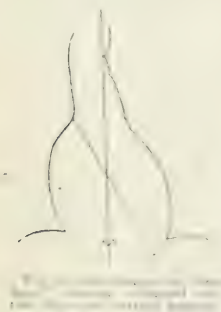


explain to the parents what the exact condition of the heart may be, and as the laity are all perfectly well aware of the permanence of organic heart changes, he should be absolutely sure of his case before expressing an opinion, which to the intelligent parent may mean that the child is to all intents

and purposes permanently crippled. In order, therefore, to put himself in a position to answer this important question correctly, the physician ought, in justice both to himself and to his patient, to avail himself of every possible diagnostic means at his disposal.

Until the last few years these diagnostic means have been more or less limited, and as a result, the differentiation between functional and organic cardiac conditions has been made in a somewhat arbitrary manner. With the advent of newer aids and methods, however, we have arrived at a much clearer understanding of the heart in childhood and, I think, are able to separate the disturbances due to truly organic disease with considerably greater surety than heretofore.

Perhaps the most complicating factor with which we have to deal is the question of "heart weakness," by which we mean that condition in which the power of the heart muscle is inadequate. It is unfortunate that up to the present time we have no method by which the expulsive power of the heart may be measured, and we are therefore at a loss to determine accurately whether a heart is weak, and if so, what degree of weakness is present. Although



many tests have been proposed, none of them has been found to fulfill the requirements, and as a result, our opinion as to the functional capacity of the heart as an organ must rest on rather arbitrary and empirical tests. It is a pity that this is the case, for a heart may be organically sound and nevertheless may be the seat of some functional condition of enough gravity to

make the heart a very weak one; in fact, as an organ it may be less able to respond to the demands made upon it than a heart which is organically diseased. From this it follows that a child suffering from a functional cardiac condition may present symptoms as striking as one suffering

from an organic condition. That this is the case is well known, for by far the largest number of children coming for treatment for cardiac symptoms are suffering from functional and not organic heart disease.

This point was well illustrated by a group of children suffering from orthostatic albuminuria, who were studied by Doctor Wessler and myself two years ago. Of thirty-six children, fifteen showed symptoms referable to the heart—dyspnea, palpitation, precordial distress, and pain—though none of them was the subject of so called organic disease. How closely such a case may simulate the more serious heart condition, the following history will show:

CASE. A girl, aged ten years, was brought to the dispensary on account of severe palpitation and dyspnea on very slight exertion. This had been growing worse for the past ten months. No other symptoms. Had had several attacks of tonsillitis. An older sister had rheumatic endocarditis (mitral and aortic disease), for which she had been confined to bed in a hospital several times.

Examination of heart revealed the following: Apex beat in the fifth space in the nipple line; distinct overaction; percussion showed the left border one finger outside the nipple line; first sound at the apex booming in character; no murmurs; second sounds at the base accentuated; action regular, somewhat rapid; short venous hum over the vessels of the neck; pulses regular, no increased tension. Orthodiagraphy revealed a heart normal in shape, size, and position.

A functional cardiac condition was diagnosed. This diagnosis was made in spite of the family history of heart disease, in spite of the history of frequent attacks of tonsillitis, and in spite of the percussion findings (overacting heart with apparent left sided hypertrophy). Organic disease was considered improbable for the reason that, first, the x ray showed the percussion findings to be erroneous, and, secondly, the child was distinctly of the asthenic type to be described below, in whom functional cardiac conditions are extremely frequent. This diagnosis proved correct, for the child was seen again two years later, when her heart appeared perfectly normal both to percussion and to the fluoroscope, and all the symptoms had disappeared.

Realizing then that organic and functional heart conditions may resemble each other, both in the subjective symptoms complained of by the patient and in many of the objective signs looked for by the physician, it is our purpose to take up systematically some of the points which may be of use in differentiating between them.

#### TYPE OF CHILD.

Of considerable importance from a diagnostic viewpoint is the general appearance of the patient—in other words, the type of child; for it has been found that a very large percentage of functional cardiac disturbances occur in a particular group of children, the so called asthenics or neuropaths.

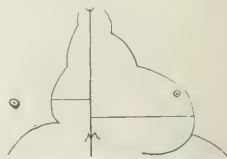


FIG. 3.—Orthodiagram of heart in chronic nephritis showing marked left ventricular hypertrophy.

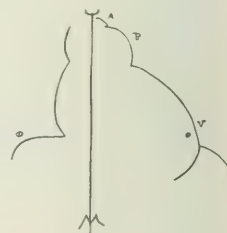


FIG. 4.—Orthodiagram of heart with patent ductus arteriosus, showing prominent pulmonary artery.

Since these children present a number of clinically well marked physical characteristics, they are quickly recognized and their cardiac complaints can be correlated with their other symptoms. These children are usually in their second decade, often about the age of puberty. They have grown rapidly and are therefore rather thin and narrow chested. The scapula project, the abdomen protrudes, there is distinct lordosis of the lumbar spine, and the child stands in a relaxed, round shouldered posture. The epigastric angle is narrow, the tenth rib is free and not attached to the other costal cartilages. These children flush easily and often show dermatographia to a marked degree. Chvostek's sign, obtained by tapping on the cheek over the facial nerve, is frequently positive. The vasomotor system is unstable, as is shown by the very red lips, the pale face, and the cold blue clammy hands, though blood pressure examinations fail to show any particular departure from the normal. The morning urine is free from albumin, but after the child has been on its feet for a time, albumin appears often in astonishingly large amounts.

This peculiar type of juvenile neuropathy, called by Mackenzie x disease, and corresponding to Still's asthenia congenitalis, is a very common clinical picture, and any cardiac signs or symptoms found in such a case are much more likely to be due to functional than to organic disease. Naturally such a child may become the subject of organic heart trouble, but other things being equal, the chances are greatly in favor of the symptoms being caused by a functional disturbance.

#### THE HEART.

In an examination of the heart itself, let us first confine ourselves to heart size. Since the advent of the Röntgen ray, and especially since the introduction of the orthodiagraph, a careful study of heart size has been possible, and with this a number of preconceived notions have been shown to be erroneous.

By many observers a cardiac enlargement has been diagnosed, relying only on percussion and palpation, where the orthodiagraph has shown normal heart size. This error was particularly common in the asthenic child, since the narrow thorax coupled with the overacting heart, gave the erroneous impression of increased area of cardiac dullness. Unless the greatest care is taken in percussing such patients, this mistake is very easily made, and one is led to conclude that the heart is enlarged, when in reality it is only large in relation to the narrow chest and therefore projects beyond the nipple line. Measurements of the heart shadow in such cases show that it is of a size normal for the age and weight of the child. It is, moreover, quite probable that many of the so called cases of "dilative weakness" of the heart (Martius) and the "hypertrophy and dilatation of growth" (Germain Sée) belong to this group of children in whom ordinary physical examination, unless performed with the greatest care, leads to incorrect conclusions. The determination of cardiac enlargement, especially in children in whom a functional condition is suspected, must therefore be conducted most carefully.

Not only may an increase in the size of the heart

help to determine whether cardiac disturbance is organic or functional, but a diminution may also aid in clearing up a diagnosis. We now know that the heart may quickly change its size and that normally after exercise it does not dilate as previously supposed, but actually contracts to an appreciable extent. There are, moreover, hearts which appear to be smaller in size than the normal, and such hearts are not infrequently found in persons showing certain neurasthenic symptoms.

#### HEART SHADOW

If an accurate picture of the heart shadow is obtainable, much valuable information may be gleaned from its study; not only, as has been pointed out above, in regard to heart size, but also as regards heart shape.

The normal heart when projected on a level surface shows a certain outline which is quite constant (Fig. 1). The commonest shape of the heart silhouette is that of an obliquely placed oval; but this may vary, depending on the enlargement of the various parts of the organ or on any change in the situation of the heart in the chest. For example we not infrequently find the heart shadow elongated and narrowed so that the heart appears to be suspended vertically in the chest (Fig. 2). This is known as the "drop heart" and is apparently part of the asthenic habitus before referred to. The finding of such a shaped heart may therefore incline the diagnosis toward a functional rather than an organic disturbance.

Another variation in the cardiac outline is shown in cases of slight ventricular hypertrophy, such as occurs in the nephritis of children. Such cases as described by Wessler, may be otherwise extremely difficult to diagnose; for the mildness of the subjective symptoms and the paucity of the objective signs may lead us to overlook the heart condition altogether. Or if only an accentuated basic sound and an overacting apex impulse are found, these together with a mild albuminuria may lead to confusion with the functional cases above referred to, in which orthostatic albuminuria was a part of the clinical picture. The rounded apex shown in the cardiogram, however, clinches the diagnosis and marks the condition as an organic one (Fig. 3).

Another condition in which the heart silhouette may help us out of a difficulty is in cases where we have a loud, rough murmur over the pulmonic valve area. Here the question of congenital malformation versus a loud "functional" murmur arises. An orthodiagram or a fluoroscopic examination may be of great service, since certain forms of congenital cardiac disease present typical heart shadows, whereas the case with the functional murmur should show a normal heart outline (Fig. 4).

#### HEART MURMURS

Until a comparatively short time ago, the presence of a cardiac murmur, its character, and persistence, were considered the most important factors in differentiating organic and functional heart conditions. Recently, however, we have learned to rely less and less on murmurs, for we have come to believe that the so called functional murmurs may so closely simulate those found in mild



organic disease that their differentiation becomes a matter of the greatest difficulty. As stated by Osier, "the diagnosis of deranged function in any organ is only a makeshift, and justifiable only as long as we are ignorant of the physical cause of that derangement." A functional heart murmur is one, the anatomical cause of which we do not know. That is why a skilled diagnostician may recognize fewer functional murmurs than one who will not diagnosticate a heart disease unless he have all the symptoms, including dilatation and hypertrophy."

There are, however, certain characteristics met with in each type of murmur which it will be well to bear in mind. The majority of functional murmurs are cardiopulmonary in origin, and for this reason may be found to vary in intensity, depending on the phase of respiration, being usually loudest at the end of inspiration and faintest at the end of expiration. Since the cardiopulmonary murmur is of exocardiac origin, change in the posture of the child may change its character or cause it to disappear altogether. Pressure of the stethoscope may change the loudness of such murmurs. According to Schlieps, the time these murmurs occur in the cardiac cycle is of the greatest importance. He believes that functional murmurs in contradistinction to organic ones, take up only part of the systole, usually the middle third. He therefore calls them mesosystolic in time and believes that this is absolutely characteristic for the cardiopulmonary murmur. However true this may be theoretically, it is extremely difficult to appreciate on auscultation. The same author uses the term "atonic" murmurs for those found in the hearts of asthenic children, for he believes the sound to be caused by a relative insufficiency, due to a loss of tone of the heart muscle. The site of this type of murmur is quite different from the cardiopulmonary variety—it is usually loudest directly over the apex; posture does not influence it, nor does deep respiration. This murmur may disappear, however, under the influence of fright or psychic disturbances. The atonic murmur is, therefore, practically identical with the murmur of mitral insufficiency, and the two conditions must be differentiated by other signs than the murmurs.

Variability must be considered as characteristic of functional murmurs, yet we meet with cases of organic disease in which the murmur is loud on one day and faint on the next; in fact cases of organic cardiac disease have been described in which well defined murmurs have completely disappeared, though the diagnosis of the condition has been corroborated at autopsy.

Hochsinger is responsible for the general impression that functional murmurs do not occur in very early life. Most authorities disagree with him on this point, and recently he too has modified his views. There is no doubt that functional murmurs are more commonly found as the age of the child increases, but we meet with, even in infants, soft blowing apical or basic murmurs which remain fairly constant for months or years and then disappear, apparently leaving no trace of deleterious effect on the heart.

#### THE PULSE.

Irregularity of the child's pulse, even of marked degree, is compatible with a healthy heart, and the mistake should not be made of considering a case as one of organic heart disease because of cardiac irregularity. In fact it has been shown by Friberger in a careful examination of 321 unselected school children, that only 37.4 per cent. had a regular pulse. The prevailing irregularity is that of sinus arrhythmia, or as Mackenzie styles it, "the youthful type of irregularity." This is characterized by a number of slow beats followed by a number of more rapid ones, tracings showing that the heart is affected as a whole, the rhythm relation of ventricle to auricle not being disturbed. The irregularity is probably due to disturbance of vagus control, as is shown by its frequent dependence on the phase of respiration, for the heart usually beats more rapidly during inspiration and more slowly during expiration. Exercise, instead of augmenting the irregularity, causes the pulse to become regular. Children are frequently kept in bed on account of this type of pulse, especially if it occurs during convalescence from some acute disease. Such treatment is obviously incorrect, for this arrhythmia may be looked upon as a normal condition in childhood—in fact, Mackenzie goes so far as to say that its appearance after an illness may probably be looked upon as evidence that the heart muscle is in a healthy condition. Sinus arrhythmia, contrary to the findings of Friberger, appears to be particularly common in vasoneurotic asthenic children, and one should be on one's guard so as not to allow it to carry any weight, even when coupled with the other findings of circulatory disturbance so commonly found in these children.

As was mentioned above, this type of irregularity often disappears on exercise, and it will often be found when this occurs that the pulse, beside becoming regular, diminishes greatly in size. This so called "lability" of the pulse after exertion seems to be a rather constant characteristic of the asthenic child, and even though the pulse becomes almost steady in character and increases markedly in rate, one should not use this symptom as a factor in favor of organic disease. In an examination of the pulses of a large number of children, Wessler and myself found this to be a very common symptom in the presence of functional heart conditions, and we were, moreover, able to show that this did not depend on the condition of the blood pressure taken either before or after exercise.

On palpating the child's pulse, one will frequently be struck by the fact that the radial artery appears considerably thickened—at times approaching the feeling given by the rigid pipestem arteries of the aged. This pseudosclerosis must not be mistaken for arterial disease. It is a condition quite commonly met with, especially in older children and is dependent on the vasomotor control, for it is found to vary in intensity from day to day, to be quite independent of any increase in the blood pressure, and to occur most commonly in nervous children.

From a consideration of the foregoing data, it will be seen that we are at the present time able to settle the question of functional or organic heart disease with considerably more sureness than for-

merly, and I believe that a consideration of the type of child, the accurate determination of heart size and heart shape, the study of murmurs if they are present, and finally the careful observation of the pulse, should be able to lead us in the large majority of cases to a correct diagnosis.

## REFERENCES.

1. MACKENZIE: *Diseases of the Heart*. 2. SOUTHERLAND: *The Heart in Youth*. 3. MORRIS: *Orthodiagraphic technique*. 4. MORITZ: *Ueber klinische Zeichen beginnenden Herzschwaches*. *Wiener med. Woch.*, Jan. 2, 1911. 5. MARTIUS: *Die Insuffizienz des Herzens*. *Klin. Woch.*, 1909. 6. BASS and WESSLER: *The Significance of Orthostatic Albuminuria*. *Med. Rec.*, 1913, Feb. 1913. 7. IDEM: *A Study of the Blood Pressure in Children Showing Orthostatic Albuminuria*. *Arch. Int. Med.*, Jan. 1914. 8. IDEM: *Heart Size and Heart Function in Children Showing Orthostatic Albuminuria*. *Idem*, April, 1913. 9. ADLER and KREIBEL: *Orthodiagnostic Observations Concerning a Certain Type of Small Heart and Its Relation to Some General Systemic Affections*. *Idem*, Mar. 1912. 10. WESSLER: *Latent Hypertrophy of the Heart in the Nephritis of Children*. *Idem*, Oct., 1914. 11. WESSLER and BASS: *Persistent Ductus Botalli and Its Diagnosis by the Orthodiagraph*. *Amer. Jour. Med. Sci.*, April, 1913. 12. FACORI: *Trans. Amer. Climat. Ass'n.*, p. 241, 1899. 13. MUSSER: *On the Disappearance of Endocardial Murmurs of Organic Origin*. *Brid. Med. Jour.*, p. 1055, Oct., 1897. 14. RIVIERE: *Heart Murmurs in the Healthy*. *St. Barthol. Hosp. Rep.*, 1911. 15. SCHLIEPS: *Ueber pseudokardiale und kardiäle Geräusche im Kindesalter ohne pathologische Bedeutung*. *Jahr. für Kinderheilk.*, 75, p. 247, 1912. 16. HOCHSINGER: *Ueber bedeutungslose Geräusche in der Präcordialgegend von Kindern und Jugendlichen*. *Arch. für Kinderheilk.*, 1913. 17. FRIBERGER: *Reviewed in Jour. A. M. A.*, p. 828, Mar. 16, 1912.

41 WEST EIGHTY-THIRD STREET.

## TYPHOID FEVER.

*A Study of Two Hundred and Forty-two Patients Treated in Their Homes from June 1, 1911, to November 1, 1914.*

BY CHARLES P. BOLLES, M. D.,  
Wilmington, N. C.

In June, 1911, the Wilmington, N. C., board of health undertook to ascertain why the morbidity from typhoid fever should be so high. As each case was reported, an inspector was sent to make a survey of the premises and get a detailed history of the case. From the information then gathered, it seemed that the large number of cases was due to fly infection from open surface privies, of which there were then over 6,200 in the city. Public sentiment was aroused and steps were taken to decrease the number of open privies by installing sanitary cans; extending the sewerage system and water mains; and every effort was made to force property owners to make connection with the sewerage system as promptly as possible. Since that time there has been a gradual decrease in the number of unsanitary closets and along with it a gratifying decrease in the number of cases of typhoid fever.

From a study of the data obtained, it appears that the largest number of cases occurred during the months of June and July, when flies were plentiful, and the smallest number during the months of March, April, and November. No cases occurred during December, January, and February, when there are practically no flies. Two hundred and fourteen patients were white; and twenty-eight patients were colored. This is interesting and would lead to the conclusion that negroes are less susceptible than whites, for their surroundings and habits of life are certainly far from ideal. One hundred and twenty-nine cases were in males and 113 in females. The largest number, eighty cases, occurred between the tenth and twentieth year and the next

largest number, sixty-two cases, between the twentieth and thirtieth year. This bears out the belief that typhoid is a disease of early adult life. One hundred and fifty-six patients drank water of known purity; thirty of these patients having drunk boiled water, four bottled water, and one melted ice. One hundred and fifty-seven patients drank water of unknown purity. One hundred and fifty-four patients drank milk from various sources, and eighty-eight patients drank no milk at all. Only two patients had eaten raw oysters.

Two hundred and seventeen cases were directly exposed to fly infection from open surface privies and twenty-five cases were not directly exposed. In many instances the open privies were in a dilapidated condition, and the surrounding soil was, so to speak, buttered with human excrement; on a number of occasions I saw flies enter dining rooms and kitchens after feasting on this disgusting pabulum. The known contact cases numbered thirteen.

From a study of these cases, it seems that so far as this community is concerned, typhoid fever is a fly-borne disease; and I think we are warranted in this conclusion, as the morbidity has decreased in direct ratio to the decrease in open surface privies.

## THE STATE'S EFFORTS TO PROTECT LIFE IN INFANCY AND YOUTH.\*

BY LYDIA ALLEN DE VILBISS, M. D.,  
New York,  
New York State Department of Health.

Do all know that the real business of life is raising babies? The real labors of all who are interested in government, in industry, in arts and sciences is for the purpose of raising citizens that they may make a contribution to the general fund of knowledge, enjoy life, and in turn raise more citizens.

The work of protecting life in infancy and youth generally has proceeded along two lines, the reduction of infant mortality and the promotion of the health of infants that survive. But important as they may be, the pasteurization of milk and educating the mothers will not solve the problems of child welfare. In order properly to preserve the life of the child, it is necessary to deal with every condition which affects the health, the happiness, and the well being of the family and indeed the entire community.

It was not until the Bureau of Vital Statistics was established that we knew how many babies were born, how many died, and what caused their death. The vital statistics are the bookkeeping records of the State's citizens. No business firm would attempt to do business long without a system of keeping accounts, yet the State of New York is one of the few States of the Union that has an adequate system of registering births and deaths.

The importance of this bureau becomes evident when we learn that the number of deaths of babies under one year exceeds the number of deaths among all ages from any one single cause, and more signifi-

\*Delivered under the auspices of the Public Health Committee of the Medical Society of the County of New York, February 2, 1915.

and it is estimated that a great proportion of these infant deaths are almost immediately preventable.

Last year, 1913, the records show that 25,015 babies died in the State of New York, and that more than half of these deaths were from causes that were easily preventable. It may seem strange that the highest percentage of death rate was not in New York city with its large foreign population and congested districts, but it was outside of the largest cities. The credit for reducing the infant death rate in New York is due to the present health department, especially to the Division of Child Hygiene established several years ago.

New York State has the distinction of establishing the first separate State Division of Child Hygiene. During the summer and fall of 1914, this division was able to reduce the infant mortality rate from 100 per 1,000 live births to 74 per 1,000, in other words, an actual saving of the lives of 1,400 babies. Excellent pamphlets on babies and baby care have been printed and distributed. These are written in simple understandable language for the benefit of the mother. As soon as the birth of a baby is reported, a baby book is sent the mother. This little book contains much helpful information, and in addition has space for the mother to record interesting facts about the baby.

Health literature, however, is likely to be read principally by those who wrote it, so the division decided to carry the message of health for the baby to the mother in a direct personal way. This they have done by organizing baby welfare exhibits and sending them into every community in charge of a trained nurse. The nurse gives the mother the benefit of her training and experience in the care of her little ones.

Often in connection with the exhibit a Babies' Health Conference is conducted. A half dozen or more babies are examined and scored by the local physicians, sometimes assisted by a specialist from the State department. This scoring is done in full view of the mothers assembled, who are given the full opportunity to ask questions on all phases of baby welfare. In this manner the mothers are educated in the proper care of children and in the best methods of treating the remedial defects which are found. In a number of cities, milk stations have been organized. These are in the nature of a permanent educational bureau and, in addition, they supply safe milk at cost for the bottle babies.

While the Division of Child Hygiene has been directly concerned in conserving child life, the activity of the whole department has been directed toward that end. Infant mortality and child welfare is a social problem, depending for its solution not only on the correction of the evils directly concerning the child, but upon the correction of every specific evil which affects the State and which engages the attention of philanthropic and civic societies.

Every case of tuberculosis which throws a wage earner out of employment and places additional responsibility on the already overburdened mother, is a contributing factor to infant mortality and to delinquency and dependency of children. Therefore the division of tuberculosis cooperating with civic and philanthropic societies in preventing tuberculosis, is saving homes for the children. And a

good home for the child may mean that determining factor between delinquency and efficient citizenship.

"Public health is purchasable, and within certain limits a community can determine its own death rate" are mottoes of the State department of health. In order to help each community and the individuals of that community to improve their health conditions, the Division of Publicity and Education sends out each week to all papers of the State, a weekly health letter, bearing on pertinent health matters of the season. This division also sends to thousands of physicians, school principals, and other interested citizens, each month, a little magazine of vital health topics. This magazine is used as a textbook on health and hygiene in many school rooms. But this literature is not read by the people who perhaps need it most. For these people, the division sends into every part of the State lecturers, who present the message of good health in a direct personal way and who are ready to give their personal services to the individual and the community as far as they are able. All this service is without a cent of expense. From the Division of Sanitary Engineers and the Division of Cold Storage to the children, seems a long way; but the first division is responsible for the purity of the drinking water and the proper disposal of sewage and garbage, and the second is concerned with their food supplies, both quite important factors in the health of little children.

Diagnosing and detecting infectious and communicable diseases is vital to the care of infants and young children. There is an old notion that children must have measles, whooping cough, and other diseases of childhood, and that the sooner they have them over with, the better. This has been demonstrated to be a cruel kind of error. Children do not need to have these diseases, and there is every reason to protect them, for the younger the child, the higher the mortality. When it is known that whooping cough alone kills 10,000 children in the United States each year, the tremendous importance of protecting the children from infection becomes evident. As a child grows older, he develops a greater resistance to all diseases, and no young child should ever be exposed to any communicable disease whenever it is possible to prevent it.

The Division of Communicable Diseases protects the children of the State from epidemics by enforcing isolation and other public health regulations and cooperates with the local health authorities in the study and suppression of threatened outbreaks of disease. The Division of Laboratories and Research makes examinations of specimens for physicians and helps them to diagnose disease. This division also furnishes free tetanus and diphtheria antitoxins and typhoid fever vaccines.

This has been a brief survey of what the State Department of Health has done and is doing. There are a great many more things that might be done for the conservation of child life, but which take both time and money. For example, healthy parents are necessary to maintain a happy and efficient home and to give the child his rightful heritage, a good mind in a sound body. This will necessitate the protection of the marriage contract so



that no one may contract marriage while he or she is suffering from a serious communicable disease and is therefore unfit to assume the responsibilities of marriage.

It seems obvious that no one who has a serious inheritable defect, such as epilepsy or feeble-mindedness, should be permitted to bring into the world defective children, but as yet in New York State there is nothing to prevent defectives and degenerates from procreating their kind. There are known to be 30,000 feeble-minded in the State with room in the State institutions for only 6,000. What the other four fifths are doing is a matter of vital importance to all citizens.

A widowed mother who must go out to work by the day to support her little family, cannot do that and at the same time give her children the proper care. The mother who brings into the world healthy children and who raises them to be useful citizens, is producing perhaps the most valuable of the State's resources. As yet her services have not been recognized. Where the money that heretofore in other States has gone to charitable or other institutions for the care of dependent children, has been paid directly to the mother, not as a charity, but as a just recompense for her services, there has been a marked improvement in both children and mother, and a diminution of juvenile delinquency.

As matters stand now, the parents who have healthy offspring are left, generally speaking, to care for their children as best they may. Parents who bring into the world a crippled, defective, or helpless child may have that child taken care of by charitable or civic societies. This from a purely material point of view is penalizing the parents of healthy children and putting a premium on degeneracy. What is needed is more intelligent aid for the parents of healthy children and radical educational and legislative measures to stop producing the other kind altogether.

In Trenton, N. J., the county authorities recently appropriated \$150,000 for a new jail to accommodate 150 prisoners. They at the same time refused to build a badly needed school building for \$250,000 which would accommodate 1,200 school children. These authorities are willing to spend \$1,200 a year to cure prisoners and only \$200 a year for such education as might prevent the possibility of their school children becoming prisoners. We have always been taught that an ounce of prevention is better than a pound of cure, but evidently in Trenton they believe that a pound of cure is better than an ounce of prevention.

A little child has a universal appeal, and child welfare work appeals to the sympathy and the understanding of the community. The public will support and cooperate with a plan for helping the babies when it will disregard other plans. For that reason child welfare work becomes an important entering wedge for general health work.

If a child is to be born, it has the right to be born well. It has the right to intelligent consideration before it is born, even before it is conceived. It is not the number born that counts, but it is the number that are born well and that are raised to efficient manhood and womanhood. Because the little child

of today is the parent of tomorrow, child welfare work is the cheapest and the most effective of all preventive health work.

## CORRESPONDENCE.

### LETTER FROM SERBIA

*Principles of military surgery. Its difficulties. Uselessness of first aid kit. Unprofitable results in some cases. Return to Packings theories and methods.—Soldiers as nurses.—Do "trained" nurses despise routine work?—Over 5,000 patients for the Frothingham unit. Work of the Rockefeller Institute. operation of Serbian authorities.—"Ours is a war against a war!"*

SKOPJE, SERBIA, June 6, 1915.

Military surgery certainly is and always will be emergency surgery. But the difficulties in obtaining and transporting the necessary medical and other supplies, the number of wounded, and proper nursing is a question with imperfect aseptic precautions, which must be answered the moment the first dressing is applied. As Lister had it, "the fate of the wounded rests in the hands of the one who applies the first dressing." We have had the same experience here in Serbia, and after a lapse of nearly eight months and seeing all the horrors of war, we have come to the conclusion that we must employ the most efficient and the simplest precautions, procedures, and methods, the pedantic care of private and hospital practice being left aside, and common sense predominating.

The value of the first aid dressing, applied behind the fighting line by the wounded man himself, by his comrades in wild retreat, or in dirty trenches, could not be admitted. The Austrians had a complete package, the Serbians only a roll of bandage, but the difference in healing of the wounds was about the same—none! In our hospital and in others the experience of the surgeons shows that there are sometimes difficulties, conditions, and individual wounds which must be treated accordingly. Some fractures have not healed in eight months of careful treatment, clean and proper, while some most terrible lacerated wounds healed by granulation in a few weeks.

Some of the perforating wounds we usually enlarged, if necessary, and for granulating surfaces used balsam of Peru and proceeded as described in my previous communication; but in deep, lacerated wounds, and especially gangrene, we followed the good advice of Purkinje, using salt solution (five per cent.) after removing the dead tissue or after amputation and even disarticulation. This simple method, old as it is, gave us results sometimes astonishing, and we were glad to find that even our English colleagues had had the same experience. Where antiseptics failed, the value of thorough drainage was almost unlimited, and hypertonic solution of salt for the promotion of flow of lymph was advised. The application was simple, setting a current flowing from the tissues and saving absorption

and retention, clearing by elimination. We added some saline of sodium to prevent coagulation of fibrin of the tissues, if necessary, doing comparatively great work of this sort here right from the start in November last.

Purkinje, in 1860, described the effects of salt on tissues and wounds especially; we happened to think of his procedure, all our antiseptic material being exhausted, and it worked well in many cases, saving many parts of gangrenous limbs, etc. Walsh, Wright, Leishman, Burghardt, and others assert the same as regard to the free flow of fluids from wounds so treated, but our Ochsner, years ago, used the salt solution for irrigation of the wounds on the basis of Purkinje's findings during the Austro-Prussian war.

As far as my unit is concerned, we have always tried our best and have had many good results and many a set back, many infectious sinuses requiring frequent dressing, and many secondary lesions and diseases, especially bedsores from faulty nursing, if the nursing received from the untrained Serbian volunteers or fellow soldiers can be called nursing. It is a well known fact that success in treating the sick, and especially the wounded, is always dependent, in some degree, on proper nursing. Our two nurses, "graduates" engaged on contract, seemed to forget that of all the acts of human kindness, none is more deserving of praise than work in the wards: to take the temperature, the pulse, and respiration, to make up beds, to look after the cleanliness of patients, wards, and prescribed diet, changing of dressings, etc.

At the start we had to teach, therefore, our outside help in this direction and instruct the Serbians what to do, those who did not know much about hygiene and ventilation especially! Neglect in carrying out the measures prescribed, inattention to records or inability to prepare proper food, provide fresh air, rest, etc., all had their marked effects on the course and results of our work in the beginning. At present I have more help from the members of "my school," the prisoners of war of Slavic origin, intelligent and educated men who were selected for this purpose and who know the main duty of a nurse in the wards or in the bandaging room! The progress is more satisfactory, the discipline more thorough, and the work itself better divided and more systematic. So far we have had 5,832 patients, mostly wounded, under our care and have performed operations, major 351 and minor 672, using our own surgical material and all the necessities sent to us by Mr. Frothingham and our friends in the United States, especially the Bohemian societies in New York and Chicago.

Our Rockefeller men are doing excellent work, cleaning up the whole country under the direction of Doctor Jackson. Doctor Zerajich, colonel and commandant of the whole new Serbian territory, maintained a thorough and wholesale cooperation in hygiene with the Americans. They drill now even new wells, are filtering the water supply, disinfect public buildings, carriages, and toilet places, cafes, restaurants, etc., and that not only here, but in other and smaller places and villages in the vicinity. Vaccination is in progress, serum against cholera is given, and a clinic for the poor has been started in a

school building "down town." It is a brave attempt, and its success is yet to be seen. It means self denial and sacrifice on the part of the foreigners, but is worthy of the most serious consideration in the name of humanity. Ours is a war of medicine, surgery, and hygiene against a war of otherwise most terrible consequences.

J. KUDIS JIGANSKY, M. D.

Chief, Bohemian-American Mission.

## Therapeutic Notes.

**Treatment of Asthma.**—G. Jepsen, in the *Journal of Tropical Medicine and Hygiene* for November 16, 1914, is stated to have procured great relief in a number of asthmatic patients by the administration of acetyl salicylic acid. In doses of fifteen grains (one gram) the drug always proved of immediate service and was found effectual in cutting short incipient paroxysms. Some of Jepsen's patients have been using the remedy with success for two or even three years. In certain instances, on the other hand, the remedy failed to bring relief and epinephrine was then resorted to. In each case a vasomotor rhinitis was present—a circumstance which the author deems evidence that in the causation of asthma a reflex originating in the nasal mucosa may be an important factor. According to this view preliminary treatment of the rhinitis is essential if good results in the direct treatment of the asthma by means of drugs are to be obtained.

**Treatment of Anal Fissure.**—A writer in *Monde médical* for January, 1915, expresses the opinion that the surgical treatment of this condition, consisting generally in forcible dilatation of the anus, will become restricted in its application in the near future, in spite of the improved methods of anesthesia recently brought into use. General anesthesia being attended with unusual risk in these cases, Kendirdjy has introduced a system of local anesthesia comprising three steps: 1. Anesthesia of the anal mucosa by the introduction of cotton plugs saturated with a dilute solution of an appropriate drug; 2. perianal anesthesia by the use of a syringe filled with anesthetic solution, the needle being passed under the mucous membrane and a white anesthetic ring being formed around the anus; 3. anesthesia of the sphincter, the index finger being introduced in the anus after removal of the plug, the needle pushed through the white ring until the resistance of the sphincter is felt, and the anesthetic solution injected in five or six places. Bensaude and Ronneaux have employed high frequency currents in anal fissure, with results so good as to suggest the advisability of using these currents in preference to operation in all severe cases. Doumer's metal electrode or Oudin's condensing electrode, well greased, may be used. If the fissure is especially sensitive, the electrode may be applied to the outside of the anus before introduction, until anesthesia has been induced. Upon complete insertion of the electrode the wrinkled mucosa is smoothed out, the current therefore acting on the entire surface. Each sitting lasts from five to seven minutes. Pain

soon subsides as a result of the treatment, and after ten or twelve sittings a complete cure is obtained. The treatment acts best in the most acute cases with marked local intolerance.

In the less acute cases analgesic ointments frequently suffice. Billon summarizes the treatment indicated as follows: Induce constipation and render the fissure aseptic. For the latter purpose one of the following preparations may be applied locally:

## I.

R Symplicis, .....gr. xxx (2 grams);  
Olei olivæ, .....m℥xlv (3 grams);  
Cera flavæ, .....gr. c (7 grams);  
Balsami peruviani, .....ʒiij (12 grams).

M et ft. pasta.

## II.

R Extracti krameriæ, .....gr. xlv (3 grams);  
Balsami peruviani, .....gr. lxxv (5 grams);  
Olei amygdalæ dulcis, .....ʒv (20 grams).

M et ft. pasta.

Siredey warmly recommends the use of a one in six ointment of colloidal silver, to be applied after each bowel movement—the parts having been carefully washed and dried—and also every evening on retiring. To make certain of proper drying before the ointment is applied, a plug of cotton dipped in ether may be used. After the application—made with a rubber finger stall—a dressing of absorbent cotton is applied over the anus and fixed in position by means of a T bandage. Under this treatment recovery usually takes place in ten to fifteen days. Pouliot obtained prompt recovery in two cases of anal fissure in parturient women by the use of an ointment made by rubbing down a concentrated culture of lactic acid bacilli with milk sugar.

**Nasal Tampon Treatment of Sinus and Ocular Diseases.**—J. I. Dowling, in the *Southern Medical Journal* for June, 1914, reports a favorable experience in over two thousand cases in the treatment of acute and chronic affections of the nose, sinuses, Eustachian tubes, and middle ears, and in corneal diseases, conjunctivitis, iritis, diseases of the retina, choroid, and optic nerve, and in some cases of refractive error or muscular anomaly, by the introduction in the nasal cavities of cotton tampons saturated with a weak solution of an organic silver salt. The tampons used are made from sterilized long fibre cotton wound about a long, thin, wirelike applicator. During its introduction, each tampon is first given a direction toward the ostium of the sphenoid sinus, being pushed back as far as possible between the middle turbinated body and nasal septum. The wire is then partly withdrawn by twisting, the tampon being simultaneously given a slight upward push in order that it may engage and be held as high in the nasal cavities as possible. When the withdrawal has reached a certain point, the handle of the applicator is depressed until the wire is nearly in contact with the upper lip and the tip points toward the infundibulum, when a final push is given to engage it in the vicinity of the latter and the wire then completely withdrawn. Tampons are always placed in both nostrils, and each is of such size as to reach from the anterior nares to

the choanæ and of such thickness as will permit a snug fit without undue discomfort. The introduction is made through a speculum and under full intranasal illumination with artificial light. Preliminary use of cocaine is seldom required. Each tampon is left in place for from ten minutes to an hour. After its removal, postnasal or intranasal douching is used to remove secretions, and a bland covering oil is then sometimes employed. That actual drainage of the sinuses is accomplished by the tampon treatment was shown by observations with electric transillumination before and after the treatment in certain acute cases where the antrum had become filled with secretions. Immediate lessening of radiating pains involving the ciliary nerves or branches of the trifacial and of headaches referred to various specific regions was also frequently noted. In acute head colds a single treatment often proved curative. For the more chronic eye and sinus conditions, numerous applications of the tampons—daily to weekly, or even less often—were found necessary. Cases illustrating the benefit of the treatment in various other conditions are mentioned.

**Hot Air Treatment of Diabetic Gangrene.**—Dupeyrac (*Presse médicale*, July 11, 1914), directed attention to the efficiency of this form of treatment, which consists in desiccation and sterilization of gangrenous tissues by the application of hot air at a temperature of about 700° C., followed by preparation of suitable flaps when the danger of septic infection has been overcome. In a case reported by Dupeyrac, the gangrenous foot was easily removed after hot air applications and the treatment continued until the gangrene had progressed to the middle of the leg. The temperature dropped from 39.5° C. to normal and a line of demarcation formed, but the patient later succumbed to pulmonary edema and myocarditis. In a case referred to by De Brignoles, in which the three last toes were gangrenous, the foot edematous, and the entire leg infiltrated, hot air treatment proved so effectual that only the last two toes had to be amputated. Imbert stated that air heated to high temperatures, applied to the gangrenous tissues under general anesthesia, acted sufficiently deeply to effect an actual sterilization of the tissues. The measure should not be applied, however, until after demarcation of the dead parts has taken place, lest repeated and excessive sacrifices of tissue become necessary. The use of hot air, indeed, is advantageous precisely in permitting long delay before intervention. Two definite indications for operation should, however, be recognized: 1. Evidences of very pronounced infection; 2, intense pain.

**Treatment of Typhoid Fever.**—Goubeau, at a meeting of the Société de thérapeutique de Paris (*Presse médicale*, April 22, 1915), recommended the internal administration of sublimed and washed sulphur in the treatment of typhoid fever. The drug is ordered in powders or cachets in the dose of fifteen grains (one gram) repeated five or six times daily. The temperature as a result promptly recedes and follows a more regular curve. The beneficial effects of the treatment are ascribed to the antiseptic action of sulphur.



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CHARLES F. M. SAVOIS, M.D., LL.D., S.D.

CLAUDE L. WHEELER, A.B., M.D.

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THE REGULATION OF EXPERT MEDICAL  
TESTIMONY.

Any sincere effort to lift us out of the dilemma in which we find ourselves at present in the matter of expert medical testimony should be recognized with appreciation and greeted with whole hearted encouragement. As a result of three years' work of committees appointed by the American Bar Association, the American Institute of Criminal Law and Criminology, and the American Medical Association, the jurists and physicians who composed these committees offer a bill applying certain general principles which, modified to suit local conditions, could be placed in a bill for each State. Although this bill is limited to expert testimony in criminal cases in which the plea of insanity is raised, thus leaving untouched most cases in which medical men are called upon to testify, there are many reasons why our recommendations in this direction should at first not be too sweeping, and why this particular class of cases, so much in the public eye and in which the defects of our present method are so glaringly seen, should be first dealt with; it is at least some advance in the right direction. The bill under consideration consists of five sections. They are so worded that each of the sections is in fact independent, so that even if one or more of its provisions should become inoperative for one reason or

another, their other portions or sections would still be valid, unless, as is not easily conceivable, the entire bill was declared unconstitutional.

Section one deals with the summoning of witnesses by the court. It is not mandatory, but gives the trial court the right to summon one or more disinterested, qualified experts, not exceeding three, to testify at the trial. They shall be allowed such fees as in the discretion of the judge shall seem just and reasonable, according to the services performed by the witnesses. The fees shall be paid by the county where the indictment was found. In order to make the bill constitutional, two classes of experts are created, those summoned by the court and those called by the defense or prosecution. In this way the defendant is permitted to introduce whatever testimony is competent to prove his case. Section two denies the right of admission of testimony from expert witnesses summoned by the defendant until the expert witnesses summoned by the prosecution have had an opportunity to examine the defendant. Whether or not this clause is held to be constitutional or is omitted from the bill submitted to the legislature of any State, the other sections of the bill would remain unaffected. Section three has already been made legal in five States. It provides that when the question of the sanity of the defendant in a criminal case is raised, the defendant shall be committed by the court to a State hospital for the insane, preferably that nearest the place of trial, there to be held under observation until further order of the court for a period not exceeding three months, the expert witnesses in the case having free access for purposes of observation. It also gives the court the right to direct the chief physician of the hospital to prepare a written report and to testify in court concerning the mental condition of the patient. In addition to other obvious advantages in this clause, it is seen that the judge has authority to commit to a State hospital for observation any defendant in a criminal case when there is doubt as to his sanity or if feigning is suspected. The fourth section permits the physician to bring into court a written report, containing a concise statement of his findings and the reasons for his conclusions. This single section is a great advance in the proper direction. Section five permits expert witnesses to consult and, if they agree, to submit a joint report of their findings and conclusions. This will do away with misunderstandings, often centred about nothing more than verbal definitions, but which, as Moyer (*Illinois Medical Journal*, April, 1903) says in his presentation and discussion of this bill, are usually magnified under the present system.

This certainly seems to be a worthy bill, which

should receive the support of the medical profession. It is the result of prolonged and serious deliberation. As Moyer remarks, it can be extended from time to time to other classes of litigation, if, after its enactment by a State legislature, it proves to be a satisfactory and efficient law.

#### THE AFTERCARE OF THE HEART SUBJECT.

Recent years have seen an intensive study of the mechanism of the heart's action and of the nature and significance of the various disturbances to which this organ is subject. At the same time our knowledge of the actions of digitalis has been greatly increased. As a result of these complementary lines of study we are today in a peculiarly favorable position in respect of the successful treatment of many serious forms of heart disease; yet parallel with these advances there has been an ever increasing rate of morbidity and mortality from such disease.

A lack of appreciation of the importance of the aftercare of these patients and of the possibilities of preventing or retarding attacks of failure of compensation by proper guidance in work and exercise, is probably responsible for much of the increase in invalidism and deaths. The importance of proper guidance is well brought out in the Summary of the Bellevue Experiment in Preventive Work for "Cardiacs," which appeared in the *Report of the Social Service Bureau of Bellevue and Allied Hospitals for 1914*.

A weekly night clinic for so called cardiacs has been conducted at Bellevue since 1911, to which a few selected patients have been admitted. These patients have been kept under constant medical supervision and visited frequently in their homes by trained social service nurses. Work has been found for them of such a nature as to permit them to support themselves without the risk of cardiac failure from overstrain. Frequent physical examinations have enabled the physician in charge to forestall breaks in compensation by enforcing periods of rest or by short courses of medical treatment.

The satisfactory results of this experiment are strikingly demonstrated by the records of ten patients with serious, but not hopeless heart disease who have been under observation for long periods of time. Of these all but one have been kept on their feet and able to work for from one to three years. Six of these had previous hospital records totalling 251 days in hospital; none has had a day in hospital since entering the clinic. This has meant a saving for each patient of about forty-two

hospital days annually, an increase of the same number of working days, and a saving to the city in hospital expenses of about seventy-three dollars.

It would be hard to place too high a value on such results from either the social or the economical point of view. The experiment has been proved a success. So far the work has been conducted upon a small scale owing to the lack of funds. The hope is expressed in the report that contributions for the extension of the work may be forthcoming, and we can but echo this hope, for such contributions would seem to be truly investments in the health, happiness, and independence of fellow human beings.

#### THE PATHOLOGY OF TUMORS OF THE APEX OF THE BLADDER

Contrary to the anatomical conditions existing in the lower half of the bladder, the upper half presents only the urachus as a hindrance to the surgeon, but the ablation of this fibrous cord has no physiological importance. The real danger is infection of the peritoneum, but the bladder and serous membrane are united by a lax cellular tissue and can easily be separated, except at a point exactly on the bladder apex, around the insertion of the urachus. Here the adhesions are very strong. In the case of a neoplasm at the apex, these adhesions become more extensive and the serous membrane is more friable. From this fact there results an ordinary adhesive pericystitis which is a kind of natural defense against the morbid invasion produced during the early stage of the tumor growth.

This does not imply that resection of the vesical apex is not possible, for it has been accomplished successfully on a number of occasions. It has been ascertained that the lymphatic supply to the bladder is greatly developed at the vesical base and diminishes as the upper portion of the bladder walls is reached, although it is not completely absent at the apex, but the immediate consequence is that there is less chance of recurrence here than at the base after a radical operation has been performed.

Extension of cancer of the bladder takes place by continuity, contiguity, and by the lymphatics. The latter process is made evident by the enlarged nodes lying beside the hypogastric vessels, as was long ago pointed out by Albarran, and again more recently by Gerota. This adenitis of the lymphatic vessels not always having been searched for, has been overlooked, but it appears to be frequent. It was found in seventy-nine per cent. of the cases recorded by Albarran, and in somewhat over fifty per cent. of these cases, the neoplasm did not appear to have extended beyond the vesical mucosa. This

is, consequently, an important element in the prognosis, and more than any other should govern the operative indications.

The relative infrequency of lymphatic involvement in neoplasms of the vesical apex perhaps explains the fact noted by Fink, that the upper part and lateral walls of the bladder are areas in which recurrence of cancer is late. For the reasons given, namely, the ease of the operation, the relative absence of lymphatic involvement, and the freedom from renal complications, extensive resection of the apex of the bladder is one of the most favorable operations in urological surgery.

#### LOCALIZING FOREIGN BODIES WITH X RAYS.

John W. Duncan, of Birmingham, communicates to the *British Medical Journal* for July 10, 1915, a statement made to him by Professor C. Niven, of Aberdeen University, to the effect that a good glass blower can make an x ray tube with two centres of emission, so as to give two images on the screen at the same time, thus obviating all movement of the x ray tube and simplifying the procedure.

#### CASTOR OIL IN MINOR SURGERY.

A. Denham White, of the Cavalry Hospitals, Meerut, and S. A. S. Ganguli communicate to the *Indian Medical Gazette* for June, 1915, their opinion that castor oil is an admirable dressing for abrasions, slight burns, small wounds, etc. In some cases tincture of iodine was used first, in all others a warm antiseptic wash. Castor oil was then applied on gauze. Captain White suggests an investigation into possible antiseptic qualities of the oil. Among its advantages are its cheapness and its availability everywhere.

#### PROSTITUTION AT THE FRONT.

Many comments on recent events in Europe have shown that there exists a considerable and increasing movement against drink and prostitution. The Germans have expressly warned soldiers against these evils. The intercourse between the sexes is the subject of moral, even stern sermonizing. Nothing shows more clearly the importance of efficiency and power in German eyes. A warning is sent on a little card to every soldier; the language is of pedantic fervor, which must raise a smile in American military circles, yet what a lesson it teaches! We give a free rendering of this document as it appears in *Medizinische Klinik*, 606, 1915. It runs: "Comrades, it is time to speak summarily of the risks you run as men. Gonorrhea and syphilis are malignant diseases, which not only make you unfit for fighting, but which you may bring home to your families and children, nay, these diseases may be with you for months and years in the madhouse. In this time of mortal need, you must summon all your will to re-

sist women. Avoid drink and its promptings of the blood, which unseats judgment and perverts good manners." The subject is delicate, but all nations are learning to digest this lesson.

#### WORK OF THE AMERICAN RED CROSS HOSPITAL.

An analysis of the first thousand cases treated in the American Red Cross Hospital operated by the American National Red Cross Society at Paignton, England, appears in the *Lancet* for July 10th. Of 445 wounded received, 41.2 per cent. suffered from perforating wounds (shrapnel or gunshot), fifty-nine per cent. from nonperforating wounds (shrapnel, gunshot, shell, or grenade), and only 0.6 per cent. incised (bayonet). In 254 cases the wounds were infected, but none by the gas bacillus, and there were only two tetanus cases, which ended in recovery. Excluding fractures, the wounds were situated as follows: On the head 64, neck 8, trunk 122, upper extremity 132, lower extremity 241, external genitals 3, central and peripheral nerve injuries 11, circulatory 1. There were 265 nontraumatic surgical cases, and fifty-eight operations under anesthesia before and 121 after admission to the hospital. Endocarditis, dysentery, and rheumatic fever were the infections most frequently observed. Of noninfectious diseases the most common were bronchitis, myalgia, debility, pleurisy, and enteritis. Four cases of primary syphilis, six of gonorrhea, and seven of miscellaneous diseases of the genitourinary organs were recorded. The average time elapsing between the injury and the receipt of the first field dressing was 6.53 hours. Thirty-five patients were invalidated out of the service and the average loss of time from duty was 22.8 days. Six hundred and twenty-three of the patients were cured, 345 improved, twenty-nine not improved, and three died. Sir William Osler is consulting physician to the hospital, Lady Paget is president, and the Duchess of Marlborough chairman. The American Red Cross staff consists of nine surgeons, one physician, and a pathologist.

#### Obituary.

FRANCIS DELAFIELD, M. D., LL. D.,  
of New York.

Dr. Francis Delafield died of apoplexy at Noroton, Conn., on July 17th, at the age of seventy-four years. He was born in New York in 1841, graduated from Yale University and from the College of Physicians and Surgeons of New York, of which his father, Dr. Edward Delafield, was president, and later studied in London, Berlin, and Paris, devoting particular attention to pathology. On his return to New York he became surgeon to the New York Eye and Ear Infirmary, pathologist to Roosevelt Hospital, physician and later consulting physician to Bellevue, St. Luke's, and Roosevelt Hospitals, adjunct professor, professor, and professor emeritus of pathology and of the practice of medicine in the College of Physicians and Surgeons.



He wrote much and ably on the subject in which he was particularly interested, his most important books being *A Handbook of Post Mortem Examinations* and *Morbid Anatomy, A Manual of Physical Diagnosis, Studies in Pathological Anatomy, Diseases of the Kidneys*, and a *Handbook of Pathological Anatomy and Histology*, the latter being prepared in collaboration with Dr. T. Mitchell Prudden. Doctor Delafield received the honorary degree of LL. D. from Yale University and Columbia. He was a member of the Century, the Yale, and other clubs. He was the first president of the Association of American Physicians and Pathologists, and was a member of various local, State, and National medical societies. Doctor Delafield was most successful both as an investigator and as an author, and occupied a high place in the esteem of his fellow practitioners as well as of the laity. He leaves a widow, a son, and two daughters.

**ROBERT HUGH  
MACKAY DAW-  
BARN, M.D.,**  
of New York.

Doctor Dawbarn died at his home in New York on July 18th at the age of fifty-five years. He was born in Westchester county, N. Y., began the study of medicine at the Long Island College Hospital, then spent several years in study abroad and took his degree from the College of Physicians and Surgeons in 1881, winning the Harsen prize. For eighteen years he conducted with marked success private classes for the instruction of physicians desiring to enter the military, naval and United States public health services. He devoted particular attention to surgery and some of his work in plastic surgery attracted a great deal of public notice. He was a frequent contributor to the medical press and many articles from his pen have appeared in the columns of the *NEW YORK MEDICAL JOURNAL*. He published two books, *Aid to Materia Medica* and *Treatment of Certain Malignant Growths by Excision of External Carotids*. He was awarded the Samuel Gross Prize of \$1,000 in 1902 by the Philadelphia Academy of Medicine for the best original work in surgery for the preceding six years. Doctor Dawbarn was senior surgeon at the New York Hospital, visiting surgeon at the Poly-clinic Hospital, and professor of surgery at Fordham University Medical School. He was a member of numerous medical societies. He leaves a

widow, a son, and a daughter. Doctor Dawbarn had a large practice and a wide circle of friends both in and out of the medical profession.

**News Items.**

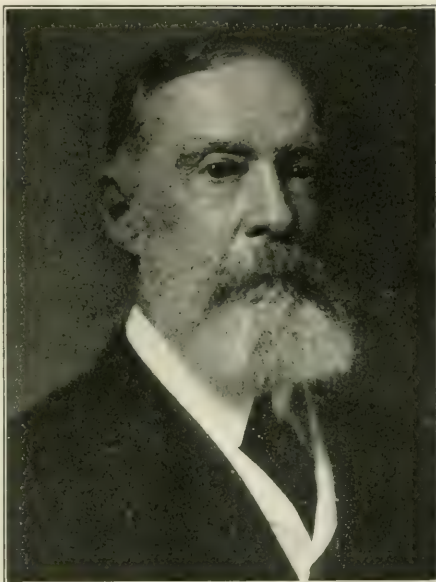
**A Splendid Example of Cooperation in the Field of Industrial Hygiene.**—One of the earliest activities of the new division of industrial hygiene was a study of working conditions in the fur trade. This study revealed a number of unhygienic conditions which fur manufacturers, through their association, were asked to improve. The response of the manufacturers has been prompt and cordial. There has appeared, as an example of the right

spirit an official letter addressed to the members of the Associated Fur Manufacturers, in which the executive committee of that association requests the members to cooperate with the department of health, and "to use every means within their power to maintain their shops on the highest possible level, from the standpoint of sanitation." Similar cooperation is now being sought by the department in other industrial fields.

**State Life Insurance Proposed.**—Dr. J. H. Kellogg thinks that government should make an effort to produce a race of "human thoroughbreds." This is the way he proposes to accomplish it: "Through State life insurance the whole population might be brought under government medical supervision. By periodical examinations the beginnings of chronic diseases might be detected and arrested by timely instruction in regard to necessary changes in habits or occupation; every such case would become an object lesson by means of which relatives and friends should be influenced to avoid the same maladies. The science

of eugenics supplemented by the now nearly perfected science of eugenics, when they come to be comprehended and put into practical operation, will result in the development of a new race of men. Every board of health and official health agency will be actively engaged in the battle against disease and degeneracy, in all its forms, chronic as well as acute. Nothing could be more profitable to the State and nothing more prolific of satisfying results than a thoroughgoing campaign for race betterment through eugenics and sane living, combined with scientific sanitation."

**A Surgeon Watches an Operation on Himself.**—On July 10th, Dr. E. E. Montgomery, president of the County Medical Society and member of the staff of Jefferson Medical College, underwent an operation for hernia at the Jefferson Hospital. Doctor Montgomery, who is an authority on abdominal surgery, desired to witness the operation on himself and for that reason Dr. J. Chalmers Da Costa, who performed the operation, administered only a local anesthetic of cocaine and other drugs. Doctor Da Costa was assisted by Dr. Charles Nassau. Doctor Montgomery, it is said, fainted at the end of the ordeal. Dr. P. B. Bland, a son-in-law of Doctor Montgomery, announced that the patient was resting comfortably, and would remain at the hospital at least three weeks.



DR. FRANCIS DELAFIELD,  
Of New York.

**A Too Strenuous Medical Advertiser.**—Dr. O. A. Young, of New York City, pleaded guilty to numerous and intentional advertisements before the State Board of Health. He was sentenced to return his certificate to practise medicine in that State on a promise not to violate the law in this way again. The hearing before the board took up the entire day. Samples of the advertising matter used by Doctor Young were submitted. On one of them he said he was the "oldest and most reliable specialist in Iowa." As he is a young man, the board took the view that his statement was not proper. Other advertisements were shown in which the Cedar Rapids physician announced that he was able to cure diseases which are asserted by physicians generally to be incurable.

**American Aid for Belgian Physicians.**—In report of the treasurer of the Committee of American Physicians for the Aid of the Belgian Profession for the week ending July 17, 1915, is as follows: Contributions—Muskegon Occana Medical Society, Muskegon, Mich., \$25; Dr. Robert F. Taylor, Philadelphia, \$5; Dr. Francis Reder, St. Louis, Mo., \$10; Dr. Charles D. Lockwood, Pasadena, Cal., \$5; Dr. J. W. Ellenberger, Harrisburg, Pa., \$5; Dr. Charles N. Dowd, New York, \$25; receipts for the week ending July 17th, \$75; Previously reported receipts, \$7,625.84; total receipts, \$7,700.84. Previously reported disbursements: 1,925 standard boxes of food, at \$2.20, \$3,575; 1,274 standard boxes of food, at \$2.30, \$2,930.20; 353 standard boxes of food, at \$2.28, \$804.84; total disbursements, \$7,310.04; balance, \$390.80.

**Medical Reunion in Western New York.**—One of the largest medical meetings held in western New York in recent years was the joint meeting held at Glen Iris, Letchworth Park, Wyoming county, by the medical societies of the counties of Allegany, Genesee, Livingston, and Wyoming, on July 15th. Over 300 guests were present. In addition to the members of the four societies, there were others from Monroe, Erie, Ontario, Niagara, Cattaraugus, Steuben, Seneca, Schuyler, and Wayne counties.

Dr. Louis F. Bishop, of New York, read a paper on Cardiovascular Renal Disease, and Dr. William Seaman Bainbridge, also of New York, one on Chronic Intestinal Stasis.

It was voted to make this joint meeting a permanent affair and to invite other counties in western New York to join in making this meeting a success at Letchworth Park, the presidents and secretaries being delegated to make arrangements for a permanent organization. A part of the time was spent in visiting the many places of interest about Letchworth Park.

W. R. THOMPSON, M.D., chairman,  
G. K. COLLIER, M.D., secretary.

**Personal.**—Mrs. W. W. Mayo, widow of Dr. W. W. Mayo, and mother of Dr. W. J. and Dr. C. H. Mayo, died on Thursday, July 15th, at the home of her daughter, Mrs. D. N. Berkman, in Rochester, Minn.

Mrs. Cammie R. Howard, sister of Dr. D. G. Thompson, of Waxahatchie, and mother of Dr. Mantion M. Carrick, of Dallas, died at the latter city on July 8th, aged sixty-two years. It was owing to her efforts that the County and City Tuberculosis Hospital of Dallas was founded. Mrs. Howard was A.B. from Newcomb College, a branch of Tulane University.

Dr. Yamei Kin, head of the Women's Government Hospital at Tientsin, China, recently arrived in California on her way to the eastern States on a year's leave. Doctor Kin will devote most of her time to visiting and studying American hospitals and to delivering lectures on the social status of women in China. She was left an orphan at an early age, was adopted by an American missionary, sent to America as a child, and educated here, graduating with honors from the Women's Medical College of New York. She has been living and practising medicine in China for a number of years, first as a medical missionary and later independently and as a government official. It was through her efforts that the Tientsin Hospital for Women was established eight years ago. Doctor Kin is very small in stature, and has a remarkable command of English which she speaks like an American. She is unusually well informed on a wide range of topics and makes a most interesting lecturer. She has a son who is being educated in the United States.

**Progress of Sanitation in New Orleans.**—The mortality has lessened; the death rate for the year 1914 was as follows: White, 10.01; colored, 30.30; total white and colored, 19.88. The gradual reduction of the rate appears from the tables of the deputy recorder. The records cover a century: The general death rate per mille of population was in 1810, 52.95; in 1820, 48.55; in 1830, 63.55; in 1840, 51.59; in 1850, 60.49; in 1860, 40.22; in 1870, 37.77; in 1880, 27.62; in 1890, 27.05; in 1900, 21.04. To the white home seeker New Orleans offers a life expectancy equal to that of the most favored large cities of the world.

**The Fly Must Go.**—It is now well known that no amount of swatting will really exterminate the fly. Constant vigilance should be exercised in order to prevent the breeding of this pesky visitor. One of the valuable adjuncts in the fly campaign, is the larger outdoor fly trap. Last winter, the Emergency Work Shop, established in this city by the Mayor's Committee on Unemployment, made a large number of fly traps. These are now available in two sizes: Twelve inches square and 24 inches high, 8 inches square and 12 inches high. The price of each is \$1.50. Orders for these fly traps should be sent direct to the Emergency Work Shop, 319 East Forty-ninth Street, New York City. Those purchasing and using these fly traps not only help to eradicate the fly, but also help to provide work for the unemployed.

**The Health Department Pension Fund Loses Ground.**—On January 1, 1915, the total resources of the health department pension fund were \$334,314.67. The receipts for the first six months of 1915 were \$42,379.10, of which sum \$28,416.14 was derived from fines, penalties, and attorneys' costs, \$6,762.02 from employees' assessments, and the balance from interest. During the same period, the disbursements to pensioners amounted to \$43,183.69. On June 30th, the total resources of the pension fund were \$333,507.14, or more than \$800 less than the resources of the fund at the beginning of the year. The long predicted turning point has been reached. The pension fund has begun to run down hill. The painfully accumulated resources of the fund will henceforth disappear at an accelerating rate; in a few years the end will be reached. The condition and prospects of the pension fund were discussed at length in the *Weekly Bulletin* early this year. At that time, the statement was made that the fund did not rest upon a substantial basis, and that its collapse was inevitable. That the situation is really critical becomes more evident than ever, now that, for the first time in the history of the fund, disbursements exceed income. Announcement of the relief measures to be proposed by the Mayor's pension committee is eagerly awaited by the beneficiaries of the fund.

**Grade A Milk.**—The various offices and bureaus of the health department are in receipt of communications from physicians and others inquiring about the merits of Grade A milk. From these communications it is evident that the writers do not clearly understand just what is meant by the designation "Grade A." There are two subdivisions of Grade A, namely, Raw and Pasteurized. Under Grade A, Raw, is included certified milk; i. e., milk produced in dairies under the supervision and inspectorial control of the milk commissions appointed by the county medical societies of New York county and Kings county respectively. The inspection of these commissions is additional to that conducted by the health department. There are thirty-seven certified farms and the milk therefrom is sold by practically every dealer in the city. Other Grade A, Raw milk, is sold by the following companies: Walker-Gordon, Clover Farms, Locust Farms, Empire State Dairy Co., High Ground Dairy Co., R. F. Stevens Co., H. S. Chardavoyne, Diamond Dairy Co., Knollwood Farms, Bay View Dairy, E. J. Field Est., William Mills, Jr. Grade A, Pasteurized milk is milk which has been produced under sufficiently rigid precautions to enable its being clean and having a bacterial content not exceeding 200,000 to the c. c. in its raw condition. This milk is then pasteurized and although allowed a maximum bacterial limit of 30,000 rarely exceeds 15,000 to the c. c. The following companies sell Grade A, Pasteurized milk: Borden's Condensed Milk Co., Sheffield Farms-Slawson Decker Co., Clover Farms, Mutual Milk and Cream Co., Empire State Dairy Co., Locust Farms, McDermott Dairy Co., High Ground Dairy Co., Alexander Campbell Milk Co., Henry Rauch, R. F. Stevens Co., Levy Dairy Co., W. M. Evans, I. W. Rushmore, C. Mertz, Beakes Dairy Co., H. S. Chardavoyne.

## HEMADENOLOGY:\* A NEW SPECIALTY.

THE INTERNAL SECRETIONS, THEIR FUNCTIONS AND BEARING ON DISEASE AND THERAPEUTICS.

By CHARLES E. DE M. SAJOUS, M. D., LL. D., Sc. D.,  
Philadelphia.

(Twelfth Communication.)

### THE THYMUS (Continued)

In the preceding communications (New York Medical Journal, June 12 and 20, 1935) we analyzed the relationship between the internal secretions and those forms of idiocy in which the cerebral neuron, or certain groups of them, failed to carry on their functions. I urged that this structure, i. e., the nerve cell, could fairly be regarded as an organ through which circulated, as elsewhere in the body, blood plasma containing that portion of hemoglobin which I have identified as the adrenal secretion converted in the lungs into an oxidizing substance (adrenoxidase). The action of this substance was stated to be exerted upon the phosphorus laden myelin of the nerve cell, its axis cylinder, etc., the reaction leading to the production of nerve energy. This energy, in turn, being the *sine qua non* of the functional activity of the neuron, that upon which its efficiency as the organ of mind in the cortex depends, all conditions capable of interfering with its development, or thereafter with its structure or functional efficiency, became so many factors capable of inhibiting thought. Alcohol and ricin were shown, by means of photomicrographs, to promote the formation of beadlike swellings in the cortical neurons. This served to illustrate the morbid influence of many poisons, including certain toxins, upon the nerve cell, either through a direct action upon it or (the more likely process) through the excessive vascular tension produced by the poisons in the arterial system at large, including the capillaries and neurons, and exceeding in centrifugal pressure, in the latter, the resistance of their fibrillar canals.

The impaired or functionally imperfect nervous system of the parent was stated to be inherited by the offspring where idiocy (among other possible neuroses) obtained. Acquired idiocy, so far as the ductless glands are concerned, was attributed to lesions of glands which include among their functions the metabolism of the neuron, to wit, the thymus, thyroid, and adrenals. Febrile infections, especially those peculiar to children, were shown to cause in these organs hemorrhagic foci or necrotic areas due to autolysis, which eventually became transformed into areas of fibrosis. These were stated to compromise the functional efficiency of the organs sufficiently to inhibit the nutrition and growth of the neuron, thus entailing idiocy.

When the treatment of idiocy is to be considered, however, it is perhaps needless to recall that various conditions which do not involve the ductless glands may also produce this condition. This is mentioned because it emphasizes the need of care

in formulating a prognosis, since it is only in certain carefully identified cases that we can obtain satisfactory results from organotherapy.

Organotherapy affords its best results where, as a result of inherited debility, the nerve cell has failed adequately to develop and where organic lesions of the brain are absent or slight. The history of the case thus becomes of major importance. Where alcoholism, for instance, has been such as to influence morbidly the brain cells of one or both parents, especially where conception has occurred during drunkenness in either parent, idiocy in the offspring ensues, not as a result of lesions in the cerebral neurons similar to those in the parental neurons, but owing to the fact that the parent transmits to the child the power to develop dynamically inadequate neuroblasts or neurons. The seed, as it were, of the neuron can germinate up to a certain limit, but beyond this it fails to grow, the result being a dwarfed neuron or an arrested neuroblast.

This is not intended to mean that the defective germ has served to transmit to the offspring the power to develop dwarfed neurons only. It is, in fact, important to bear in mind that the entire nervous system of the child suffers in the same way, and that many tissues, the osseous system, for example, fail to develop physiologically owing to inherited adynamism. It is because of this that in such cases we so often meet the stigmata of ductless gland deficiency, not necessarily the conspicuous signs denoting advanced disease of the various organs of this class, but their larval signs. Indeed, some of the cases present only the phenomena of physiological inadequacy of the various ductless glands without discernible stigmata. Thus, a child may not show the jellylike swellings or pads of myxedematous infiltration, roughness of the skin, puffy face, watery eyes, drooling tongue, coarse and brittle hair, etc., denoting cretinism, but it may show the pallor, hypothermia with cold extremities, especially the feet, low blood pressure, goose flesh on slight exposure, somnolence, etc., of thyroid insufficiency. The child may also show a phenomenon which occurs in all stages of Addison's disease, i. e., myasthenia. Here the infant fails to hold its head up long after a normal child should, and shows sufficient weakness, in some instances, to suggest paresis of the entire musculature. Along with this symptom occur the others of Addison's disease: pallor, coldness of the extremities, hyperthermia, etc., the identical list credited above to insufficiency of the thyroid, but which also becomes manifest in all cases of adrenal insufficiency—a fact which emphasizes what I have long urged, to wit, the intimate functional correlation between adrenal and thyroid functions.

A third set of morbid phenomena may also be

\*Hemadenology, from the Greek *haima*, blood, *adeno*, gland, *Adenos*, to remove, to remove (hence) the glandology, hemadenology, and adenadenology applied to structureless the aggregate of our knowledge on the ductless or blood glands.



...which I have attributed in the present set of articles to the thymus. We may not always find clear evidences of rachitis, but, as is well known, this osseous disorder or disproportion and malformations of the bones is almost ubiquitous in idiots, while very few, if any, attain even average height. There lurks, moreover, hidden in the functions of the thymus—in correlation with other ductless glands and the nervous system of course—the solution of another obscure question—the origin of the stigmata of degeneration so commonly observed in idiots, viz., the abnormalities in size and shape of the cranium; the tardy closure of the fontanelles; the malformations of the ears, which are in reality due to defective cartilaginous development; the deficient growth of the nasal bones and inferior maxillary which causes the saddle nose and receding chin; the vaulted palate, irregular dental arches, defective growth of the teeth, etc. Also related to the thymus is the peculiar facies of many idiots even during infancy: the aged and wizened appearance, the frontal creases, etc., so suggestive of Gilford's progeria or precocious senility, the origin of which we have traced to thymic deficiency (see *NEW YORK MEDICAL JOURNAL*, March 20, 1915, page 586). The absence of the thymus in seventy-five per cent. of nonmyxedematous idiots ranging in age from one month to five years, examined post mortem (Morel), emphasizes the pathogenic role of *thymic deficiency* in this connection.

Under these conditions, it is apparent that the common practice of administering only thyroid gland in these cases can be fraught with satisfaction only when the thyroid gland is alone deficient, i. e., in cases of cretinism or larval myxedema. Many of the cases met in practice, however, are not of this type, and what proportion of these show no evidences of organic lesions whatsoever, and may be traced to parental alcoholism, syphilis, gout or tuberculosis, consanguinity, marked disparity in the ages of parents, extreme youth of parents, premature birth, parental insanity or neuroses, psychic shock, mental impressions, or violent emotions in the mother, are all due, so far as the ductless glands are concerned, to inadequate activity of all these organs. Briefly, it is mainly by debilitating the functional efficiency of the true ductless glands, and through them the nutrition and oxygenation of the central nervous system, that idiocy which cannot be traced to organic lesions is engendered.

Our aim, in all such cases therefore, should be to compensate as early as possible for the deficiency of glandular products. In some cases, the stigmata of a certain gland stand out more prominently than others; thus the general myasthenia may be so marked that adrenal deficiency suggests itself as a predominant feature. Yet we should not administer this agent alone, since an essential feature of organotherapy in general idiocy is to restore, not only the equilibrium of ductless gland activity, as is the case in cretinism, but to enhance what functional activity the various ductless glands concerned are capable of. The salient stigmata, therefore, only point to the one ductless gland which requires additional compensation without omitting the use of the other glandular products required in the remedial process. The need of these various agents is empha-

sized by the pharmacology of the various products, as I understand it.

Thymus, we have seen, supplies through its lymphocytes, phosphorus laden nucleins or, better, nucleoproteids which feed, as it were, the nerve cell. We must bear in mind in this connection that we are dealing with a food. It is because of this that the small doses usually administered are virtually inefficient. In a breast fed infant a grain of powdered thymus thrice daily will suffice, because ten to fifteen grains may be given to the mother and thus enrich her milk. In artificially fed infants, however, larger doses should be given, the doses being gradually increased until ten to fifteen grains are given daily, divided into the feedings. A suggestive feature in this connection and emphasizing the fact that it acts as a food, is that large doses of thymus may be administered without producing the least untoward effect.

What we expect of thymus, as stated, is that it will build up the nuclei of all tissue cells and particularly those of the nervous system. Yet no results worthy of the name will be obtained if the other glandular products are not present to complete all the phases of the nutritional process. The excess of nucleoproteids administered fails to be assimilated and it is excreted. Granting that the protein-forming part of the nucleoprotein carried to the tissues by lymphocytes represents the nutritional pabulum of the nerve cell (Abderhalden has, since I did so, also attributed nutritional properties to leucocytes), the next step, from my viewpoint, is the adjustment or sensitization of the phosphorus of the nuclei to the needs of oxidation—a function which I attribute, on the basis of considerable evidence, to the thyroid secretion. This product, as Hutchison expressed it many years ago, "renders the tissues more inflammable." That this function is of cardinal importance is well illustrated by the striking effects of thyroid gland in cretinism, a disease in which the thymus and adrenals are comparatively normal, while the thyroid gland is more or less degenerated and functionless.

The dose of thyroid must be considered from a standpoint quite other than that which, we have seen, permits the free use of thymus. While the latter is functionally passive, though rich in latent energy through its phosphorus, the thyroid principle is that which mobilizes it preparatory to combustion, as it were, or oxidation, and is therefore active. As long as the proportion in the blood and tissues is below that necessary to sustain the functional activity of their cellular nuclei, no abnormal phenomena occur. It is precisely because we never know the proportion of thyroid principle—iodine in organic combination—that the tissues contain, that a definite dose cannot be recommended. At any moment under such circumstances the safety limit might be passed and cause, not only untoward symptoms, but a fatal issue. Three grains of thyroid three times a day has, in fact, caused a death in a half grown girl. This indicates the danger of the so called average dose given in the United States Pharmacopeia, four grains. An infant can, however, be given one quarter grain of the powder with safety. If it is nursing, the better way is to give one grain thrice daily to the mother, along with thy-

mus, ample experimental and clinical evidence being available to show that the milk transfers to the nursing a sufficient quantity of the organic products to benefit it. It is important to bear in mind, however, that both mother and infant should be carefully watched under these circumstances. Beside the possible development of thyroidism, the first symptom of which is a marked increase in the pulse rate, the production of milk is sometimes diminished. When any indication of this appears, the remedy should be given to the infant in absolutely fresh milk, or if the latter is not obtainable, in milk Pasteurized just before use. The administration of thymus to the mother should be continued, since it favors milk formation.

In some cases, where the mother is in good health and other measures to be described in our next article are resorted to, improvement becomes noticeable after a few weeks, even though no adrenal preparation is used. In the majority of instances, however, especially if rectal hypothermia is constant, adrenal gland assists the curative process by completing what might be termed the physiological tripod of nerve cell development. This consists of the compounds which form part of the myelin: 1. Thymic nucleoproteids to nourish the nerve cell and supply it with combustibles, as it were; 2, thyroid iodine in organic combination (thyroidase) to render the combustible phosphorus-laden nuclein susceptible to oxidation; and, 3, the oxidizing substance originally derived from the adrenals (adrenoxidase) which circulates through the myelin, in capillarylike fibrils (see the first illustration on page 1331, of our article in the *NEW YORK MEDICAL JOURNAL* of June 26, 1915), all constituting features of the metabolic process in the nerve cell through which nerve energy is generated. The adrenal principle is useful in another way in the process of regeneration of the organ of mind through transformation of the neuroblasts into fully developed neurons, in that it raises the vascular tension and thereby serves to enhance arterial circulatory activity within the nerve cell itself, its axis cylinder, cell body, nucleus, and nucleolus.

The dose of adrenal substance (powder) should, as is the case with thyroid, be regulated by its effects; but it must be said that the preparations available are not always satisfactory and that it is preferable to employ pituitary which, as shown by the chromaffin test, contains the adrenal principle. In infants one half grain of the posterior lobe usually suffices; or, one grain thrice daily may be given to the mother, if the patient is a nursing, the thymus, thyroid, and pituitary being given in capsule in the course of each meal.

(To be continued.)

**Treatment of Pityriasis rosea.**—G. Pernet, in the *Medical Press and Circular* for April 7, 1915, states that this affection has a tendency to clear up spontaneously in the course of a few weeks. The administration of salicin in a mixture containing fifteen or twenty grains (one or 1.3 gram) of the drug in one ounce (30 c. c.) of menstruum, three times a day after meals, is of service in hastening recovery. Lead and tar lotions or alkaline baths are then useful.

## Pith of Current Literature.

### ZENTRALBLATT FÜR INNERE MEDIZIN

**Perrheumal in the External Treatment of Rheumatism and Gout,** by K. Ollendorff.—As an adjunct to internal salicylic medication, especially where the latter causes tinnitus or gastrointestinal disturbance, the external use of perrheumal, a ten per cent. ointment of the tertiary trichlorbutyl ester of salicylic acid and acetyl salicylic acid, is recommended. No irritation of the skin or other untoward effects were ever noticed. The affected joints should be anointed and rubbed with the ointment twice daily and then packed in cotton. When the acute inflammation has subsided massage of the tender areas with perrheumal should be continued. A report of four cases illustrating the beneficial effects of the ointment is given. In gout and sciatica, distinct relief from pain was procured, though other agencies, such as atophan and dry heat, were also required.

### PRESSE MÉDICALE.

MARS 6, 1916.

**A Simple Method of Treatment in Fracture of the Humerus,** by Léon Bérard.—The procedure was specially devised for fractures with comminution, such as are generally produced by bullets or shell fragments. After disinfection of the wound and the establishment of drainage, if required, a sterile gauze and cotton dressing of medium thickness is rolled about the fractured arm, from shoulder to elbow. Five or six strips of pine wood measuring twenty to twenty-five cm. by three to four cm. by two mm. are then placed parallel at equal distances along the gauze dressing, and concentric pressure is exerted by means of a band of gauze, bringing the comminuted fragments as close together as possible. Continuous extension is established by means of a metallic bracelet made of a piece of leaden pipe, or a series of leaden bullets strung like beads. This bracelet is placed above or below the elbow, according to the situation of the fracture, and held by two turns of gauze bandage. A sling supporting the forearm completes the dressing. The patient is kept sitting or standing as much as possible. That the loss of extension incurred when the patient lies down does not interfere with the ultimate success of the dressing was shown by x ray examinations. In fractures of the neck or shaft, the dressing was uniformly efficacious and well borne. In some supracondylar fractures, pressure of the leaden bracelet proving uncomfortable during the first week, the limb was kept in extension, with supination of the forearm in this period. In forty-eight fractures in which the dressing described was used, bony union took place in from four to nine weeks.

**Radiooperative Extraction of Projectiles from the Tissues,** by Lobligeois.—The use of the radioscopic screen is recommended as a simple method of removing projectiles with the assistance of the x rays. The screen should be boxed so that examinations can be made in daylight. The radiologist examines the part containing the foreign

from various directions through the screen, and with a little practice is able accurately to estimate the distance of the body from the skin and the bones, its situation with respect to the latter, and its size. Then, tapping the skin with a finger tip, he ascertains which bundle of muscle tissue covers or contains the foreign body. Unless the bullet is deeply imbedded, or wedged in a bone, a point will be found at which pressure will cause the foreign body to move. At this point a Michel clamp should be placed and the incision made by the surgeon. If upon incision and separation of tissues the operator, guided by the radiologist's directions, fails to expose the projectile at once, a grooved director is inserted in the opening and the relation borne by its extremity to the foreign body ascertained with the screen, removal being then usually effected without difficulty. In seventy cases in which this procedure was followed extraction was performed with uniform success.

#### BULLETIN DE L'ACADÉMIE DE MÉDECINE.

**White Patches on the Buccal Mucosa as a Sign of Syphilis**, by L. Landouzy.—Prolonged observation of oral conditions in syphilis has convinced Landouzy that, among the minor signs of the disease none is of greater diagnostic value than buccal leucoplakia. White triangular patches on the mucous membrane of the labial commissures were far more common than lingual leucoplakia, upon which stress has hitherto been laid. Less frequently the white areas extended in a linear form from the first molar tooth to the commissure, on the inner surface of the cheek. The former localization of these patches has led pathologists to designate them as smokers' patches. Landouzy, however, considers smoking—cigarettes in particular—only an occasional and secondary cause of the patches, syphilis being, on the contrary, a *sine qua non*. He describes them as occurring in both sexes, and has found them of value in drawing attention to otherwise undetected syphilis in women. They may be thin or thick, extensive or localized, and their surface may be irregular, like that of a candle dripping grease, like psoriasis, smooth and shining, or of the appearance of onion peel. Among 131 hospital cases presenting these patches, eighty-one yielded a definitely positive Wassermann reaction. Landouzy believes the patches to be as valuable as the Wassermann in the diagnosis of syphilis. Treatment with iodides and mercury sometimes reduced the patches or prevented their appearance even though the use of tobacco was continued. At times similar patches were observed on the glans, prepuce, or vulva.

**Technic of Late Secondary Amputation in Military Practice**, by A. Routier.—The author amputated directly through suppurating tissues, with gratifying results in both instances. Passing the amputating knife through previously made lateral arthrotomy openings, a large anterior flap extending below the patella was made, the femur exposed and sawed through as high as practicable, and the skin section completed posteriorly through the lower extremity of a previously made vertical drainage opening. After section of the muscles,

vessels, etc., there remained three unequal flaps, of which at least four fifths of the total surface was covered with granulation tissue bordering on the focus of suppuration. The entire wound was treated with hot phenol solution, and the flaps were left for the time being united. Healing took place far more rapidly than in the two cases referred to in which amputation by the usual method was carried out. The chief feature of the new operation is to use surfaces already granulating as a protecting wall against fresh infection.

#### RIFORMA MEDICA.

June 10, 1915.

**Clinical Aspects and Specific Therapy of Cholera**, by S. Liverato.—This is a review of an epidemic in Salonica in 1912 in which 147 cases were treated; mortality, 27.2 per cent. The stools, which rarely contained blood, in twenty-four hours varied in number from four to thirty; colic was usually present. Vomiting followed diarrhea and in severe cases was often uncontrollable. The temperature was almost always below normal from 95° F. to 96.5° F.; the pulse was slow and thready, seldom above 70. The urine was diminished with cases of suppression. Muscular cramps were frequent and varied in intensity. Visual disturbances and aphonia were seen. Serum therapy was employed in seventy-three cases mostly virulent, with forty-one per cent. recoveries, large doses of twenty to forty c. c. a day being given. Hypertonic solutions produced no specific effect and seemed rather to impede the action of the serum, which produced the best results when used alone.

**Acrocephalic Syndactyly of Apert**, by M. Bertolotti and G. B. Trotti.—Acrocephalic cranium with syndactyly seems to be a pathological synostosis of the fetal skull, of a teratological nature. It is characterized by the abnormal conformation of the skull, transversofrontal depression, exophthalmos, deviation of the facial bones, bilateral optic neuritis, and basilar lordosis.

#### REVISTA DE MEDICINA Y CIRUGIA PRACTICAS.

June 11, 1915.

**Surgical Treatment of Acute Serous Meningitis**, by J. L. Abechuco.—The first state in serous exudation from the meninges is a slowing of the blood stream followed by exudation through the capillary walls. This exudate, at first clear, like lymph but richer in albumin than lymph, is soon invaded by leucocytes and in severe cases it becomes quite purulent. There is usually slight fever and the accompanying headache is not so severe as in purulent meningitis; opisthotonos and stupor often occur on the third or fourth day; vomiting is very common. The serous form is usually distinguished by not showing any fever or only a slight and irregular elevation. Serous meningitis is rarely seen in adult life, seventy-five per cent. of patients being between ten and twenty-five years of age. The cerebrospinal fluid usually contains little sugar or albumin, few cellular elements or bacteria. The most rational treatment is that which diminishes directly the cerebrospinal pressure, and trephining comes under this head, followed by evacuation of fluid from the pia mater or by ventricular puncture. This



course of treatment has brought about favorable results in a number of cases, one of which is described, where the meningitis followed scarlatinal otitis media.

#### SEMANA MÉDICA

Mar. 2, 1905.

**Urethral Calculus in a Woman**, by J. M. Caballero.—This is a rare condition owing to the shortness and dilatability of the female urethra. In a case described, a woman aged sixty years sought an operation for rectal tenesmus, presumably from hemorrhoids. Examination revealed a large urethral calculus weighing forty-two grams; it was easily extracted and the tenesmus immediately disappeared.

Mar. 9, 1905.

**Visceral Syndromes of Syphilis**, by J. J. Viton.—The liver is the abdominal organ most frequently affected in syphilis, next in frequency being the spleen and kidneys. Splenohepatic syphilis shows three types, the anemic, the icteroid, and the ascitic, while there may be a true syphilitic involvement of either the liver or spleen separately. The treatment consists in relieving dyspnea by removing exudates in the abdomen or pleura and giving mercury by mouth, as its action on the liver is more marked by this route, followed by iodide of potassium and neosalvarsan.

**Twilight Sleep in Vaginal Surgery**, by T. Rosendi and P. A. Etcheverry.—The method used was that of Canton in cases of Pozzi's cervix operation, extirpation of a submucous polyp of uterus and Jonnesco's anterior colpotomy with removal of retained placenta after abortion.

#### BRITISH MEDICAL JOURNAL.

**Localization of Foreign Bodies by X Rays**, by J. H. Shaxby.—Briefly, the method consists in the erection of a ladder of leaden wire, the rungs of which are obliquely placed and equidistant, perpendicular to the surface of the plate and close to the part to be photographed. Two exposures are then taken with the tube first on one side and then on the other of the ladder. The displacement of a given point in the shadow of the foreign body is determined by calipers and the point on one of the rungs of the ladder which just corresponds to this distance is found. As the rungs are placed one cm. apart, the distance of the foreign body from the surface of the plate is obtained directly. By prolonging the vertical lines of the shadows of the side wires of the ladder, the point of their intersection will give the focal spot of the target. Both focal spots being thus determined, the object must lie midway between them.

**Treatment of the Symptoms Arising from the Inhalation of Irritant Gases**, by W. L. Symes.—The experiments were conducted on cats which were allowed to inhale bromine vapor until respiratory changes were produced. Efforts were then made to relieve the symptoms of irritation and inflammation by various drugs given subcutaneously or by inhalation. Injections of amyl nitrite were without beneficial effect, but prompt relief was secured by the inhalation of this drug. The same was true of stramonium. The fumes of lobelia, tobacco, and of opium were also found of considerable value,

especially those of opium, although this is not to be recommended except in severe cases. Chloroform vapor occasionally gave relief also. Injections of atropine or epinephrine were without effect.

#### LANCET.

June 10, 1905.

**Right Sided Murmurs of Mitral Stenosis**, by James F. Goodhart.—Brief histories of ten cases are related to show that in mitral stenosis of long standing there may be a total disappearance of the typical presystolic murmur and accentuated sounds over the precordium. In such cases the murmur most commonly present is a long, blowing diastolic murmur, often musical in character. In addition there is also often a more or less prolonged systolic murmur present. Both of these murmurs are produced, according to the author's belief, in the right heart, which has become enormously hypertrophied and dilated so as to have almost totally displaced the left ventricle from the precordial region. The diastolic murmur is thought to be produced by a pulmonary insufficiency secondary to the dilatation. The veins of the neck are commonly engorged, but frequently no pulsation is to be made out in them or in the enlarged and engorged liver. This is probably due to an overdistension, so that the waves are not transmitted. The systolic murmur is due to a tricuspid insufficiency also arising from the dilatation of the right heart. One or both of these murmurs has been observed by the author in seventeen of eighty-four cases of mitral stenosis. The liver and spleen are usually enlarged and their bloodvessels serve as huge reservoirs for the blood dammed back into the right heart, and constitute a very efficacious mechanism for the preservation of life. The prognosis in mitral stenosis is commonly regarded as unfavorable, but the author believes that the outlook in most cases is good for a considerable number of years and records his personal experience in which the patients enjoyed reasonably good health for from sixteen to thirty-two years. In the treatment, one of the most satisfactory measures is venesection, and those patients in whom there have been periodical attacks of hematemesis, or profuse menstrual bleeding, have fared best.

#### BOSTON MEDICAL AND SURGICAL JOURNAL.

**The Use of Magnetism for Localizing Needles in the Tissues**, by George H. Monks.—Although the brilliant and satisfactory results obtained by means of the x ray seem to have rendered all other methods of localization unnecessary, the writer believes that in certain cases, magnetic test can be of great assistance even when a röntgenograph has been obtained. Such cases are those in which the needle fragment is large enough to receive and to retain a charge of magnetism sufficient to attract the indicator needle; those in which the needle fragment is near enough to the skin to be strongly magnetized, and also near enough to attract the indicator needle; and those in which, during the progress of an operation, the incision opens up the tissues in such a manner that the indicator needle may be brought very close to the foreign body. In all other cases the test is of doubtful value.

# **Pollen Therapy in Hay Fever, by J. L. Goodale.**

... methods have been employed in the treatment of the various plant fevers and ...  
The application of these substances to the treatment of hay fever by injection of plant proteids promises to assist in the selection of the specific material required for a given case. Definite reactions are elicited in hay fever by the pollen of the exciting plants when brought into contact with an abrasion of the skin. The intensity of these skin manifestations may be sensibly diminished by the repeated administration of the proteids in question. Coincident with the diminution in the skin reactions, there seems to occur an increased tolerance of the exposed mucous membranes to the pollens of the plants employed. Pollen therapy in hay fever may be regarded at the present time as a promising method of treatment, but its value and the permanence of its results wait to be definitely established.

## **JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.**

**Syphilis of the Brain, by Joseph Collins.**—The present communication is based on one hundred cases seen at the Neurological Institute, of New York. The symptoms of brain syphilis, in the order of their frequency and diagnostic importance, are: 1. Headache; 2, mental irritability, alteration of personality, explosiveness, depression, inadequacy; 3, cranial nerve disorder, particularly of the third, eighth, second, fifth, and seventh; 4, insomnia; 5, disorder of motor function, shivering attacks, stiffness, convulsion, paralysis, dysarthria, aphasia. The headache, which is of recurrent nature, may be associated with dizziness, vomiting, and optic neuritis, and in such instances brain tumor cannot be excluded until examination of the blood serum and cerebrospinal fluid is made. In this series there were many cases diagnosed as headache, and a considerable number as migraine. In fact, if laboratory tests had not been tried, no other diagnosis could legitimately have been made. As to what should be done for the individual who has contracted syphilis in order that his brain and meninges will not become infected, the answer is, treat him immediately, vigorously, properly. The spirochetes get into the perivascular lymph spaces of the central nervous system, and no effort on the part of the physician, or development of antibody on the part of Nature, can destroy or dislodge them. Adequate treatment of syphilis consists in the proper use of salvarsan and mercury, begun as soon as possible after infection and kept up until all biochemical evidence of the disease has ceased, while the metabolism of the patient is maintained as nearly normal as possible. There are two substances which kill the spirochetes—arsenic and mercury; and their administration compasses the cure of syphilis. The minds of physicians should be disabused of the belief that potassium iodide is an antisiphilic agent. There is no more justification for considering that it is such, in the strict sense of the term, than there is for considering it an antituberculous agent.

**Chronic Pancreatitis, by Max Einhorn.**—The cases which have been observed by the author may

be divided into three groups: 1. Main symptom, diarrhea. 2. Main symptoms, gastralgia, constipation, weakness. 3. Main symptoms, diabetes mellitus, dyspepsia, weakness. In the first group the following conditions were prominent: 1. Severe diarrhea, attended with the passage of large quantities of feces; in the latter, numerous undigested food particles, easily recognized macroscopically. 2. General weakness. 3. The digestive food capsule showed many of the test substances undigested. 4. Examination of the duodenal contents showed either entire absence of or a very faulty pancreatic secretion. Frequently one or two of the ferments, and at times all the three ferments, may be absent. In the second and third groups similar conditions were observed, except that there was constipation instead of diarrhea.

## **MEDICAL RECORD.**

July 26, 1915.

**Syphilitic Reinfection, with Notes on Immunity and Treatment, by F. W. Smith.**—A few years ago errors in diagnosis and treatment were due to pardonable ignorance, but today, with modern serological tests and laboratory methods for determining the pathogenic organism, diagnosis should be made promptly and treatment instituted early, and, if the case is managed properly, so called parasymphylis, which is really a late stage of actual syphilis, should be avoided. A properly performed Wassermann test not only tells us that the patient has syphilis, but the degree of constitutional infection, or amount of natural resistance. For this reason a uniformity in technic and a standardization of reagents should be adopted by serologists. There should be a standard method for reporting the degree of infection or resistance, allowing for comparison with previous examinations, as an index of the result and as a guide for treatment. As soon as the diagnosis in a case is established intensive treatment should be commenced. Salvarsan or neo-salvarsan should be given intravenously every week or ten days for at least six injections, and between the injections mercury should be given in some form, preferably by deep intramuscular injection. Inunctions cannot well be employed outside of a suitable institution, and patients who have been treated with mercury pills for as long as six years have been known to show positive Wassermann reactions, and even active lesions of the skin and mucous membrane. Salvarsan and mercury are synergistic drugs, and together are most effective in treating syphilis. If the disease is malignant in form or particularly virulent, or if the patient is unusually asthenic, it is sometimes well to give a few injections of mercury before beginning a course of salvarsan, and by so doing prevent a cerebrospinal toxemia due to lysis of the many protozoa destroyed by the assault of the more powerful drug, salvarsan. In a reinfection case cited, after this course of medication, the author suspended treatment for a month, and then found the Wassermann test negative. Desiring, however, to give the patient the benefit of any doubt, he repeated the entire course of treatment, and since then he has found—as in a series of similar cases where treatment

had covered a period of less than six months—that the Wassermann reactions have remained negative until the present, or from one and a half to two years; while no clinical manifestations of the disease have been discovered. In the light of our present knowledge, it must be concluded that this patient is cured; but time alone will determine the permanence of the cure.

**The Conservative Treatment of Enlarged Tuberculous Glands of the Neck**, by L. B. Meyer.—The observations reported embody the conclusions formed as to the best method of treatment from a careful study of a large number of cases during the past ten years. It should be understood that these enlarged glands, the scrofulous glands of former days, are not invariably tuberculous. Frequently they are simply inflammatory enlargements, such as one finds in any part of the body where glands happen to be in the path of the lymphatic drainage of an infection. The condition is extremely common, being found in the majority of children of school age. It is Meyer's opinion that no case of enlarged glands of the neck, tuberculous or other (and in a large proportion of instances a differential diagnosis is impossible without the removal of a specimen), should be operated upon radically without at the same time, or, better, previously correcting all pathological conditions in the mouth and nasopharynx which might act as sources of infection. When the mouth has been placed in a thoroughly clean state by such measures as the removal of adenoids and diseased tonsils and the proper treatment of bad teeth, a large majority of these glands will never need surgical treatment if appropriate hygienic and tonic measures are given a chance. Where, however, in spite of this routine, some enlarged glands, not yet broken down, remain (and there are very few such cases), various methods of local treatment should be tried. Among these are the injection of five per cent. iodoform emulsion in oil, or of a two to four per cent. solution of formalin in glycerin, and the use of Bier's hyperemia, of tuberculin, and of the x ray and the high frequency current. For the ideal handling of the condition, after removal of the cause, we are in the presence of the same problem, though in a lesser degree, as are those treating pulmonary tuberculosis. When in a case seen for the first time there are one or more sinuses, appropriate treatment of the mouth is frequently followed by healing of these and retrogression of the enlarged glands without any special local treatment. Where, however, this does not occur, a little assistance with the curette, stimulation with tincture of iodine, or the use of Beck's paste, together with one or more of the methods previously mentioned, will usually suffice. When an abscess exists, the treatment should be extremely conservative. Under no circumstances should a large incision and drainage be employed. Whenever pus is present, it should be aseptically removed; after which a sterile dressing (preferably wet), to prevent a mixed infection, should be applied. Whether we remove the pus by aspiration, or make a very small incision with a narrow knife and permit the pus to flow out by means of a grooved director, is immaterial. The process should be repeated every few days until no more secretion is present. Ab-

scesses treated in this way heal with pin point, practically invisible scars. After an abscess is healed, the case is to be handled in the same way as one which has not progressed so far.

#### AMERICAN JOURNAL OF THE MEDICAL SCIENCES

Dec., 1914.

**Certain Medical Aspects of Recurrent Malignant Tumors**, by J. B. Herrick.—Not infrequently physicians see a patient from whom a malignant growth was removed long before, a patient in whom recurrence has taken place, not at the site of operation nor in the shape of visible and palpable tumor masses in distant parts of the body, but with symptoms resembling those of a so called medical or internal disease, as distinguished from the external or surgical, i. e., operable affection. Four things are likely to stand in the way of the early and easy recognition of these so called medical recurrences: 1. The fact that there is no relapse at the site of operation. 2. No tumor mass can be made out in other parts of the body. 3. The long period that may have elapsed since the operation, during which the patient has apparently been in good health. 4. The symptoms are not those commonly associated with tumor, but rather symptoms of some other, often a so called medical condition. The first three of these stumbling blocks to diagnosis should be easily avoided by remembering that they are by no means exceptional, and should not be given much weight in excluding the presence of neoplasm. The fourth difficulty is not so easily surmounted. At times it is only by careful exclusion of other diseases, or by patiently tracing some atypical symptom or sign to its malignant source, that a correct diagnosis is made; and often this diagnosis can be only a presumptive one. Among the clinical features worthy of special consideration are nervous symptoms, which may accurately resemble those of various other diseases, and those relating to the respiratory tract. It is necessary for one to see an autopsy on only one of these cases, with the lungs riddled with small or larger tumor nodules, to be able to understand how, clinically, the condition resembles miliary tuberculosis. Another metastatic phenomenon, often a late one and often the first sign of failing health after operation, is pleural effusion. One type of disease due to these metastases is chiefly characterized by severe anemia and marasmus. Though at autopsy symptomless nodules in the myocardium or pericardium are occasionally met with, the author has never observed clinical symptoms from involvement of the heart by the metastases; nor has he noticed clinically symptoms which could be referred to metastases in the kidney.

**Analysis of Achylia gastrica**, by M. E. Rehfuss.—True achylia, in which there is a total lack of acid and enzymes through the entire period of gastric digestion, is exceedingly rare. In cases of achylia, Rehfuss, by means of the fractional method, has studied the entire period. On the basis of Pavloff's work, it is suggested that if his conception of gastric secretion is correct, it should follow that achylia can be either psychical or chemical. A total absence of secretion in the first hour of digestion, followed by a perceptible secretion in the second, would favor



The interpretation of a psychical (nervous) achylia; the reverse theory of an secretion, would favor that of a chemical achylia; while a total lack of secretion through both phases might indicate a deficiency of both functions or an inactive mucosa. The present studies show that the commonest form is a complete lack of gastric secretion through both phases (total achylia). Two cases of true psychical achylia were met with, but a pure chemical achylia was never observed. Attention is called to spurious achylia, which is quite common, in which there is an ultimate elaboration of juice late in digestion, and enzymes are always present. In two cases of *bona fide* achylia, one of over ten years' duration, a perceptible return of gastric secretion during the psychical phase was noted as the result of the administration of parathyroid extract. Dietetic and local treatment was instituted at the same time. The phase method of examination is of great value in determining the type of achylia, as well as the possibility that at some phase the secretion might still be active. This finding improves the prognosis.

**Mode of Action and Use of Emetine in Entamebiasis**, by K. Lyons.—Ipecac and emetine, when absorbed into the blood stream, exert their specific effect only on entamebas within reach of the circulation—that is, in the tissues; those free in the intestinal canal are apparently not affected by either the oral or subcutaneous use of the remedies. It is not definitely known how or in what form these agents are eliminated, though there is some experimental evidence that the amebicidal principles of ipecac, when taken by the mouth, are not eliminated in the feces; while the failure of emetine by needle to destroy the vegetative *Entamoeba coli* argues against the elimination of the drug from the circulation by way of the large intestine. Relapses are due to the survival of some of the entamebas. In the carrier state the parasites are probably simply harbored in the lumen of the gut in the same manner as *Bacillus coli*, and cause no symptoms; the mucosa being in some way protected against the penetration of the organism. Emetine is best administered subcutaneously, and preferably by means of small, repeated injections; in severe cases it should be given intravenously. For oral administration and colonic irrigation, emetine is not advisable because of resulting intestinal irritation; the whole drug is preferable. In an ordinary case of amebic dysentery an average of one grain of emetine daily, or less, is sufficient; the treatment being maintained for from one to two weeks. Too large doses, or too prolonged use of moderate doses, may prove injurious. In order to prevent relapses an intermediate form of treatment should always be instituted, even though cysts are not found. In pyorrhœa alveolaris emetine, subcutaneously and locally, has been shown to be practically specific. In hemorrhagic conditions the use of the drug is entirely empirical, and its value questionable.

#### ARCHIVES OF RADIOLOGY AND ELECTROTHERAPY.

**Inhibitive Effect of X Rays upon Malignant Growths**, by Christopher Kempster.—When applied to a new growth the x rays apparently have a selective action. Those cells which approach the em-

brionic state are affected more profoundly than others. In small doses the rays stimulate; in moderate doses they retard growth and in larger doses they cause destruction. In order to cause the disappearance of a new growth it is not necessary to destroy a single cell. The destruction can be brought about by an inhibition of the power of division and subdivision. The amount of irradiation required to do this just falls short of the amount which is necessary actually to kill the cells.

**Treatment of Nonmalignant Growths by Diathermy**, by E. P. Cumberbatch.—The treatment consists in a destruction of abnormal tissues by heat electrically produced within them. In the case of naevi, coagulation of the contained blood is brought about. In these cases a strong current is to be employed as the circulating blood dissipates the heat which is generated by a current just strong enough to coagulate fixed tissue. The overlying skin is cauterized in the region of the active electrode and if the nevus is transfixing in many directions a large slough is produced. For this reason naevi of the mucous membranes are more suitable for treatment. Other nonmalignant growths treated by diathermy are lymphangiomata of the lip, papillomata of the skin, epulis and papillomata of the urinary bladder. In the latter case novocaine is employed in the urethra. A catheterizing cystoscope is used for illumination, the indefinite electrode is placed on the thigh and the active electrode is buried in the papilloma. The current is turned on for from ten to fifteen seconds and is then switched off. This is repeated several times. A case treated in this manner showed a smooth scar in the bladder at the site of the former papilloma after four treatments.

**Stone in the Submaxillary Gland**, by C. Thurston Holland.—The patient presented a painless swelling under the left jaw which had persisted for six weeks. Palpation with one finger in the mouth and one externally gave the sensation of a thickening, but no definite hardness was felt. Two plates, with the left side of the face downward, were taken. In one the chin was midway between flexion and extension and in the other the chin was fully extended. A soft tube was employed and a short exposure given. The second plate showed the stone through the shadow of the right lower jaw. It was removed the following day and weighed 0.31 grain.

**Congenital Malformation of Both Hands and Forearms**, by J. Metcalfe.—The patient, a clerk aged twenty-four years, had the following unusual malformations of the hands and forearms. The right arm showed an ankylosed elbow and a bowed and hypertrophied radius. The ulna was thick above and small below. There were four or five carpal bones, three metacarpals, one digit with three phalanges and two digits with two phalanges each. The left arm also showed an ankylosed elbow with a thick radius and an ulna which is expanded above and undeveloped below. There were also about five carpals and three metacarpals. The thumb had two phalanges and the little and ring finger had one set of phalanges between them, a bridge between the two metacarpals carrying all the phalanges, three going to the apparent ring finger and two to the little finger.

## ARCHIVES OF OPHTHALMOLOGY

June, 1914

**The Study of Bitemporal Hemianopsia with New Instruments and Methods for Detecting Slight Changes.** by Clifford B. Walker.—The key-note of this paper is that an examination of the field of vision with only one size of disc is just as incomplete as examination of vision itself with one size of letter. In each case the functional ability of certain regions of the retina should have been tested with respect to only one visual angle, whereas a series of visual angles should have been used to make the examination complete. Hence the writer has devised new instruments for this purpose and reports his findings in a number of cases of bitemporal hemianopsia. The discs cover a large range of visual angles, from  $1.7^{\circ}$  to  $8^{\circ}$ , and the findings are of aid in determining the status of atrophy, or optic block, the diagnosis, and the prognosis. Temporal islands of vision, which occur in these cases, probably represent the strongest part of the temporal field, and add encouragement to the prognosis, as does also a response to large discs in a defective field.

## SOUTHERN MEDICAL JOURNAL

June, 1914

**Intestinal Parasites in Adults; Some Symptoms.** by H. L. McNeil.—In 1,500 cases admitted to the Southern Pacific Hospital, Houston, intestinal parasites were found in 2.9 per cent. About eight per cent. of the parasitic infections were complicated by other diseases, a percentage of 2.1 uncomplicated infections. As regards the proportion of other diseases, it is found that intestinal parasites compare with affections such as typhoid fever, pneumonia, appendicitis, etc., as a cause of disability and of economic loss. In most of these cases there was found an increase of eosinophiles in the blood, and, indeed, in many instances, an unexplained eosinophilia first led to the suspicion of parasitic infection. A process which was of great assistance in detecting ova, and the parasites themselves, in the stools was the antiformin-ether method of Yavita, which was found much superior to any other for extracting ova, and especially valuable in studying liquid or partly solid stools. Another point of great value in detecting parasites was the administration of one or more small doses of santonin and calomel, followed in an hour or so by a saline cathartic. It is important to remember that one negative stool examination is not sufficient to rule out a parasitic infection. The following facts have been especially impressed upon the author by this study: 1. Indefinite and unexplained abdominal pains or tenderness should make one suspicious of intestinal parasites. These should be thought of in all cases of alleged chronic or subacute appendicitis. 2. The adult negro of the South West is apparently practically immune to hookworm infection. 3. Many apparently normal men who harbor parasites are subject to certain indefinite complaints, usually diagnosed as indigestion, cramps, biliousness, mild diarrhea, malaria, influenza, etc., which are really symptoms of parasitic infections. 4. An otherwise unexplained eosinophilia is good evidence of parasitic

infection, even though the parasites are not discovered at the first stool examinations; but an absence of eosinophilia does not rule out such infection.

**Conservative Treatment of Fractures,** by R. W. Knox.—The tendency is to become biased in favor of radical methods, when a discriminating selection of the form of treatment is most suitable to the case in hand. The secret of the marked success of Lane, who does the bone operation with fixation in nearly all his cases, is his painstaking and excellent technique, but there is no question that some of his good results could have been accomplished as well without operation, and some of his bad results avoided in the same way. It has been Knox's experience and observation that, in the most instances, there is very little tendency to displacement, if the limb and its adjacent parts are kept immovable by properly adjusted plaster splints. We often attempt to immobilize fractures without positive knowledge that they have been properly replaced; and, unfortunately, there are fractures which no amount of manipulation, however skillful, can replace, even under anesthesia. In many of these, the only operation found necessary is to open up the fracture, evert and replace the bones, and apply a moulded plaster splint. The femur is a notable exception among the large bones of the body in showing a marked tendency to displacement after fracture, and the old method of treating fractures here has not been a success. The long steel bone plate will come nearer to giving adequate support to the bone, if properly reinforced by external support. In a recent case of fracture just below the trochanter, the author has had a good result by enclosing the entire pelvis, as well as both legs at a slight angle of abduction, in a solid plaster cast, after the bone plate had been applied.

## BRITISH JOURNAL OF CHILDREN'S DISEASES.

**Bacteriology of Cerebrospinal Fever,** by David Nabarro.—Doubt is thrown upon the generally accepted view that the Weichselbaum meningococcus is the cause of meningitis. It is thought that in meningitis, the meningococcus might be a late, not infective phase in the life history of an organism which is infective and causes the disease only in its earlier stage. To support this theory, the examination of the urine, blood, and cerebrospinal fluid in a number of acute cases of cerebrospinal fever showed Gram positive and the Gram negative organisms of Jaeger. The effects of serum treatment on the cerebrospinal fluid are a diminution in the amount of albumin, in the number of polymorphonuclear leucocytes, in the number of cocci, particularly the extracellular, and a return of the sugar.

**Pulmonary Tuberculosis in Children,** by Jessie M. Campbell.—Of great importance is the differentiation between active and latent tuberculosis. A positive von Pirquet or a Calmette reaction indicates that the body somewhere and at some time has been infected by the tubercle bacillus. The two main channels of infection are ingestion and inhalation, the latter being the more frequent. Infection is probably caused by both the human and the bovine bacillus. Cases are divided into suspected cases, in-

effect of early definite cases, caseous and fibro-caseous cases and cases of tuberculosis of the bronchial glands and hilus tuberculosis. In the first class are placed the cases showing any physical signs in the chest on repeated examination. They are examined at intervals of from four to twelve weeks, and as many as possible are sent to the open air school. In the second class, diagnosis is often difficult, a careful record of the temperature being the most valuable aid. The best treatment for these cases is prolonged rest at a sanatorium school. In the third class the diagnosis is rather easy, but the treatment required is more than hygienic and sanatorium treatment. Tuberculin does well in a good many of these cases. In the fourth class an impairment of note in the interscapular region with weakened breath sounds and the presence of the stigmata of tuberculosis are very suggestive. These cases should be treated at a resident tuberculous school.

**Self Mutilation of the Penis in Young Boys,** by Thomas H. Kellock.—Three cases are described, all being of a similar nature, in which hair twisted around the penis just behind the glans was the cause of the trouble. In one case, the child being circumcised when three years old, there was ulceration behind the glans soon after the operation. On examination the mother found a piece of hair hanging round the penis; subsequently the child passed urine from an opening on the under surface of the penis. On examination it was found that the glans was almost completely separated from the rest of the organ, the isthmus connecting them being only one eighth of an inch across, the urethra having been completely divided. Epithelium had grown over both faces of the sulcus and across the isthmus so that there was no raw surface. As to the treatment of these cases, prevention is the best. It may be a good plan not to allow complete exposure of the glans when performing circumcision, but to do a modified operation and leave a portion of the prepuce. To remedy the mutilation a plastic operation has to be performed.

#### AMERICAN JOURNAL OF TROPICAL DISEASES AND PREVENTIVE MEDICINE.

**Craigiasis,** by Nathan Barlow.—Fifty-six cases of intestinal disease resembling amebic dysentery, but due to a flagellate organism, instead of *Entamoeba histolytica*, were observed in Honduras. Of these, five were infectious with *Craigia hominis*, recently described by Craig; the other fifty-one were infections with a slightly different, new parasite, to which Barlow applies the name *Craigia migrans*. The life cycle of *Craigia migrans* was found to differ from that of *Craigia hominis* in that, instead of division of the organism occurring in both flagellate and amebic stages, each flagellate, on attaining full development, becomes an ameba without dividing, and each ameba encysts and produces a number of flagellates. The symptoms were, on the average, as severe as those produced by *Entamoeba histolytica*. There were no cases with an acute onset. The intermissions in the diarrhea seldom exceeded a week in duration. Severe hemorrhage and tenesmus were less common than in entamebic dysentery, but indefinite abdominal pain and tenderness were present nearly always. Among the complications

were noted abscess of the liver, pulmonary abscess, appendicitis, arthritis, duodenal ulcer, metastatic infections in various parts of the body, etc. The diagnosis could be made only by finding the parasites in the stools, the swimmers being very conspicuous objects. In intestinal cases, simultaneous use of emetine hypodermically, one grain daily, with corresponding doses of ipecac internally, was found most effective in the treatment. In cases of liver abscess, two grains of emetine a day for two weeks are advised. The bowels should occasionally be flushed with saline laxatives. If diarrhea results from ipecac used *per os*, it should be controlled with opium.

### Proceedings of Societies.

#### THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

*Special Queens-Richmond Meeting, Held at Forest Hills, L. I., April 5, 1915.*

Dr. L. HOWARD MOSS in the Chair.

#### **Pertussis and Its Treatment: Report of Cases.**

—This paper, by Dr. THOMAS C. CHALMERS, will be published in the JOURNAL.

Dr. CONRAD O. STUMPF had not met with favorable results from the use of vaccines such as those reported by Doctor Chalmers. He had employed two commercial preparations, one of which was the same as that used by the latter, and had observed absolutely no benefit. In addition, one of the children, with bronchopneumonia, had come very near dying. He had consequently given up the vaccine, but, encouraged by the results met with by Doctor Chalmers, he would now give it a further trial.

The president, Dr. THOMAS S. SOUTHWORTH, believed that one of the reasons why the results met with in the treatment of whooping cough were so diverse was to be found in the differences in the ages of the children. It had been his observation that under the age of two years the dangers were very great, and the disease frequently proved fatal; while in older children it was often of slight severity. Fresh air was strongly recommended, and as it was difficult to keep children to themselves when out of doors, it was easy to see how the infection was spread. The discovery of the Bordet-Gengou bacillus had marked a great step in advance, and they were now getting somewhere near the solution of the problem of pertussis. It was probable that it would be proved that the disease was by no means so infectious in the later weeks as had been supposed. The laboratory work of the department of health had recently shown that the specific bacillus could not be detected at the end of a week after the development of the whoop, and therefore it had been announced that a quarantine period of three weeks seemed to be all that was necessary. When two, three, or more cases developed successively in a family, however, the parents were apt to grow lax in precaution. Among the measures recommended in the disease he had been very favorably impressed with the Kilmer belt, which was composed of strong linen, with elastic webbing inserted at the sides. When the patient wore such a belt the paroxysms



seemed to be fewer and shorter, and certainly vomiting was diminished. As to specific vaccine, it would seem to have proved of most value as a prophylactic. Its efficacy in treatment was more doubtful, but before a definite conclusion could be reached, further clinical reports, such as those they had heard, were needed. Even at the present time, however, in severe and complicated cases it was definitely in order to make trial of the vaccine.

Dr. LEOPOLD M. ROHR said that one child in whose case he was using vaccine died from bronchopneumonia. He was now inclined to employ the combined vaccine, as used by Doctor Chalmers; up to the present he had used only the vaccine of the health department, prepared from the Bordet-Gengou bacillus alone. The department was certainly doing good work in the matter of pertussis, and should receive the encouragement of the profession. The disease could now be better controlled, since it was known that the greatest danger from infection was during the first fourteen days. As Doctor Southworth had stated, after one week following the onset of the whoop the contagious Bordet-Gengou bacillus could no longer be found. This was undoubtedly a valuable aid.

Dr. J. MILTON MABBOTT, while he had had no experience with pertussis vaccine, had recently reported a case of septicemia in which he had employed a stock vaccine with brilliant success; the urgency being so great that he could not wait to have an autogenous vaccine prepared. He had also used stock vaccines in the treatment of pneumonia. He assumed that in whooping cough, as in other infectious diseases, there were different strains of bacilli, and here also the ideal vaccine would be an autogenous one.

Dr. FRANK J. WEIGAND's plan of treatment consisted of the saturation of the patient with calcium sulphuret and the employment of either atropine, hyoscyamine, or coniine for controlling the paroxysms. As soon as a child had whooped once, he commenced the atropine, and under this treatment he had not had a case lasting over six weeks.

Doctor CHALMERS, in closing, said that while an autogenous vaccine might be ideal, it was rather hard to get and required at least forty-eight hours to prepare. It was possible that the conditions might have had something to do with his favorable results. At Forest Hills Gardens and the vicinity there was plenty of fresh air and the houses were for the most part isolated. When he had started the vaccine treatment he had been skeptical, but in the first case, it proved so satisfactory that he felt encouraged to go on.

**Surgical Considerations of Carcinoma of the Stomach.**—This paper, by Dr. JOHN F. ERDMANN, will be published in the JOURNAL.

Dr. WILLIAM BRYAN spoke of the great value of an exploratory incision where the conditions were such as to give rise to the suspicion of cancer, and urged its more frequent employment. If nothing was found, no harm would have been done, while if malignant disease was discovered, great advantage would be gained.

Dr. SAMUEL FLOERSHEIM said that while they heard a great deal about the harmlessness of a simple laparotomy, most persons objected to having

their abdomens opened unless necessity was urgent, and exploratory laparotomy was unjustifiable except in the presence of strong evidence of serious trouble. At present the early diagnosis of cancer of the stomach was somewhat on a par with that of incipient pulmonary tuberculosis. The number of tests which had been devised for such early diagnosis was sufficient proof that as yet there was no satisfactory sign, symptom, or test by means of which it could be stated with certainty that a beginning cancer was present. To suspect malignant disease was one thing; to prove its presence was another, and this proof was unfortunately wanting. Signs of tumor, retention, and cachexia were all late evidences. Some of the tests which had been advanced as of benefit were the following: V. Dungen's serological test—positive in eighty-nine per cent. of cancer cases, but also positive in ninety-two per cent. of noncancer cases. Loeper and Binet's cytodagnosis test—positive in ninety per cent. of cancer cases; positive also in fifty per cent. of noncancer cases. The Wolff-Junghaus soluble albumin test—positive in eighty per cent. of cancer cases; many mistakes, especially when blood was in the test. Of Salkowski and Kojo's colloidal nitrogen test, it had been stated that it was not specific for cancer, as it had been found to be often present in cachexia from other causes. The Solomon-Sexl urine-sulphur test had proved positive in sixty-eight per cent. of cases of carcinoma and thirty-five per cent. in cases of sarcoma, and was regarded as of value. Weichardt's epinephrine reaction was positive in eighty-one per cent. of cancer cases and negative in the majority of noncancerous cases. Friedman and Hamburger's edestin and peptone test had value only in conjunction with the usual clinical and laboratory data. Ascoli's mios-tagmin reaction had given a positive result in ninety-eight per cent. of cancer cases, but also in a large proportion of other conditions—especially pregnancy, chronic osteomyelitis, and diabetes. The glycyltryptophan test was now considered of meagre value. The x ray was of no value in either early or well advanced mucous or submucous cases, and data for diagnosis could be obtained by this means only when the disease attacked the muscularis and disturbed its function: which occurred when the cancer was beyond the early stage. The diagnosis of cancer of the stomach previous to operative diagnosis would probably resolve itself into a blood serum test.

**The Ideal Physician as the Citizen Builder.**—

Dr. IRVING DAVID STEINHARDT liked to look forward to the time when the medical profession would be real builders of useful and good members of the community, in addition to being "repair men" of the physically or mentally impaired. While it was no doubt true that first of all they should be proficient in the curative art, they should never neglect to educate themselves for the constant and zealous practice of the "citizen building" part of their work. By so doing they could more readily than in any other way refute the charge of commercialism now so often brought against them by the various weird cults, purely commercial themselves, which were always trying to usurp the honored place of the profession as medical advisors to the people.

This country, like other, needed citizens of the best type, and so each citizen had a better opportunity to improve the standard of citizenship than the members of them nations. It was their duty and privilege to make the people better, happier, and healthier, and while this would tend to diminish incomes, ideal medicine looked forward to a time when the incomes of physicians would be derived from prevention rather than from the curative part of their work. They did not want the wife and mother to be on the battlefields of life when it could be avoided. The best interests of the nation, the home, and the child were conserved and served when she was in her natural element, the home, guiding the offspring of love to the highest standards of future good citizenship. A very tardy recognition of this fact by the State itself was becoming more apparent every day, as could be seen by the number of bills introduced in the various legislatures to pay widowed mothers a stated allowance for each child, in order that they might remain at home and devote their time to the proper bringing up of their little ones. Rightly constructed bills of this kind should receive the unanimous and earnest support of the medical profession.

Little children were perhaps the most important of those they had to work with, for the young were the easier to influence, inasmuch as in their case there was less to undo. They needed the help of the home; otherwise efforts would be largely nullified. To them little talks in simple language on various topics tending to mould their characters on suitable lines were to be recommended. They should be on the lookout for poorly kept teeth, unwashed hands and faces, unbathed bodies, improper language, untruths, bad habits, and things of like nature. Everything depended on securing their confidence. They should warn parents to be on the watch for typical or atypical masturbation, a practice which was prevalent among even small children of both sexes, and if this fact was more generally recognized by physicians, it would clear up many obscure and puzzling diagnoses and bring about quick cures in many protracted and unsatisfactory cases. He advocated public lectures by physicians generally.

*Virtual Motion, April 19, 1915.*

The President, Dr. THOMAS S. SOUTHWORTH, in the Chair.

**Personal Observations on Some Medical and Other Features of the Present War.**—Dr. LOUIS LIVINGSTON SEAMAN had gone to Europe immediately on the outbreak of the war, and had had unusual opportunities for observation both in France and Belgium. In the early part of the war the soldiers of the Allies were inadequately supplied with facilities for first aid, and in consequence there had been a needless sacrifice of life and unnecessary suffering. He had been greatly impressed with the efficiency of the American hospitals, which were models in every way, and the able staffs of which were demonstrating to Europe the superiority of American surgery. It was a matter of regret that antityphoid vaccination had not been made compulsory. Among the English this was largely due to the Antivaccination Society, which had circulated the most atrocious falsehoods concerning the prac-

tice; the authorities not insisting on it for fear of its discouraging enlistments. Doctor Seaman had personally known of three instances, two of them in officers, in which men who had been inoculated against typhoid died of the disease. Whether this was due to the inefficiency of the way in which the vaccination was done or of the vaccine itself, or to the peculiar virulence of the infection in these cases, it was impossible to say. He had examined the waters of several of the rivers of France and Belgium, and found them all dangerously polluted, the colon and the typhoid bacillus being among the bacteria found. During the coming summer an immense amount of infectious disease was inevitable in Europe, and he urged the importance of having the New York quarantine transferred to Federal authority, especially on account of the probable importation of many cases of cholera and typhus fever. At the close of the war, moreover, there would naturally be a flood of immigration, and it would be desirable that the port of New York should be administered by the National Government.

Dr. EDWARD WALLACE LEE said that while first aid worked well for wounds in other parts of the body, it was not applicable to wounds of the abdomen. Here the delay in operating was generally likely to prove fatal, and it was therefore essential that there should be suitably equipped field hospitals in which laparotomies could be done promptly.

**Secretin and Its Therapeutic Possibilities.**—This paper, by Dr. J. WALLACE BEVERIDGE, was published in the JOURNAL, June 26, 1915, page 1315. Dr. WILLIAM VAN VALZAH HAYES said that up to the present secretin had not been sufficiently standardized, and consequently there was some uncertainty regarding its action. His practical experience with it had not been large, on this account, and he was glad to have the definite information which Doctor Beveridge had given. If they had a reliable preparation which could be administered by mouth, it would be a valuable addition to their therapeutic resources. In some cases it had appeared to do wonders. He would like to ask Doctor Beveridge how it affected the gastric secretion; did it increase hyperacidity? If they could increase a low urea output, it would certainly be a great gain. He believed that the medical profession had not yet availed itself of the great possibilities of this agent because there had been no standardized preparation for general use, and it was to be hoped that the expense of such a preparation would not be prohibitive.

Dr. ROLFE KINGSLEY, in looking over the meagre literature, had been impressed with the fact that in this country, at least, secretin had had but a scanty trial. Because of its characteristic action on the pancreas, nearly all those employing it had given it in diabetes; but universally it had no effect on the sugar in the urine. On the other hand, although glycosuria was not diminished, diabetes using it gained in weight from ten to twenty pounds and were greatly improved in general health. It was hard to reconcile these two observations, and he had been puzzled by the results noted until he had heard Doctor Beveridge explain the favorable action of secretin on protein metabolism and in relieving intestinal stasis. Personally, he had had little oppor-

timity for observing the therapeutic effects of secretin, but some years ago he had seen it employed in diabetes at the Vanderbilt Clinic. It was supposed that in its action on the pancreas there was included an effect on the islands of Langerhans, and that it would therefore prove of service in this disease; but the trial proved disappointing, as in some thirty cases the results were wholly nil. The secretin was administered for from three weeks to three or four months, and in one instance it produced obstinate vomiting. The preparation employed was, no doubt, an unsatisfactory one. Doctor Beveridge had stated that it was essential in the preparation of secretin for administration that the boiling point should be avoided, but the secretin used at the Vanderbilt Clinic had been boiled for four hours.

Dr. HENRY R. HARROWER called attention to the extreme importance of the work that Doctor Beveridge was doing, and emphasized the need for a more popular consideration by the profession of the therapeutic possibilities of secretin. He recalled some experiences in the treatment of conditions associated with total low solids in which the urea output was materially increased after a course of buttermilk given several times a day, and wondered if, perhaps, the lactic acid in the milk did not act like the normal gastric acid by releasing secretin from the duodenal walls, and thus stimulating the whole digestive cycle. An important field for the use of secretin preparations was in the treatment of the digestive disturbances of children, especially the summer diarrheas and marasmus. A paper regarding this by him had been published in *Pediatrics*, xxv, 430, 1913. The principal advantage from its administration lay in the regulation of digestion and the reestablishment of the normal production of the digestive juices—the most effective gastrointestinal antiseptics which could possibly be imagined. Another field for the use of secretin which had not been mentioned, was its value as a means of favoring nutrition in carcinoma. He called especial attention to the fact that it had no influence on the disease itself, but, since achlorhydria was the rule in carcinoma, secretin liberation would be reduced to a minimum because of the lack of the hydrochloric acid stimulus to the duodenum, and the exhibition of secretin would therefore be a natural stimulus to the digestive cycle, and thus prove of material service.

Dr. WILLIAM EDWARD FITCH said that notwithstanding the contention of some of the English authorities to the contrary, his personal experience had completely convinced him that secretin was a potent remedy when administered by the mouth. For about a year he had suffered from symptoms indicating intestinal stasis, and these had been completely relieved by its use in this way. When he stopped taking it he found that the symptoms returned, especially the signs of putrid gases and putrid stools, but, after taking for several days a dram of secretin solution three times a day after meals, these entirely disappeared. From his own experience, therefore, as well as from his observation of its effects on others, he was an enthusiast for secretin.

Dr. A. JUDSON QUIMBY, having been permitted to examine a number of Doctor Beveridge's cases by the aid of the x rays, could speak with regard to

the influence of secretin on intestinal stasis. The impressions received by the examination of the intestinal tract, after the administration of a bismuth meal, after having seen so many of the worst types of stasis, such as came to the x ray specialist for examination, were gratifying. Practically no ileac stasis existed, and the colon delay was materially reduced. In examining the ileum for stasis, the character of the shadows presented on the screen, the density of the bismuth, and the quantities in which the bismuth accumulated in the lower and terminal ileum, determined stasis. If the ileac contents remained very flocculent or fluid, and passed through the lower ileac coils in a thin stream, so that the colon received the entire amount within a normal period after the meal had left the stomach, ileac stasis could be pronounced absent. The flocculent appearance of the contents of the upper ileum was frequently seen in the terminal ileum after the administration of paraffin oil and laxatives of similar character. These characteristics were observed in the cases which had been treated by Doctor Beveridge and submitted to himself for examination. Having followed with interest the progress of the several patients who were examined by x ray during their treatment with secretin, he had been pleased and astonished at the remarkable improvement.

Doctor BEVERIDGE stated, in answer to Doctor Hayes's question, that in his cases gastric hyperacidity often seemed to have been improved.

### Letters to the Editors.

#### FAMOUS AMERICAN MEDICAL MEN.

NEW YORK, July 12, 1915.

To the Editors

A medical periodical of the standing of the NEW YORK MEDICAL JOURNAL is not the place for a controversy between medical men even if the subject is that of woman in the medical profession.

Dr. Simon Baruch, of this city, replied by two lengthy letters in the *New York Times* (July 4th and July 11th) to my defense of woman physicians against Dr. Richard C. Cabot's statement concerning their unfitness for general practice and research work. (See NEW YORK MEDICAL JOURNAL for June 26th.) Those who wish to read Doctor Baruch's arguments favoring Doctor Cabot's views, I refer to the above mentioned newspaper articles.

There is, however, a grave historical error in Doctor Baruch's last letter to the *Times*. After stating that there is not a single medical woman whom the profession would regard as illustrious, Doctor Baruch continues by saying, "The fact is that, since woman entered the profession, only three men have become illustrious—Lister, Koch, and Carrel." It is against this statement that I, as an American physician, desire to enter a strong protest. Lister was an Englishman; Koch, a German; Carrel is a Frenchman.

Woman has been in the medical profession in antiquity and prominently so since the beginning of the last century, and according to Doctor Baruch, no American physician has become illustrious since that time up to the present date. Has he forgotten Dr. Ephraim McDowell (1772-1830) of Danville, Ky., who performed the first successful ovariectomy and thus became the father of modern abdominal surgery? Does Doctor Baruch not know of the world famous American gynecologist, Dr. J. Marion Sims (1813-1883)? Of Dr. William T. G. Morton, who first proved to the world that ether would produce insensibility to the pain of surgical operations and that it could be used with safety? Does Doctor Baruch not know Professor A. Jacobi, the American pediatricist of international fame?

None, I believe, can appreciate the work of Koch more





Booth Tarkington, John Reed, and Faune Hurst. Living, as we do, however, where one well placed shell might make 250,000 people homeless, our mind keeps going back from the stories to the army and navy.

Chaco is in Paraguay. In the *Wide World Magazine* for July, Grubb of Gran Chaco, by Joseph Heigh-ton, tells us a good deal about the primitive way in which medicine is practised in Chaco by witch doctors. The hero is a missionary, and as missionaries to such places have usually a medical education, it was not long before there was a lively case of *invidia medicorum* between him and the indigenous practitioners. The latter used methods foreign to members of the A. M. A., characterized by poisoned arrows and the like. The native doctors of savage tribes seem to have a workable and useful knowledge of hypnosis, a weapon against disease which we use too little. There is plenty of excitement in other stories in the *Wide World* this month, e. g., in The Haunted Tomb, by C. H. Shanan, which was frequented apparently by the illuminated ghost of a tiger.

## Official News.

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the second days ending July 14, 1915:*

**Bahrenburg, L. P. H., Surgeon.** Granted two months and fifteen days' leave of absence from July 15, 1915; also granted twelve days' leave of absence from June 3, 1915, and six days' leave of absence from June 23, 1915, all on account of sickness. **Billings, W. C., Surgeon.** Granted one day's leave of absence, June 26, 1915, under paragraph 193, Service Regulations. **Bogges, J. S., Surgeon.** Directed to report to the San Francisco Quarantine Station, for duty and assignment to quarters. **Bryan, W. M., Passed Assistant Surgeon.** Granted seven days' leave of absence on account of sickness, from June 30, 1915. **Collins, George L., Passed Assistant Surgeon.** Directed to report to the chairman of a board of commissioned medical officers at the Bureau, Monday, July 19, 1915, for examination to determine his fitness for promotion to the grade of surgeon. **Ebert, H. G., Passed Assistant Surgeon.** Directed to report to the chairman of a board of commissioned medical officers at the Marine Hospital, San Francisco, Cal., Monday, July 19, 1915, for examination to determine his fitness for promotion to the grade of surgeon. **Galloway, T. C., Assistant Surgeon.** Leave of absence for five days from June 21, 1915, amended to read three days' leave of absence from June 21, 1915. **Gillespie, J. M., Passed Assistant Surgeon.** Relieved from duty at the Marine Hospital, Chicago, Ill., and directed to proceed to Ellis Island, N. Y., and report to the chief medical officer for duty. **Hommon, H. B., Sanitary Chemist.** Granted two days' leave of absence en route to Cincinnati, Ohio. **Knox, H. A., Assistant Surgeon.** Granted seven days' leave of absence from July 1, 1915. **Nydegger, J. A., Surgeon.** Granted one month's additional leave of absence from July 26, 1915. **Phelps, E. B., Professor.** Directed to proceed to Westfield, N. Y., for the investigation of the disposal of industrial wastes; also directed to proceed to Cincinnati, Ohio, to supervise the studies of industrial wastes now being conducted at that station. **Roberts, Norman, Passed Assistant Surgeon.** Directed to report to the chairman of a board of commissioned medical officers at the Bureau, Monday, July 19, 1915, for examination to determine his fitness for promotion to the grade of surgeon. **Rucker, W. C., Assistant Surgeon General.** Granted fourteen days' leave of absence en route to station at Washington, D. C. **Smith, F. C., Passed Assistant Surgeon.** Directed to report to the chairman of a board of commissioned medical officers at the Bureau, Monday, July 19, 1915, for examination to determine his fitness for promotion to the grade of surgeon. **Sullivan, M. X., Biochemist.** Directed to proceed to Spartanburg, S. C., and report to the medical officer in charge of the pellagra hospital for duty in connection with studies of pel-

lagra. **Watkins, J. A., Assistant Surgeon.** Granted permission under paragraph 198, Service Regulations, to go beyond the sea while on leave of absence. **Weldon, L. O., Assistant Surgeon.** Designated as a member of a Coast Guard Retiring Board to meet at the Marine Hospital, San Francisco, Cal., July 20, 1915, vice Surgeon R. M. Woodward, relieved. **Wertenbaker, C. P., Surgeon.** Granted one month's leave of absence from August 1, 1915. **Wilson, R. L., Surgeon.** Directed to assume charge of all the operations of the Service at Galveston, Texas, during the absence of Surgeon L. P. H. Bahrenburg on leave. **Woodward, R. M., Surgeon.** Granted one month's leave of absence on account of sickness, from July 8, 1915.

### Boards Convened.

Board of commissioned medical officers convened to meet at the Bureau, Monday, July 19, 1915, for the purpose of conducting the mental and physical examinations of Passed Assistant Surgeons Norman Roberts, George L. Collins, Herbert M. Manning, and Frederick C. Smith to determine their fitness for promotion to the grade of surgeon.

Detail for the board: Assistant Surgeon General W. G. Stimpson, chairman; Assistant Surgeon General L. E. Cofer, member; Surgeon A. D. Foster, recorder.

Boards of commissioned medical officers convened to meet July 12, 1915, for the physical examination of officers of the Coast Guard for promotion.

Bureau, Washington, D. C., detail for the board: Assistant Surgeon General W. G. Stimpson, chairman; Passed Assistant Surgeon G. L. Collins, recorder.

Marine Hospital, Detroit, Mich., detail for the board: Senior Surgeon H. W. Austin, chairman; Acting Assistant Surgeon K. L. Weber, recorder.

Marine Hospital, Stapleton, N. Y., detail for the board: Senior Surgeon George W. Stoner, chairman; Passed Assistant Surgeon C. P. Knight, recorder.

Board of commissioned medical officers convened to meet at the Marine Hospital, San Francisco, Cal., on Monday, July 19, 1915, for the purpose of conducting the mental and physical examination of Passed Assistant Surgeon Harvey G. Ebert to determine his fitness for promotion to the grade of surgeon.

### United States Army Intelligence:

*Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the week ending July 17, 1915:*

**Anderson, John B., First Lieutenant, Medical Corps.** Relieved from duty at Fort Sam Houston, Texas, to take effect at such time as will enable him to comply with this order, reporting by letter to the commanding officer, Twenty-seventh Infantry, and will proceed at the proper time to join that organization en route to San Francisco, Cal., and then proceed on the transport to sail from San Francisco, Cal., on or about September 7, 1915, to the Philippine Islands, and upon arrival at Manila will report in person to the commanding general, Philippine Department, for assignment to duty. **Bell, Leonard P., First Lieutenant, Medical Reserve Corps.** Ordered to proceed from Fort Stevens, Oregon, to Gearhart, Oregon, for temporary duty. **Billingsales, C. C., Major, Medical Corps.** Ordered to proceed to Dixon, Ill., for field duty July 11-18, 1915. **Coffey, A. McD., First Lieutenant, Medical Reserve Corps.** Granted seven days' leave of absence. **Dunbar, L. R., Captain, Medical Corps.** Ordered to proceed on July 1st to Ludington, Mich., for duty from July 5 to August 8, 1915. **Eckels, Lauren S., Captain, Medical Corps.** Relieved from duty at Fort Grant, Canal Zone, and will proceed by steamer to San Francisco, Cal., and then proceed by the first available transport to Hawaii, and upon arrival at Honolulu will report in person to the commanding general, Hawaiian Department, for assignment to duty. **Ferenbaugh, Thomas L., Captain, Medical Corps.** Granted leave of absence for three months, with permission to apply for an extension of one month, to take effect upon his arrival in the United States. **Ford, H. G., Captain, Medical Corps.** Ordered to Presidio, San Francisco, Cal., for duty until September 6, 1915. **Frick, Euclid B., Lieutenant Colonel, Medical Corps.** Ordered to proceed to Texas City, Texas, and

temporary duty as surgeon of that division, relieving Dr. Walter B. Thompson, Medical Corps, who upon being thus relieved will return to his proper station. **Kirk, Norman T.**, First Lieutenant, Medical Corps. Relieved from duty with the Second Division, Canal Zone, and upon arrival will report in person to the commanding officer of that post for duty and by letter to the commanding general, Eastern Department. **Kremers, Edward D.**, Captain, Medical Corps. Relieved from duty in the Hawaiian Department, to take effect at such time as will enable him to comply with this order, and upon arrival at Honolulu, Hawaii, of the transport to sail from Manila, P. I., on or about October 15, 1915, will proceed on that transport to San Francisco, Cal., and upon arrival report for further orders in accordance with General Orders No. 80, October 26, 1914, War Department. **McAfee, Larry B.**, Captain, Medical Corps. Relieved from duty in the Hawaiian Department, and upon arrival at Honolulu, Hawaii, of the transport to sail from Manila, P. I., will proceed on that transport to San Francisco, Cal., and report for further orders. **Magee, James C.**, Captain, Medical Corps. Ordered to proceed at once to Fort Riley, Kans., and report in person to the commanding officer of that post for temporary duty, and upon the completion thereof, will return to his proper station; detailed as a member of the board of officers of the Medical Corps, appointed to meet at Fort Riley, Kans., for the purpose of conducting the preliminary examination of applicants for appointment to the Medical Corps of the Army, vice, Major William R. Eastman, Medical Corps, hereby relieved. **Owen, Leartus J.**, Captain, Medical Corps. Relieved from duty in the Hawaiian Department, and upon arrival at Honolulu, Hawaii, of the transport to sail from Manila, P. I., will proceed on that transport to San Francisco, Cal., and report for further orders. **Rice, William F.**, First Lieutenant, Medical Reserve Corps. Ordered to active duty in the service of the United States, on account of an existing emergency, and will proceed to the Walter Reed General Hospital, Washington, D. C., and report in person to the commanding officer of that hospital for duty. **Roberson, H. H.**, Captain, Medical Corps. Ordered to Tobyhanna, Pa., by telegraph to C. O. H. G. Wright. **Robertson, James A.**, First Lieutenant, Medical Reserve Corps. Ordered to active duty in the service of the United States on account of an existing emergency, and will report to the commanding officer, Fort Thomas, Kentucky, for duty, during the absence of Major Ernest L. Ruffner, Medical Corps, upon whose return to Fort Thomas, Lieutenant Robertson will stand relieved from active duty in the Medical Reserve Corps. **Tenney, E. S.**, First Lieutenant, Medical Reserve Corps. Relieved from duty at Fort Liscum, Ala., and directed to return to station, Fort Baker, California. **Truner, John W.**, First Lieutenant, Medical Reserve Corps. Ordered to active duty in the service of the United States, on account of an existing emergency, and will proceed to Fort Riley, Kansas, and report in person to the commanding officer, Central Department. **Van Kirk, H. H.**, Captain, Medical Corps. Granted two months' leave of absence, effective about August 14, 1915.

Each of the following named officers of the Medical Corps is relieved from duty with the Second Division and from further station at the post specified after his name, to take effect at such time as will enable him to comply with this order, and will report in person to the commanding officer, Twenty-seventh Infantry, for duty with that organization en route to San Francisco, Cal., and will proceed on the transport to sail from San Francisco on or about September 7, 1915, to the Philippine Islands, and upon arrival at Manila, will report in person to the commanding general, Philippine Department, for assignment to duty: First Lieutenant Coleridge L. Beaven, Fort Washington, Maryland; First Lieutenant Walter P. Davenport, Fort Sam Houston, Texas; First Lieutenant William G. Guthrie, Fort Riley, Kansas; First Lieutenant E. Frederick Thede, Fort Porter, New York; First Lieutenant Wilson C. von Kessler, Fort Niagara, New York; First Lieutenant Lamphear W. Webb, Jr., Madison Barracks, New York; First Lieuten-

ant Robert H. Wilds, Fort McPherson, Georgia; First Lieutenant Alexander W. Williams, Washington Barracks, D. C.; Captain Robert M. Hardaway, Texas City, Texas; Captain Harley J. Hallett, Fort Crook, Nebraska.

## Births, Marriages, and Deaths.

### Born.

**Tucker.**—In Teh Thow Sung, China, on Sunday, June 27th, to Dr. and Mrs. Francis Tucker, a son.

### Married.

**Bulkeley-McLean.**—In Kingston, Canada, on Wednesday, June 30th, Dr. Howard S. Bulkeley, of Little Falls, N. Y., and Miss Alice McLean. **Dowling-Land.**—In Detroit, Mich., on Wednesday, June 30th, Dr. T. J. Dowling and Miss Louise D. Land. **Entwistle-Rose.**—In Johnstown, Pa., on Monday, July 12th, Dr. Robert M. Entwistle and Miss May Belle Rose. **Hall-McDowell.**—In Portland, Ore., on Wednesday, June 30th, Dr. Robert G. Hall and Dr. Edith A. McDowell. **Robbins-Sloan.**—In Brockton, Mass., on Saturday, July 3d, Dr. Elmer E. Robbins, Jr., of New Bedford, Mass., and Miss Ruby Sloan. **Sullivan-Rose.**—In Humberstone, Ontario, on Thursday, June 24th, Dr. James C. Sullivan, of Buffalo, N. Y., and Miss Laura Elizabeth Rose.

### Died.

**Auld.**—In Buffalo, N. Y., on Friday, July 9th, Dr. Lucius Auld, aged forty-eight years. **Bennett.**—In New York, on Monday, July 12th, Dr. James Albert Bennett. **Burvenich.**—In Denver, Colo., on Saturday, July 3d, Dr. Charles H. Burvenich. **Currier.**—In Quincy, Mass., on Friday, July 9th, Dr. Edward Merrill Currier, aged fifty-seven years. **Davison.**—In Flemington, W. Va., on Sunday, July 4th, Dr. Ithamar Davison, aged sixty years. **Dillow.**—In New York, on Tuesday, July 13th, Dr. George Morris Dillow. **Dispenette.**—In Kalama-zoo, Mich., on Monday, July 5th, Dr. Andrew Jackson Dispenette, aged seventy-nine years. **Dumm.**—In Baltimore, Md., on Monday, July 12th, Dr. William M. Dumm, aged twenty-nine years. **Eshenour.**—In Cross Lake, N. Y., on Sunday, July 4th, Dr. Robin Adair Eshenour, of Jordan, N. Y., aged twenty-seven years. **Ferrin.**—In Calistoga, Cal., on Thursday, July 1st, Dr. Joseph Ferrin, formerly of Halfmoon Bay, Cal., aged twenty-nine years. **Grace.**—In Clarks Mills, Pa., on Wednesday, June 30th, Dr. Thomas J. Grace, aged fifty years. **Haner.**—In Tannersville, N. Y., on Saturday, July 3d, Dr. George Haner, aged sixty-five years. **Jones.**—In Tacoma, Wash., on Monday, July 5th, Dr. Josiah Jones, aged fifty years. **Kuster.**—In Fallbrook, Cal., on Saturday, July 3d, Dr. Charles Edward Kuster. **Leech.**—In Glasgow, Ky., on Saturday, July 10th, Dr. Joseph Sherrill Leech, aged fifty-seven years. **McCrory.**—In Mayfield, Ky., on Saturday, July 10th, Dr. J. H. McCrory, aged sixty-four years. **McEvoy.**—In Fort Wayne, Ind., on Wednesday, July 7th, Dr. James B. McEvoy, aged forty-one years. **Maloney.**—In New Britain, Conn., on Tuesday, July 13th, Dr. Thomas A. Maloney, aged forty-one years. **Merrill.**—In North Adams, Mass., on Thursday, July 8th, Dr. Samuel L. Merrill, aged seventy-seven years. **Nash.**—In Bath, Ont., on Thursday, July 8th, Dr. Samuel Nash, aged eighty-two years. **Nowell.**—In Altoona, Pa., on Friday, June 25th, Dr. Mary Nowell. **Remer.**—In Dallas, Texas, on Friday, July 2d, Dr. Anton T. Remer, aged fifty-three years. **Schoonmaker.**—In Mercedes, Texas, on Sunday, July 4th, Dr. Edward C. Schoonmaker, aged forty-four years. **Sherman.**—In Milwaukee, Wis., on Friday, July 2d, Dr. Lewis Sherman, aged seventy-one years. **Snyder.**—In Council Bluffs, Iowa, on Tuesday, July 6th, Dr. Susan Snyder, aged fifty-four years. **Taylor.**—In Marshall, Texas, on Monday, July 5th, Dr. James Howard Taylor, aged sixty-two years. **Tibbitts.**—In Geneva, Ohio, on Monday, July 5th, Dr. Francis E. Tibbitts, aged forty-nine years. **Trimmer.**—In Pacific Grove, Cal., on Monday, July 5th, Dr. Oliver S. Trimmer, aged eighty-two years. **Writer.**—In Chautauque, N. Y., on Friday, July 9th, Dr. Theodore Writer, of Otisville, N. Y., aged seventy-seven years.



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### Original Communications.

#### TOTAL TRANSVERSE LESIONS OF THE SPINAL CORD.

By JAMES HENRIE LLOYD, M.D.,  
Philadelphia.

As is well known, Bastian, in 1890, first pointed out the effects of total transverse lesions of the spinal cord in man.<sup>1</sup> In these lesions there is complete flaccid paralysis, with absence of the tendon jerks, and complete anesthesia; also paralysis of the sphincters, and wasting and degeneration of the muscles. This syndrome is so widely at variance with preconceived ideas about the physiology and pathology of the spinal cord, that it has always presented something of a problem in neurology. Charcot and his school had taught that an interrupting lesion in the pyramidal tracts, causing lateral sclerosis, was always followed by a spastic paralysis, with increased tendon reflexes, below the seat of the lesion; and we know that this is a common observation in the case of such a lesion. The explanation offered by Charcot was that an inhibitory influence of the cerebrum was cut off, and that in consequence the lower centres in the cord overacted; and this overaction was intensified by a constant inflow of sensory stimuli. The reflex arc, as it were, was liberated from the governing control of the cerebrum, and a spastic or hypertonic paralysis resulted, with exaggerated reflexes. It was taught, moreover, that the nutrition of the paralyzed muscles was not affected, since the trophic function of the multipolar cells in the anterior horns of the spinal gray matter was not interfered with, much less abolished. Such a descending lateral sclerosis, with hypertonus, spastic paralysis, and increased tendon jerks, is seen in old hemiplegias and in many lesions of the spinal cord.

Bastian's observations, which have been confirmed by other clinicians, cannot be harmonized with this doctrine of Charcot's. A total transverse lesion, say in the upper dorsal cord, presents all the conditions required, it would seem, to cause a spastic paralysis of the legs, with exaggerated knee jerks, ankle clonus, and preservation of the nutrition of the paralyzed muscles, for it cuts off the pyramidal tracts high above the lumbar enlargement, and does not directly injure the multipolar cells in this part of the cord. Nevertheless, such a lesion causes a flaccid paralysis, with abolished knee jerks

and with very marked atrophy in the lower limbs—the condition known as "isolation dystrophy."

The only explanation offered for this anomalous state has been that it was caused by "shock." But this is practically no explanation, for we do not know how or why shock could do such a thing, especially as in many cases the condition is permanent, and we should suppose that mere shock could be recovered from, and would allow the lower levels of the cord to resume their activity, and to proceed in time to overaction.

This subject derives additional interest today from the fact that new theories are being advanced to explain the phenomena of tonus and hypertonus in the muscles. Most of these theories are based upon one cardinal idea, i. e., that special sets of fibres are concerned in giving tone to the muscles. The very existence and location of these fibres are still matters of mere theory, and I shall not attempt to review these theories in great detail. They presuppose the existence of extrapyramidal tracts, an idea which has especially been brought forward by Kinnier Wilson in his work on the lenticula.<sup>2</sup> Mills has also elaborated and illustrated a theory of a "tonectic apparatus," which, however, is entirely cerebral, as well as extrapyramidal, passing from the midfrontal cortex by way of the lenticula and the red nucleus.<sup>3</sup>

Doctor Mills, in a personal communication to the writer, has defined his idea as follows:

Tone is preeminently a cerebral function and largely cortical; it is fundamentally dependent upon sensation, but may be also secondarily dependent upon idea; and there is an extrapyramidal cerebral tonectic apparatus, cortical and striate, which is structurally separate from the motor projection systems. It has special cortical areas of representation, and these are connected by fibre systems with the sensorimotor executive apparatus. The cortical tonectic zone is chiefly midfrontal, the striatum being an association or integration region where are regrouped the excitations from the differentiated cortical centres for tone. The cortical tonectic area is not necessarily topographically entirely segregated from the pyramidal motor cortex, each motor centre probably having its separate outlying cellular tonectic annex or dependency. As most of the pyramidal motor system is represented in the postfrontal region, chiefly in the precentral convolution, the tonectic centres are mainly located anterior to this convolution.

These schemes, however, having to do entirely with tracts, or alleged tracts, in the cerebrum and basal structures, cannot serve to explain alterations in the functions of the spinal cord from lesions that are purely spinal, hence they do not apply to the phenomena caused by total transverse lesions of the spinal cord.

<sup>1</sup>Former Wilson  
<sup>2</sup>Trans. Am. Neurology Assoc. Meeting, p. 103.

<sup>3</sup>Med. Chi. Trans., 1, 23, p. 171, 1896.

The idea of a special tonectic apparatus, moreover, is not entirely new. Hughlings Jackson, whose name is associated with so much in neurology, especially by English writers, advanced a similar view many years ago, but he placed this tonectic function in the cerebellum. Thus it appears that there is no unanimity on this subject, for the extrapyramidal tonectic fibres are placed by some in the cerebrum, and by Jackson in the cerebellum. It is not to be wondered at, therefore, that still another location should be sought for these supposititious fibres, and that in view of what we see in cases of transverse lesions of the spinal cord, some one should seek for them in the cord itself.

This has been done by Walshe in a recent paper on the Physiological Significance of the Reflex Phenomena in Spastic Paralysis of the Lower Limbs.<sup>1</sup> Walshe refers to the theory of extrapyramidal subcortical motor systems to explain spasticity, hyper-tonus, and reflex movements, with which are associated the names of Foester, Monokow, Rothmann, and others. Sherrington has alleged "the existence of two reflex systems in the brain stem and in the cord, each governing its own group of muscles, and giving rise to reflex reactions peculiar to itself." One of these is *extensor*, the other *flexor*, having different centres. Walshe asserts that in total transverse lesions the receptive field for the flexion reflex is confined to the sole of the foot, and no reflex response can be obtained from any other part of the limbs.

Walshe's idea (as shown in his diagram)<sup>2</sup> is that there is an extrapyramidal tract, arising in the paracerebellar nuclei, and going down to the extensor neurons in the gray matter of the cord, which is tonic (or tonectic for Mills). This tones up only the extensor fibres. In a pure lesion of the pyramidal tract there is paralysis of the *extensor* type, with reflex activity of both extensor and flexor muscles increased. But in a more extensive cord lesion the extrapyramidal fibres are cut off; this causes *loss of tone in the extensors*, and a *paraplegia in flexion* results. In total transverse lesions the same result arises, but is obscured by shock and isolation dystrophy; the legs are flaccid, but still some flexion reaction remains. This proves that the flexion reflex is situated in the cord. According to this view there are three types of spinal cord paralysis:

1. Paralysis in which the extensors act, or, rather, overact—owing to involvement of the pyramidal tract alone, allowing the extrapyramidal tract or tonectic tract to overact, and causing spastic paralysis, with increased tendon jerks.

2. More extensive cord lesion, involving not only the pyramidal tract, but also the extrapyramidal tract, causing paralysis of the extensors and of the tonectic fibres, hence resulting in paraplegia in flexion, i. e., overaction of the flexors. This is seen in many cases of trauma of the cord. We have all seen these paraplegics, with the legs drawn up on the abdomen.

3. Total transverse lesion, with shock and isolation dystrophy, causing flaccid paralysis, loss of

tendon jerks, atrophy, anesthesia, and paralysis of the sphincters. But even in this type there is often preserved flexion reflex movement, showing that these centres of the flexion reflex movements are in the cord. The field of excitation for these reflex movements is entirely in the sole of the foot, i. e., it is only by irritating the sole that these movements of flexion are obtained. They may be accompanied by the plantar dorsiflexion reflex of Babinski, which according to Walshe is associated always with flexion movements at the knee and hip. In this type there is no spastic rigidity or contractures, for the tonectic extrapyramidal tract is, of course, paralyzed.

I am not the champion of any of these theories, yet I recognize that the several types above mentioned are seen in neurological practice. The difficulty in accepting these theories is chiefly that these extrapyramidal tracts are not yet clearly to be recognized in anatomy. They exist merely in hypothesis. They are postulated merely to explain a condition, and there is no certainty as yet even about the necessity for them, much less about their actual existence. It seems to me that the hypothesis upon which they rest, creates difficulties which are even greater than the difficulties which that hypothesis is supposed to sweep aside, for I can conceive that these various types may be explained by variations simply in the pyramidal tracts. Why should we call into existence a special toning apparatus, when nerve tone is an essential function of every motor neuron? Why push this special function of "tone" farther back, as it were, and place it in a special set of fibres? Why is it any more difficult to conceive of tone in motor neurons than it is to conceive of it in extrapyramidal neurons? I do not attempt to answer these queries, but for me they express problems that are very real.

The object in this paper is to present a clinical study of this subject as illustrated in some rather unusual cases of lesions of the spinal cord. These cases present some difficulties of interpretation, and may be taken as instances for the presentation of the problem rather than for the solution of it.

*Total transverse lesion in poliomyelitis.* The first case is an example of total transverse lesion of the spinal cord occurring in poliomyelitis.<sup>3</sup> A total transverse lesion of the cord in poliomyelitis must be a rare affection, as there appear to be but few instances of it mentioned in the literature. Wickman does not give such an instance in his careful study of the disease. Sachs reported a rather typical case in a young woman who made a rapid recovery.<sup>4</sup> The patient had sensory and motor paralysis below a certain level, with involvement of the sphincters, and with *exaggerated* tendon jerks. Skoog reported a well studied case in a girl, aged thirteen years, in which there was evidently a transverse myelitis, somewhat diffused downward from about the seventh dorsal vertebra.<sup>5</sup> The patient had paralysis of the lower limbs, anesthesia, paralysis of the bladder and bowel, and *abolished* knee jerks. It may be a question, however, whether this case can fairly be

<sup>1</sup>This case was reported in *Internationale Clinica*, IV, 24, p. 102, from which it is abstracted in the text above.

<sup>2</sup>*Ann. of Nervous and Mental Dis.*, 90, p. 247, 1912.

<sup>3</sup>*Minnesota J. M. A.*, p. 704, Sept. 7, 1912.

<sup>4</sup>*Minnesota J. M. A.*, p. 704, Sept. 7, 1912.

<sup>5</sup>*Minnesota J. M. A.*, p. 704, Sept. 7, 1912.

included in the group of simple transverse lesions, as the autopsy revealed extensive diffused myelitis below the upper level of the lesion: hence the lumbar enlargement may not have entirely escaped; a fact which would account for the lost knee jerks. The same objection applies to the cases recently reported by Netter and Levaditi,<sup>9</sup> which were really of the polyneuritic or meningitic type of poliomyelitis rather than simple segmental transverse myelitis. Not one of them appears to be really a case of pure localized transverse lesion. There was anesthesia as well as involvement of the sphincters, with *abolished* knee jerks. But cases of diffused myelitis below a certain level do not present the conditions to which reference is made in this paper, for such conditions presuppose a total, but localized transverse lesion at a certain level only, leaving the cord below intact. Sach's case apparently meets these conditions, as does also the following case which I report; but as Sach's patient, as well as mine, recovered, there is no way of stating positively, except from the clinical showings, just what the lesion was in either case. Clinically, however, this lesion in either case was apparently a localized transverse one.

There is no apparent reason why the infection of poliomyelitis may not cause a total transverse lesion of the cord. It is capable, as we know, of causing extensive lesions in the brain, in which both the white and gray matter are involved. Thus Wickman speaks of the temporal lobe and the optic thalamus being the seats of rather extensive lesions. What occurs thus in the brain might be supposed capable of occurring in the cord. My observation of such a possible lesion is based on only one case, but this case was so noteworthy, and even anomalous, that I present a brief statement of it here.

CASE I. D. C., girl, aged ten years, was taken, March 10, 1914, with pain in her back and legs, and her mother noticed that she was weak in her legs and tended to fall on her knees. She was feverish and vomited, and the next morning was almost paraplegic, and had lost control of her bladder and bowel. On her admission to the hospital a few days later there was complete paraplegia. The knee jerks were *increased*, and there was a lively ankle clonus and a Babinski reflex on each side. The paralysis was not flaccid and there never was atrophy. There was also tactile anesthesia from the middorsal region down; also weakness of the bladder and sphincter ani. The arms and cranial nerves were not affected. The temperature ran a slightly febrile course for a few days. The cerebrospinal fluid was clear, and the Wassermann, Nonne, and Noguchi tests were negative. The x ray did not show any lesion of the vertebrae. The appearance of the case for a while was grave, as there was every indication of a severe transverse lesion of the spinal cord. In view of the extremely acute onset, with symptoms of an acute infection, a diagnosis of poliomyelitis was made. In the course of a few weeks the child made a good recovery. The paralysis entirely disappeared, leaving no residual paralysis of any kind. The anesthesia also disappeared, but the active deep reflexes continued, although less lively. In this state of improvement the child left the hospital in about a month.

Now according to the accepted views of the Bastian syndrome, and according to Walshe's theory, this patient should have presented a flaccid paralysis with *abolished* tendon jerks; that is, if her lesion was a total transverse one. Moreover, as the condition came on very suddenly, there was the added element of "shock"; not so great as in a case of trauma, but still a very positive shock to the

tissues. That it was a total transverse lesion seems to be indicated by the fact that all transmission of impulses both upward and downward was *abolished*, and the sphincters were paralyzed. But if it was a total transverse lesion, the extrapyramidal or tonic tract must also have been interrupted, and therefore, according to the theory, the patient should have presented lost tendon reflexes, whereas in fact the knee jerks were exaggerated, and there was ankle clonus and a Babinski reflex.

It throws no additional light on this case to know that a few months later the patient had another attack, in which there was a left sided facial and crural paralysis.

I believe that this case is really no exception to the rule, but that the explanation probably is that the lesion was very evanescent, and not so completely transverse and destructive as it seemed. This is shown by the fact that the child recovered. Much of the symptomatology may have been caused merely by a transient interference with circulation, and as this rapidly subsided, the lower levels of the cord did not practically suffer the effects of a total transverse lesion.

This syndrome is better shown in lesions which are either sudden or rapid in onset, and totally transverse in extent; such, for instance, as are caused by traumata, or by progressive organic lesions, like tumors or destructive myelitis.

*Transverse lesion from a tumor of the spine.*  
The history of this case is not as complete as could be wished, as the patient was under observation for only a few days before her death, and no autopsy could be obtained.

CASE II. Mrs. T., a white woman, aged sixty years, was admitted to the hospital, with a history of having begun to have difficulty in walking several months before. She had gradually lost all power to walk, and was bedridden when first examined. She had almost complete paraplegia; there was still a very little power to flex the legs at the knees and hips. The paralysis was flaccid, without contractures, the legs lying extended, and being freely movable passively. The knee jerks were *abolished*. Anesthesia was complete from the waist down. There was incontinence of urine and feces, and there was a bedsores over the sacrum. There was also a reflex movement of flexion on irritation of the soles. The patient complained of severe pain in the upper thorax, much like a girdle pain. A Wassermann test was negative. The x ray showed a lesion, like a bony growth of the spine, at about the third dorsal vertebra, but the spine was not deformed externally, although it was sensitive on percussion. Physical examination failed to reveal the signs of aneurysm, although the opinion of one expert roentgenologist who examined the plate, was that the lesion was an aneurysm of the aorta. Others thought that the shadow indicated a bony growth of the spine, possibly an osteosarcoma.

Special points of interest in this case were that the lesion had come on gradually, without any element of "shock," and that the case presented almost a pure picture of total transverse lesion, with flaccid paralysis of the legs; and abolished tendon reflexes. Nevertheless, very feeble voluntary movements of flexion were retained; yet the patient did not present a "paraplegia in flexion."

*Total transverse lesion from pistol shot wound of the upper dorsal cord.* The following case illustrates most clearly the effects of a trauma of the upper spinal cord causing a total transverse lesion. It is exactly the kind of a case on which Walshe bases his theory of an extrapyramidal tonic tract in the spinal cord.

CASE III. A. M., Italian, aged twenty-seven years, was brought into the Methodist Hospital, January 11, 1915, having been shot in the back with a pistol about 2:30 p. m. of that day. On admission his legs were totally paralyzed, but he could move his arms freely. The knee jerks were absent on both sides, but the plantar reflexes of defense could be obtained. Sensation to touch was lost from the nipples down. Both sphincters were involved.

<sup>9</sup> *Bull. et mém. de l'Acad. méd. des Sci. de Paris*, 12, 2 avril, 1913.



Two wounds were present, one about the left scapula about three inches from the middle line, the other in the right thigh. The x ray showed one bullet lodged in the spinal canal at the upper border of the second dorsal vertebra; the other bullet lodged in the soft parts of the thigh in front of the femur. The latter bullet can be ignored, as it has no bearing on the case. The man was operated on promptly by Doctor Hutchinson, and the bullet removed from the spinal canal. It had not penetrated the dura, but had evidently torn it slightly, for there was an escape of cerebrospinal fluid. The dura was not further opened at the operation, and so far as could be seen the parts did not seem to be badly damaged.

I first examined the patient three days later, and found total motor paralysis in both lower extremities, with loss of the deep reflexes and no ankle clonus nor Babinski reflex. Complete anesthesia extended downward from a line a little above the nipples. The arms were not paralyzed nor anesthetic, but the right arm was weak and painful and a little swollen. The sphincters were paralyzed. An opinion was given that there was a total transverse lesion of the upper spinal cord, at about the third dorsal segment, and that the prognosis was grave. The lesion was probably a traumatic hematomyelia and softening.

On January 24th, the condition remained about the same, except that there had been a slight return of sensation in some areas on the legs and thighs, with some pain and formication in the right arm. The gain in sensation, however, was not maintained, and soon there was complete anesthesia once more.



Fig. 1. Transverse lesion of the spinal cord from pistol shot at the second dorsal vertebra. The right leg, as shown, is flaccid.

The patient's condition at the time of the present writing, four months after the injury, is one of complete abolition of all the functions of the spinal cord below the seat of the trauma. He is as one who has no spinal cord below the level of the third dorsal segment. The only exception is that a very weak reflex movement of flexion of the legs and thighs is obtainable on irritation of the soles of the feet. The paralysis of the legs is complete and is of the flaccid type, without contractures, the legs lying extended with the feet in the position of foot drop. All the deep and superficial reflexes are abolished. Sensation is entirely abolished for touch and pain below the level of the nipples, and the sphincters are totally paralyzed. Most remarkable of all, there is extreme wasting of all the muscles of the thighs and legs, and the faradic contractility is reduced almost to a minimum, but there is no fibrillation. This wasting presents an almost exaggerated form of the so called isolation dystrophy. The spinal cord is thus practically dead. The reflex movement of flexion on irritation of the soles is very feeble, but attention is particularly called to it, because it displays the only remnant of function that can be observed in this cord. All else has been abolished, showing that this function for reflex flexion is not only situated in the cord, but also that it is apparently the last function to be abolished. It is an illustration of what Walshe designs to prove

concerning the reflex activity of the cord. According to Walshe's view this case illustrates the effect of a paralysis of the extrapyramidal or toning fibres, which is shown in the entire loss of the knee jerks and other deep reflexes.

But the case to my mind shows even more than this, for it presents a condition in the extreme muscular atrophy that still requires explanation. It raises the whole question of the location and vital connections of the centres for muscular nutrition in the cord. The belief has obtained for many years that this function of nutrition resides in the multipolar cells of the anterior horns of the gray matter; in other words, in the motor neurons of the second or lower order. But in this case these motor neurons are situated far below the seat of the injury. It is inconceivable, according to this doctrine, how these multipolar cells in the lumbar enlargement could be affected by a lesion high in the dorsal region, except by a process of degeneration passing down the lateral tracts; but this would require a lateral sclerosis, with subsequent degeneration of the anterior horns; in other words, an amyotrophic lateral sclerosis. But this patient, with his flaccid paralysis and abolished knee jerks, does not present the syndrome of amyotrophic lateral sclerosis; and, besides, descending lateral sclerosis from a focal trauma high in the cord does not, as a rule, present amyotrophy; it does not, in short, affect the lower order of neurons arising in the anterior horns of the lumbar enlargement. Moreover, there is no fibrillation of the paralyzed muscles, as is seen in slowly progressive spinal amyotrophy.

I have no intention of entering into a prolonged speculation on this subject, but ever since I first saw a spinal cord thus completely "knocked out" by a trauma in the cervical region, as I once did in the case of a woman who suffered a hematomyelia in the cervical segments after a fall down stairs, I have been on the lookout for a possible explanation. It seems to me that there is something involved here in the physiology of the spinal cord that we have not yet fathomed. I have carefully considered Walshe's paper, but I cannot find in it a solution. The theory of an extrapyramidal toning or tonic set of fibres is at best only a theory, and even if it explains the abolition of the deep reflexes, it does not explain the extreme "isolation dystrophy." We cannot appeal to the vascular system, for this system cannot be so interfered with by a high dorsal lesion as to abolish the functions of the lumbar enlargement. Whatever it is, it acts promptly, for in the case here reported the deep reflexes were abolished at the very beginning, and the atrophy of the muscles began soon and progressed rapidly.

Bastian recognized this problem, except that he did not attempt to explain the extreme muscular atrophy; which, in fact, he rather ignored. He fell back on Hughlings Jackson's theory that the cerebellum presides in some way over the function of muscular tonus; but this theory is not now generally accepted, and it cannot explain the isolation dystrophy, unless we assume that the cerebellum likewise presides over muscular nutrition; which no one probably believes.

In the lower animals it seems that the spinal cord preserves more of an autonomy than it does in the higher vertebrates. Thus the decapitated frog and the decapitated snake present very lively coordinated movements, which must be entirely localized in the spinal cord. But in man, as we have seen, a total transverse lesion serves practically to abolish all functions in the cord below the level of the lesion, showing that in man the spinal cord preserves little if any autonomy, but depends for its functioning upon its connection with the higher cerebral centres. Among these functions to be abolished are not only the deep reflexes, but also the muscular nutrition.

I think it is probable that this may be the whole explanation of the phenomena seen in cases of total transverse lesion. In the higher vertebrates evolution has gone on to the development more and more of the pallium or cerebral hemispheres, which have gradually assumed, in some obscure physiological way, supreme control over the lower or cord centres. When these latter are completely cut off, they languish and finally cease to function. We may not be able to explain this thing either anatomically or dynamically, but it is a fact which confronts us in these cases of total transverse lesions of the cord.

Embryology points to a very close relationship between, or even a common origin for the nervous and muscular systems. According to Gaskell,<sup>10</sup> the adult body is built up of two different kinds of tissues; first, the nervous system and those tissues which are connected with it; second, those which have no connection with that system. In the first group the central nervous system is connected with all the muscular tissues. This close connection is apparent from the earliest period of embryonic life, and indicates a relationship of great physiological importance. Gaskell maintains that there is no period in the earliest development of the embryo when the muscle cell exists apart, i. e., free from its connection with the nervous system. The clinical significance of these facts may be very great, for they tend to show that the integrity of the central nervous system is essential to the nutrition of the muscles; when the connection is broken, the muscles degenerate. This control of the nervous system over the muscular nutrition is not confined to the cord, for the clinical facts, as present in cases of total transverse lesion of the cord, show that the higher or cerebral centres also exercise this controlling influence. This control over muscular nutrition is probably associated also with this phenomenon which we call "tone." The two suffer and languish together. Some atrophy of the paralyzed limbs is seen in cases of hemiplegia, as has been pointed out by Savill and others; but the exact location of a trophic centre in the cerebrum is a mere matter of speculation. It is doubtful, indeed, whether there is any such distinct centre, or whether there is any need for one. As already said, this function is probably inherent in *all* the motor neurons, and it has no centre other than the centres of those neurons themselves.

116 SOUTH TWENTY-FIRST STREET.

## RENAL TUBERCULOSIS WITH OCCLUSION OF THE URETER.\*

By EDWARD F. KILBANE, M. D.,  
New York,

Consulting Urologist, Roosevelt and Flushing Hospitals and St. Mary's Free Hospital for Colored.

By renal tuberculosis with occlusion of the ureter, is meant the condition in cases in which decided destruction of the kidney tissues may have occurred as a result of the tuberculous infection, but in which we find it impossible to catheterize the ureter of the infected side, because of the pathological changes in the wall of the lumen. In these cases the urine voided by the patient may be clear in gross appearance. Microscopical examination will, however, result in the detection of pus cells and possibly blood cells. In most cases tubercle bacilli cannot be found. In some cases the bladder mucous membrane may be entirely normal in appearance and the cystoscopic examination negative except for the detection of an occluded ureter.

When it is found impossible to catheterize a ureter and other conditions appear normal, the question arises as to whether the difficulty is because of faulty technic or because of pathological changes. Whenever it has been found impossible to catheterize a ureter and any doubt existed as to the conditions present, the following procedure has been followed: At a later examination, under a general anesthetic if desired, usually with a single catheterizing instrument, repeated attempts are made to pass a catheter, bougie, or whalebone filiform up the infected ureter. Failing in this, or if the ureteric orifice cannot be definitely identified, close observation of this region is maintained for a considerable period, after the beginning of the secretion of a dye from the opposite side. Either indigocarmin or methylene blue is used to color the urine. Of the former, from two to four c. c. of a four per cent. solution are injected subcutaneously; the one disadvantage is the painful node persisting for several days at the site of injection. Ten c. c. of a one to 300 solution may be used instead intravenously. Secretion of the dye begins in from five to fifteen minutes after injection, with normal kidneys, and the color of the urine gradually changes to a very dark blue. Occasionally from the infected side the escape of a few drops of lightly colored fluid may be detected, but the difference between this and the frequent discharge of a dark colored urine, sent in a good sized stream and with good force from the other orifice, is so great that no hesitation is experienced in deciding that the difficulty of catheterization is due, not to faulty technic, but to the presence of pathological changes.

If methylene blue is used, fifteen grains of the drug are given in divided doses, six, four, and two hours before the examination. The single catheterizing cystoscope is used because it is decidedly less painful to the patient and much less likely to cause hemorrhage into the bladder during the examination. It is well also to restrict fluids for some hours before the examination, and then have the patient drink a large quantity of fluid in the half hour im-

<sup>10</sup>Gaskell, *Origin of Vertebrates*, Chap. XIV, where the subject is discussed at length.

\*Read before the American Urological Association, Baltimore, Md., April 15, 1915.

usually preceding the examination. By doing this an immensely rich stained urine will be obtained.

This study is based on a series of forty-five cases of renal tuberculosis cystoscoped by the writer. With two exceptions, all cases have been included

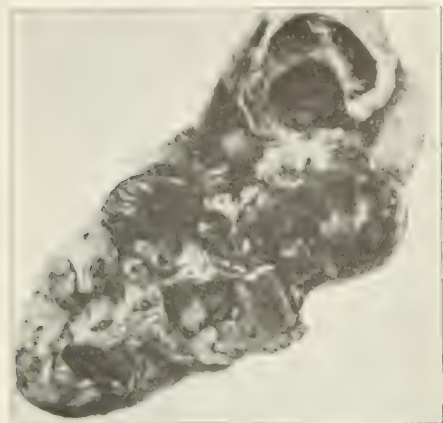


Fig. 1. Kidney specimen, showing typical tuberculous infection.

in which the diagnosis of tuberculous renal involvement was verified, either by operation or by the demonstration of tubercle bacilli in the urine obtained by ureteral catheterization. Thirty-eight cases went to operation, four patients refused operation, and in the remaining three surgical intervention was considered inadvisable because of conditions other than the renal lesions. In fifteen of the cases catheterization of the ureter of the involved side was successful and in these the diagnosis became a comparatively easy matter. In thirty cases catheterization of the ureter of the infected kidney was unsuccessful, and it is with these cases that this paper is concerned.

The two cases, the exception of which is noted above, were both of the type of the quiescent or silent renal tuberculosis with complete occlusion of the ureter. In each there was an absence of all subjective local symptoms pointing to a renal involvement, as well as an absence of the usual signs of bladder irritability. A nephrectomy was advised in each case, but both patients refused operation.

Clinically the cases under consideration may be grouped into three general classes:

1. The usual type of chronic tuberculous pyelonephritis or pyonephrosis, presenting the symptom complex of urinary frequency and urgency, dysuria, pain in the back or kidney region or in the bladder or penis, and loss of weight and strength. Less frequently chills, fever, or sweats may be noticed. Pus in small or large amount is always present in the urine; blood is present in most cases, but it is impossible in many cases to demonstrate the tubercle bacillus in the voided urine. Of the forty-five cases, thirty-five were of this type.

2. A generally unrecognized type, in which a kidney tumor often rapidly increasing in size, with

acute symptoms of marked septic infection, are the predominating symptoms. In these cases an acute septic pyonephrosis is superimposed upon a pre-existing but usually unrecognized chronic tuberculous pyelonephritis. Five cases of this type are considered, each of which went to operation.

3. The silent or quiescent renal tuberculosis. These cases came under observation for other conditions, the renal lesion not being suspected and being found only as a result of routine examination. Five cases of this type have been observed in this series.

Of the thirty-five cases of the first class, twenty were found to have an occluded ureter on the affected side. In nineteen of these twenty, symptoms of frequency and urgency of urination, dysuria, and blood and pus in the urine were present, so that a tuberculous infection of the urinary tract was suggested. In one case no history of such symptoms could be elicited, all the symptoms having reference apparently to a disturbance of the digestive organs. In only six of the twenty cases was there pain or discomfort referable to the infected kidney. In the other fourteen cases there were no symptoms that helped to localize the seat of the tuberculous lesion.

The tuberculous infection apparently causes no pain unless some other factors are added. A kidney infected with tuberculosis, even to a slight extent, is decidedly below par as far as its functional activity is concerned, and there will be no distention from a hydronephrosis, nor will there be distention from the rapid production of inflammatory products while the tuberculous infection remains free from contamination with pus producing organisms.

Not all cases of renal tuberculosis are free from kidney pain. Some patients suffer excruciating pain, but this is usually in rapidly progressing cases where the escape of small masses of tissue down the

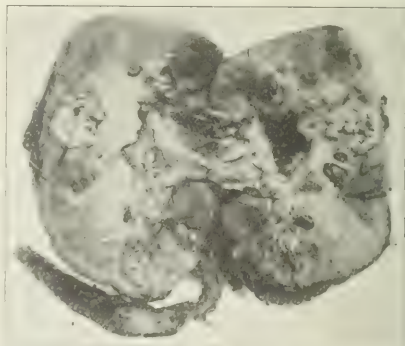


Fig. 2. Kidney specimen, showing three weeks' duration of symptoms of acute infection, including blood, pus, and tubercle in urine.

ureter produces a condition analogous to the passage of a calculus, with sudden stoppage of the urinary flow and the consequent intense pain of rapid pelvic distention.

As to temperature, seventeen of the patients were



under observation for some time in the hospital and of these sixteen had charts noting a practically normal temperature before operation or cystoscopy, the latter procedure in several instances being followed by a rise in temperature lasting a variable length of time. One patient had a temperature as high as  $101^{\circ}$  F.

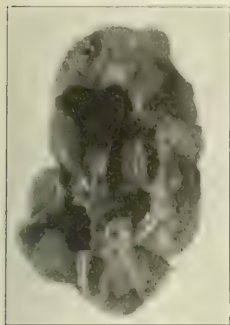


FIG. 3.—Case VII, J. N. Simpson. Organ four weeks before pyrectomy. Entire destruction of kidney tissue.

The von Pirquet test was positive in eight of the ten instances in which it was used. It will be noted that this test was used in only one half of the cases, the explanation being that in the other cases the diagnosis having been made, the use of a skin reaction was considered superfluous. When used, it has been of considerable diagnostic value.

Tubercle bacilli were demonstrated in only

seven of these cases and in none of the cases in the other two groups, a total of seven positive results in thirty cases. This is in marked contrast to the results in cases without ureteral obstruction. In the report of the Roosevelt Hospital for five years ending December 31, 1914, twelve cases of chronic tuberculous kidneys with patent ureters are recorded and tubercle bacilli were demonstrated in eleven of these. In one case a catheter was introduced a distance of seven inches, in another a catheter went one and one quarter inch above the bladder. In all of the other cases the obstruction was at the orifice or just within the ureter.

Frequency and urgency of urination were present in nineteen of the twenty cases. The frequency complained of was of all degrees of severity, some patients finding it impossible to retain urine for more than fifteen minutes at a time, the condition persisting day and night and being influenced not at all or to a slight extent only by treatment. Some could retain urine without discomfort for two hours, and with an effort, a few could go three or even four hours. Again, other patients might retain urine for a period considered long for this condition, but could retain it no longer once the desire to urinate was felt, so intense would be that desire, and incontinence would follow if the bladder was not immediately emptied.

With some, painful urination was a constant symptom, with others it occurred only at certain periods or in conjunction with certain other symptoms, for instance, in one patient only with hematuria. In severity it varied from a feeling of moderate scalding to one of intense severity or agonizing tenesmus. Some patients with clear urine and no discoverable bladder lesions might have intense and excruciating pains with every urination, others with very turbid urine containing pus, blood, and tubercle bacilli, would suffer much less. The frequency and urgency of urination and dysuria after

operation are perhaps the most discouraging factors connected with the treatment of this condition.

The length of time that these very distressing symptoms of urinary frequency and urgency and dysuria persisted before the patients sought relief varied to a very considerable extent. One patient had symptoms of only two weeks' duration, another only three weeks. In both instances the involved kidney was practically destroyed, the infection evidently long antedating the onset of appreciable symptoms. In a third case with a history of very intense symptoms of seven weeks' duration, the gross appearance of the kidney was normal. Microscopical examination of sections showed many tubercles and extensive round cell infiltration. Here apparently the onset of symptoms more nearly approximated the advent of the kidney infection. One patient had bladder symptoms intermittently for four years, at times feeling entirely well, as a rule being much more comfortable during the warm weather than during the winter months. Another patient had an attack of hematuria of short duration three years previous to the onset of symptoms of bladder irritability. Operation followed three months later, and an entirely destroyed kidney was removed. Another patient had bladder symptoms for two months, followed by a year of entire freedom from symptoms and then a return of all the previous distress.

The pain also varied in character, severity, site, and duration, there being no apparent relationship between the severity or site of the pain and the extent or site of the renal involvement. Pain occurred before, during, or after urination, or without any relation to this act. In some the pain came with the desire to urinate and was relieved afterward. In others the pain was made worse for a time by urination. The site of the pain was most frequently the glans penis, but it might be in the back, perineum, groin, or bladder or in two or more of these.

Record of the presence or absence of blood was recorded in fifteen histories, being absent in five and present in ten instances. In some cases the blood was mixed with the urine, with others it occurred as a terminal hematuria or was voided in clots. Again a combination of two or all three of these forms might be present in the same patient, at the same time or at different times.

In two instances the hematuria antedated all other symptoms, in one case appearing three years before the advent of frequency and urgency of urination. The occurrence of hematuria early in renal tuberculosis without other evidence of urinary disturbance, is of not infrequent occurrence, and this origin of bleeding should be borne in mind

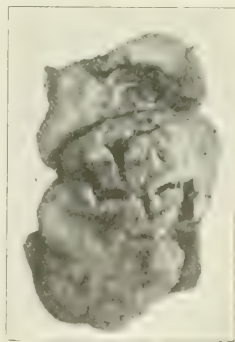


FIG. 4.—Another view of kidney of Case VII.

in determining the source of a hematuria occurring in a patient without other symptoms.

The kidneys presented all degrees of involvement, from young tubercle formation to the breaking down of large caseous areas, or as noted in several,

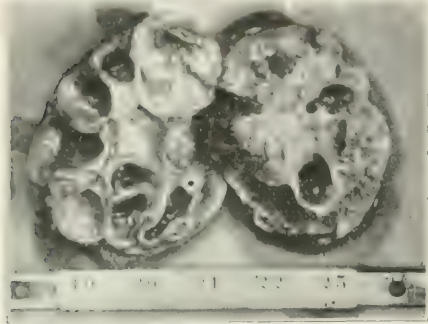


FIG. 1.—Case I. S. S. Silent renal tuberculosis. Blood in urine. No symptoms suggestive of renal condition.

the conversion of the kidney into a pus sac with the entire destruction of kidney tissue.

Bearing in mind that there is no definite relationship between the character or duration of symptoms and the extent of the kidney involvement, we should be on our guard against temporizing in these cases. While it may be justifiable to make use of nonsurgical therapeutics for the treatment of an incipient renal infection, clinically it may be impossible to determine how long the infection has been present or to what extent it has progressed, and delay in active treatment may forfeit the patient's chance for recovery.

The following case records are representative, each of a certain type of case. The first had no urinary disturbance.

CASE I. C. C., a married woman, aged thirty-six years, with a family and personal history of no material interest or bearing on the present condition. Ten months ago, while bathing in the sea, noticed a dull uncomfortable feeling in the right side of abdomen anteriorly, radiating to lumbar region and to right scapula. Eight months ago, severe pain of sudden onset in right side of abdomen at the waist line. No radiation of this pain. Was chilly and nauseated and vomited. The pain lasted one hour and passed away after patient took a bottle of citrate of magnesium. A similar attack occurred one week later. No urinary symptoms occurred at any time. For nine months suffered with heartburn, gas eructations, regurgitation of food and fluid at intervals, and constant headache. She consulted a stomach specialist, who discovered a mass in the right side of the abdomen and sent her to the hospital. Temperature was normal; blood count 10,000 with seventy-nine per cent. polynuclears; von Pirquet test positive.

Urine was clear in gross appearance. Bladder tolerance for fluid good. Mucous membrane about the right orifice edematous. Vesical portion of the right ureter thickened, appearing as a distinct ridge in the bladder wall. The right orifice was at the apex of a cone shaped projection of mucous membrane. Urine from the opposite side became blue soon after the injection of indigocarmine. Nothing observed coming from the right side.

Operation, nephrectomy, the kidney showing several small tuberculous cavities and one large cavity in the upper pole. Good postoperative recovery, but later developed many other tuberculous lesions, death occurring about six months after the operation.

The second patient gave a history of decided uri-

nary frequency and urgency, but no kidney pain or discomfort.

CASE II. P. D., a well built and strong looking man, aged twenty-two years, had never been sick before. One brother had pulmonary tuberculosis. The remaining members of a large family all were in good health. Three weeks ago, the patient noticed scalding urination and some frequency and urgency. One week later, terminal hematuria appeared. Patient then consulted a doctor, who diagnosed the condition as an inflammation of the bladder, and during the course of the next week washed out the bladder on three occasions, each treatment being followed by severe pain lasting for some hours. For one week past no blood had appeared, but the other symptoms had persisted.

Right epididymis had a node in the globus major. Left cord large. Urine contains blood, pus, and tubercle bacilli. Cystoscopic examination showed thickening of the left ureter with occlusion at the orifice. Urine from the other kidney contained a few blood cells, but no pus cell or tubercle bacilli.

Operation, nephrectomy. The kidney showed extensive involvement with many tuberculous cavities.

The third case gives a history of bladder symptoms and pain in the lower left quadrant and left flank with involvement of the left kidney.

CASE III. J. C., aged thirty-five years, barber; Neisser infection twelve years ago; lues contracted soon after. For past nine months had had continuous sharp pains across the lower abdomen on left side. This pain did not radiate. Occasionally slight dull pain in the left lumbar region. For past nine months increased frequency of urination, now voiding every half hour. Blood noticed once. At times voided a large stream freely. At other times could void only small quantities in drops and with much scalding. Sleep was much disturbed because of the nocturnal frequency. Had lost fifteen pounds in weight. Four months ago noticed swelling of the left epididymis. This ruptured after a time with discharge of pus and blood. A sinus persisted afterward. Temperature normal; blood count 12,000 with sixty-six per cent. polynuclears; urine negative for tubercle bacilli. Cystoscopic examination showed urine clear in gross appearance; right ureter normal, left ureter obstructed at the orifice.

Operation, nephrectomy, disclosed two tuberculous abscesses in the upper third of kidney; pelvis and calices normal; ureter thickened.

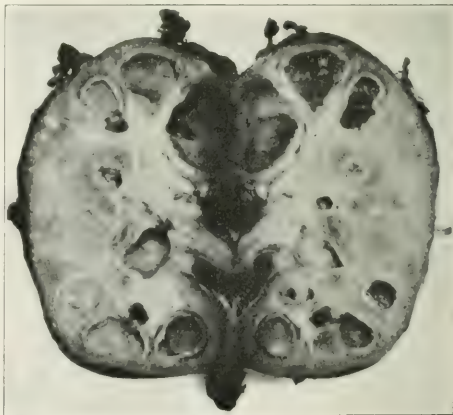


FIG. 2.—Case XI. L. A. Silent renal tuberculosis. No symptoms suggestive of renal condition.

Of the second class of tuberculous kidneys, those in which an acute infection was superimposed upon a preexisting chronic tuberculous lesion, five cases have been observed. Of these five cases, two had symptoms of bladder irritability for some time pre-

vious to the onset of the acute symptoms, one had had some bladder disturbances, but with the other two, no symptoms had existed until four days previous to admission to the hospital.

CASE IV. K. M., a middle aged married woman, with decided frequency and urgency of urination for two years. Two weeks before admission a dull boring pain had appeared in the left costovertebral region. At about the same time, a large, tender, and rapidly increasing mass appeared in the same region. The bladder irritability rendered a satisfactory cystoscopic examination impossible. Pulse was very rapid and temperature went to  $104^{\circ}$  F. At operation there was removed a large pyonephrotic sac, on a chronic tuberculous kidney. Made splendid recovery, with relief of bladder symptoms.

CASE V. C. V., Italian woman, aged twenty-two years, had marked frequency and urgency of urination over a period of some months. Palliative treatment had been tried with the usual indifferent success. Came to the hospital with a large tender mass in the right kidney region. Temperature up to  $104.4^{\circ}$  F., blood count 24,400 with eighty-eight per cent. polymorphs. There was involvement of the left kidney, but removal of the right kidney was considered essential to save her life. As in the first case, a large pus sac was found to have replaced the kidney. Showed very considerable improvement both in the general and the bladder condition, but died some months later from the involvement of the other kidney.

CASE VI. C. G., Italian woman, aged nineteen years, had been treated in two other hospitals over a period of some weeks. Up and down septic temperature rising to  $104.6^{\circ}$  F., blood count 26,000 with eighty-six per cent. polymorphs. No pain in kidney region. Cystoscopic examination cleared up all doubt as to the diagnosis. Recovery followed a nephrectomy.

CASE VII. J. N., Armenian, aged twenty-six years. Severe pain in the right upper quadrant of the abdomen for four days past. A large mass felt in the same region. Immediate operation after cystoscopic examination. His recovery was uneventful, the patient leaving the hospital entirely well.

CASE VIII. P. A., Austrian, aged forty-eight years, gave a history of pain of varying severity in the lumbar region, present for four days. Had no urinary symptoms, but did have a chronic tuberculous osteomyelitis of the sternum. As in the other cases, an occluded ureter was found. Nephrectomy with the removal of a large pus sac. Later developed tuberculous lesions of other organs.

In each of these five cases there was found at operation a pus sac on a chronic tuberculous lesion, the diagnosis of the latter condition being made after microscopical examination of tissue sections. It is probable that the last two cases mentioned were of the silent or quiescent type of renal tuberculosis, until a secondary infection occurred. The presence of tuberculosis would not have been suspected in these cases if it had not been for the finding of an occluded ureter in each patient.

The third class, the silent or quiescent renal tuberculosis, is of decided interest, and cases of this type are apt to tax the keenest diagnostic skill until a cystoscopic examination makes clear the conditions. These are the cases that offer most hope for a radical cure if removal of the tuberculous focus is accomplished before extension to other organs has occurred. In all five cases of this type are included. Three went to operation, a nephrectomy being performed in each instance.

CASE IX. G. S., aged twenty-three years, laborer, United States, came to the hospital, in 1911, for relief of pain in left hip and back. Pain had been present for two years. Had been treated all this time without relief. Fourteen months before admission a nephroproly had been done on the left kidney. Relief of pain lasted while patient was in bed following the operation, but symptoms returned when he started to get about again. Had had no frequency nor urgency of urination at any time. Five years previously had noticed blood in the urine on one occasion. Ex-

amination, palpation of kidney region negative. Temperature normal. Urinalysis negative, except for a few white blood cells; von Pirquet test positive. Cystoscopic examination showed a bladder of good tolerance to fluid. Mucous membrane normal in appearance. Left orifice occluded. This patient was examined three times, but at no time was anything observed coming from the left orifice. The kidney was removed and found to consist almost entirely of cavities filled with pus.

Relief did not follow the operation, and as there had been a suspicion of a very early tuberculous involvement of the lumbar spine, a suitable supporting apparatus was applied and the patient enabled to return with comfort to his usual work. It is likely that the pain was caused entirely by the spinal lesion and not by the renal infection.

CASE X. J. G., aged twenty years, driver, United States, came to the hospital with an incarcerated hernia, which was reduced without examination. Examination of the urine revealed pus cells. The further history was then obtained, that some months previously he had applied at a hospital for treatment because of a hematuria, but after several cystoscopic examinations and a suprapubic puncture, he was discharged as not having a case for hospital treatment. No further trouble had been experienced, until the hernia became incarcerated. The right kidney was removed and found to be entirely destroyed.

CASE XI. L. A., aged twenty-seven years, engineer, United States. Two years previously, pus in the urine which cleared up with hexamethylenamine. One year previously, passed a small stone after the pain of an attack of renal colic had subsided. Ten months ago, two similar attacks one week apart. Six weeks before admission to hospital, began to complain of headache, general malaise, feeling of lassitude, and a bad taste in the mouth. Three days after the beginning of this ill feeling, he had to go to bed, where he remained for five weeks. During this time had a high temperature. Bacillus paratyphosus was reported in blood culture. Was up three days, when had a relapse with former symptoms and again went to bed. Chilly sensation noticed and began to have slight pain in the left lumbar region. Pus was then found in the urine and hexamethylenamine administered. Repeated examinations of the urine had been made during his illness, but all examinations were reported negative. No burning, frequency, nor urgency of urination had been noticed, except that urination became more frequent after the administration of large quantities of fluid. While in the hospital temperature was normal, von Pirquet test positive, and examination of kidney region negative. Nephrectomy was performed and the kidney was found to be practically destroyed, the renal tissue replaced by cavities filled with pus.

The cystoscopic findings in these two cases and in the next case recorded are almost identical, namely, a congested mucous membrane about the orifice of the involved side, occlusion of the ureter, the intravesical portion of the ureter distinctly thickened, so that the ureter stands out as a distinct ridge in the bladder wall and a contraction of the involved ureter with traction on the posterior wall of the bladder so that that portion of the bladder presents a tent-like appearance, the ridge being the thickened ureter and the walls sloping above and below from this ridge.

Had these cases not been recognized, it is probable that they would in time have changed in character and presented symptoms referable to, and suggestive of a renal tuberculosis of either one of the other two classes previously described.

While not unanimous, the consensus today favors nephrectomy as the treatment of choice for uncomplicated unilateral renal tuberculosis, and while there may be a decided tendency to progression of the tuberculous lesions, even after an early nephrectomy, it is reasonable to expect that the earlier in the course of the disease that active surgical intervention is instituted, the better will be the chance for complete recovery.



It follows that the recognition of such cases as these, before involvement of other structures has occurred, should result in better postoperative conditions than we expect when operation follows a more or less extended period of bladder irritability.

The remaining two patients refused operation for the renal condition, although each submitted to operation for other tuberculous lesions, one for a tuberculous tenosynovitis of the forearm, and the other for a tuberculous arthritis of the knee. These cases are of especial interest, because of the relationship that may have existed between the renal conditions and the lesions for which the patients sought treatment.

CASE XII. A. S. Linn, aged twenty-three years, United States. Nine years ago had an attack of hematuria lasting two weeks, for which he was treated in a hospital. For the past two years had had an occasional attack of urinary frequency, but had none on admission to the hospital and had never considered it of sufficient importance to seek medical attention. Two months ago, patient twisted his right knee, and it had been troublesome ever since. On admission the diagnosis of tuberculous arthritis of the right knee was made. Resection of the knee followed. Six weeks after operation and while convalescence was progressing favorably, blood appeared in the urine without other signs of urinary disturbance. The bleeding persisted for two days. The cystoscopic findings were practically the same as in the two preceding cases, and the diagnosis of a silent renal tuberculosis entirely justifiable.

It is quite likely that this patient's renal infection dates at least from the time of the original hematuria, nine years ago, and that the knee infection was secondary to the renal tuberculosis, the twisting of the knee and consequent trauma determining the localization of the infection in a tissue of weakened resistance.

CASE XIII. M. J. P., aged forty years, a widow, born in the United States, became ill six months ago. No definite illness, but felt all run down. Pus was found in the urine, and after a cystoscopic examination in a hospital the diagnosis of renal tuberculosis was made and operation advised. Consent to operation was refused. Never had any symptoms of urinary disturbance. Came to the Roosevelt Hospital for treatment of an extensive tenosynovitis of the forearm. Temperature was normal. A few pus cells reported in the urine. Cystoscopic findings the same as in the preceding cases, except that a whalebone filiform could be passed up the ureter a distance of twelve cm. Patient refused operation for the renal condition.

As in the preceding case it is quite possible that here again the silent renal condition may have been the source of infection of the other tuberculous lesions.

It would seem that the presence of a stenosed ureter in so many cases of this condition, would make this point one of considerable diagnostic value. The writer now feels that it is of sufficient importance to warrant the diagnosis with very little corroborative evidence, it being assumed of course that other conditions, such as nontuberculous strictures, calculi, etc., are ruled out, as they most always can be after a full consideration of all the factors.

Of great practical importance to us in our work is the question of what should be done for the patient with the silent tuberculous renal infection. Should it be left alone until definite subjective symptoms appear, or should the kidney be removed? Cases of this type have been reported as remaining quiescent over a period of years. If we know in advance that this is going to happen, justification for interference might be hard to find.

Are these patients reported with healed tuberculous kidney lesions, really cases with the kidney focus safely encapsulated, or are they simply quiescent for the time being, and ready to become active when the opportunity presents? May they not become the source of infection of other organs when suitable local conditions are present.

Are we ever justified in thinking that the patient with such a kidney is as well off if left alone as he would be if the kidney were removed? According to the history of one patient, he had a tuberculous kidney for nine years, with no symptoms for seven years and very little discomfort off and on for two years, yet a comparatively slight injury was followed by a tuberculous lesion necessitating resection of his knee joint. And after the lapse of all this time, the kidney lesion is showing evidence of reawakened activity. Another patient manifested symptoms of an extensive tenosynovitis, and is still without subjective symptoms referable to the kidney condition. Others suddenly present the symptoms of acute septic infections, and the kidney shows evidence of a chronic tuberculous infection having existed before the mixed infection occurred. One of the patients, reported here, with symptoms of only three weeks' duration, certainly had a tuberculous renal condition for a much longer period. He was operated upon six months ago and he still suffers from frequency and urgency of urination. Might it not have been better if that kidney had been removed before the onset of bladder symptoms? In several of the cases here recorded, tuberculous invasion of the epididymis was noted before the onset of symptoms recognized to be those of renal infection, the inference naturally being that the kidney involvement was secondary, but the kidney condition in these cases would make one suspect that the involvement of the epididymis was secondary to a silent renal condition.

It is quite apparent that a latent tuberculous kidney may become active, even after a long period of quiescence, but on the other hand it cannot be said that every quiescent kidney will necessarily become active if left alone. However, with the possibilities for harm that may be latent in such a kidney, it seems from a consideration of these cases, that the safer course for the patient lies in the earliest possible removal of the tuberculous kidney, that is nephrectomy as soon as the diagnosis is made.

While it is never safe to attempt to generalize from the consideration of a small number of cases, a study of these seems to warrant the following conclusions:

1. Many cases of tuberculous kidneys exist without causing symptoms.
2. When symptoms do occur, they may be referred to organs other than the kidneys.
3. There is no relationship between the severity or duration of the symptoms and the extent of the kidney involvement.
4. Every case of silent renal tuberculosis may at any time become active or the source of infection of other structures.
5. Nephrectomy, therefore, is the logical treatment for uncomplicated unilateral cases, as soon as a diagnosis is possible.

104 WEST SEVENTY-FIRST STREET.

# VISCERAL STASIS, MECHANICAL OBSTRUCTIONS, AND THEIR EFFECTS, RELIEVABLE BY RATIONAL MEASURES.\*

## A Preliminary Report,

By J. MADISON TAYLOR, A. B., M. D.,  
Philadelphia,

Assistant Professor of Nonpharmaceutical Therapeutics, Medical Department, Temple University.

Few problems are of greater significance than determining how to relieve effects of visceral stasis, adhesions, kinks, or other mechanical obstructions in vegetative mechanisms, and to apply efficient remedial measures. Surgical interference by operation is coming to be less and less confidently employed.

An important clinical correlation exists between the ptoses, splanchnic circulation, their innervation (especially the autonomic), and visceral or intestinal obstruction, local spasms or atonies, and also some metabolic disorders, neurasthenia, psychasthenia, general wretchedness, and inefficiency.

Through the invaluable contributions of abdominal surgeons and röntgenologists, many obscure and otherwise inexplicable problems in general medicine have been illuminated. A certain proportion of these problems can be solved only by resort to the knife, others are admittedly unsuitable for operative interference.

Some subjective phenomena are sufficiently distressing, yet of such varied causation and manifestation, as to render the victims incapable of maintaining their place in the scheme of current life. In whomsoever they exist, remedies should be provided, as radical, yet as simple and safe as possible.

About fifteen years ago, I began experimenting by manipulation in some cases presenting visceral obstructions and disturbances of tone. These I was able to relieve remarkably by combining stimulus to the vasomotor subcentres, along with pressure on the abdomen in the lower quadrants, including the area most affected. Gradually empirical movements guided by physiological hints supplied the basis for a diagnostic and therapeutic system which has served me in working out present methods.

Education of the sustaining musculature is a valuable adjunct. As observations and experience multiplied, my confidence grew. Little of encouragement came from reading or from critical colleagues. Analogous reported instances were few. Information during my earlier attempts was not precise. Later, surgeons and röntgenologists began to accumulate invaluable data, such as are crystallized in the delightful little book, *Pathology of the Living*, by Sir Berkeley Moynihan.

My earlier crude attempts were occasionally successful beyond expectation,<sup>1</sup> and many of the cases are still under observation.

Recently I learned of the work of Doctor Bour-

cart, of Geneva, a surgeon who is said to have abandoned the knife for manipulation, and has had singular successes on persons who either refused operation or whose conditions were inoperable. Being unable to get first hand evidence, I combined what could be learned of his methods with my own, and am now encouraged to believe there is much of promise for these sufferers. Doctor Bourcart is said to lift and pull on the tissues. This, in my hands, causes characteristic pains of a dull, sickening sort, especially when made over the areas shown by x rays to be adherent or angulated. Hence a diagnostic method is being evolved as well as a therapeutic.

Up to date the objective and subjective symptoms I have formulated may be sketched as follows:

*Objective.* A pull on well relaxed abdominal walls seems capable of affecting the structures be-

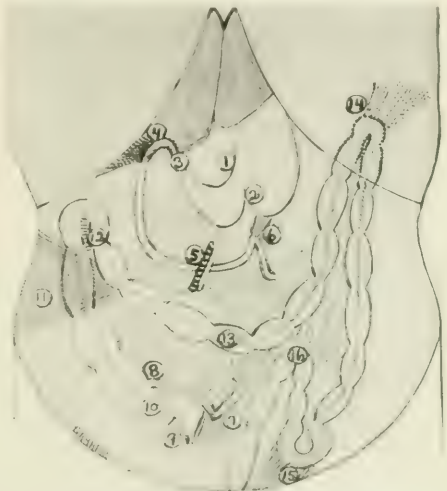


FIG. Diagram, showing causes of gastrointestinal stasis. (Graham). 1. Prolapsed stomach. 2. Hourglass stomach. 3. Pyloric obstruction. 4. Adhesions at the duodenum. 5. Mesenteric ileus. 6. Adhesions at duodenojejunal angle. 7. Lane's kink. 8. Incompetent ileocecal valve. 9. Chronic appendicitis. 10. Mobile and dilated cecum. 11. Jackson's membrane. 12. Adhesions at the hepatic flexure of the colon. 13. Prolapsed colon. 14. Adhesions at the splenic flexure of the colon. 15. Adhesions at the sigmoid. 16. Angulation at the rectosigmoid junction. [Reprinted from the article on Gastrointestinal Stasis by Dr. Henry Flack Graham, JOURNAL, May 19, 1914.]

low to a degree at first surprising, which also becomes more pronounced as treatment progresses. Guided by Henry Flack Graham's diagram, along with particular reference to the peculiarities or abnormalities found, there appear to be limitations in accord with normally existing membranes, veils, or adhesions suspected, which yield as tractions are repeated.

*Subjective.* In an abdomen presumably free from abnormalities, adhesions, kinks, etc., there is no more than a moderate amount of discomfort, varying in degree, though little in kind, due to hypersensitiveness or hyposensitiveness to skin pinch or sense of drag. Where these abnormalities exist, the

\*Read by title before the American Therapeutic Society, June 19, 1915.

<sup>1</sup>Notably one of a lady, fifteen years ago, in whom the gallbladder was apparently obstructed by adhesive bands, who had had the advantage of many distinguished specialists, but without relief; also a number of postoperative cases, obviously suffering from adhesions, from fifteen to ten years ago.

sensory reaction to pulling exhibits certain commonly recurring subjective sensations, too numerous to describe, varying also in degrees of activity or chronicity of causal process, requiring much experience and revision to codify. As a rule, the existence of subacute or chronic appendicitis is shown by a peculiarly severe tenderness on dragging toward the umbilicus.

Any adhesion yields a dull "sickening" pain, the more acute ones a nausea for a few moments, usually subsiding soon after cessation of traction. Postoperative adhesions yield somewhat similar sensations, usually less severe than those wherein an acute process has existed without operative interference; variations, of course, are wide.

In women who have suffered any kind or degree of acute disorder in or about the uterus or annexa, traction on the umbilicus is painful; so also if the bladder has been affected, pain of a characteristic kind occurs on traction; old ovarian or tubal lesions induce peculiar hypersensitivenesses. Any upward traction on the umbilical areas is more uncomfortable than other forms of pull, even in normal persons.

These random memoranda will serve to show that the phenomena are capable of being reduced to a workable symptomatology.

The factors of treatment so far as elaborated, now consist of:

1. Mechanical pressure and traction upon the paravertebral structures.<sup>2</sup>

2. Gentle, very slow pressures on abdominal contents from a point near the anterior superior spines of the ilium, radiating in a quarter circle for six or eight inches on each side in turn toward the diaphragm. This relaxes spasm, seems also to induce action of peristalsis when in abeyance, an equalization of neuromuscular action, in short, a balance.

3. A two hand compression of the abdominal contents, lateral and upward. This stimulates a general peristaltic and interorganic movement and mechanically adjusts fluid contents and hydraulic competence, and hastens emptying.

4. A lifting, a slow and graduated pull on the abdominal walls, which procedure exacts some effort to achieve expertness; much help is afforded as to direction, by the diagram by Henry Flack Graham.

5. Eliciting the cooperation of the patient voluntarily to compress and elevate the abdominal walls till the contents are increasingly forced upward; this enhances muscular power of raising the viscera and holding them in place.

6. Also lifting the head while in dorsal decubitus, and performing a cross thrust of the arms to right, then to left (R. Tait McKenzie's method of eliciting the action of, and developing the transversalis muscles in cure of hernia).

The whole procedure occupies about ten minutes and is repeated every third day.<sup>3</sup>

1504 PINE STREET.

## ACANTHOSIS NIGRICANS.

### Report of a Case.

BY WILLIAM FRICK, M. D.,  
Kansas City, Mo.

This disease is rare, but interesting to general practitioners and to dermatologists. It is of especial importance to these two classes of physicians because of the extraordinary pigmentation and thickening of the layers of the skin which are dependent upon internal conditions. The first description published of this disease was in an atlas of rare skin diseases in 1890. In the same number two cases were reported, one each by Pollitzer and Janovsky. In 1909 Pollitzer (1) reviewed the subject. In this paper he recorded fifty-two cases taken from the literature, which he considered to be of this nature. The age of these patients varied from two to seventy-one years; eighteen were under twenty-one years of age and all cases proved to be benign. The



FIG. 1.—Clinical appearance, acanthosis of the neck.<sup>1</sup>

other thirty-four all proved to be malignant cases and the subjects ranged in age from twenty-eight to seventy-one years. Since the appearance of Pollitzer's paper, I have found recorded a considerable number of other cases by the following observers: Dyer (2), Juliusberg (3), Beron (4), Pribram (5), Toyama (6), St. George and Melville (7), Wild (8), Rona (9), Walker (10), Klotz (11), White (12), Schalek (13), Nixon (14), Brandweiner (15), V. Brezovsky (16), Juan de Azua (17), Arndt (18), Petrina de Galatz (19), Porias (20), Cavagnis (21), Wollenberg (22). I have also a personal communication from Dr. M. L. Heidingsfeld, in which he tells me of a case of his of the benign type. The patient when first seen was an anemic boy, seven or eight years old, with hyper trophy and pigmentation of the skin, especially in the axillary region and on the neck. Ten or twelve years later, he was a robust, healthy looking young man.

The case here reported was sent me by Doctor Trueheart, of Sterling, Kansas, to whom I am also

<sup>1</sup>I wish to acknowledge my indebtedness to Dr. O. L. Castle for microscopic sections and photographs.



indebted for a report of this patient's previous condition. I saw the case in January 1912, and the history was taken at that time from the patient supplemented by Doctor Trueheart's records.



FIG. 2.—Acanthosis of the hands.

CASE. Farmer, aged forty-two years, medium height and weight. Family history: Father died at forty-five years of age of hemorrhage of the lungs; one brother and one sister of father died of tuberculosis. Nothing else of importance in the family history. Personal history: The patient was born in West Virginia, reared in Henry County, Missouri, and had lived since seventeen years old in western Kansas, except one year spent in Colorado, working for the bridge department of a railroad. The patient considered himself an ordinary healthy person up to eight years ago, except for some trouble with his stomach which he called "water brash." This trouble begun at the age of fourteen years and he thinks it was due to long hours between meals. He was working on a farm at the time. He ate his breakfast about 4:30 in the morning, after which he continued working in the field until noon. This long period between meals, along with the outdoor work he was doing, caused an extraordinary appetite, to appease which he was in the habit of overloading his stomach. This, he believed, was the cause of the trouble occurring at that time. Eight years ago he began to have intestinal distention from gas which he could neither raise by belching nor pass by rectum. He also complained of acidity and constipation. Four years ago he spent some time in Excelsior Springs, Missouri, using the salt sulphur water and also the water from the soda springs. This seemed to relieve the acidity to some extent and to overcome his constipation. In October, 1910, he first noticed the changes in his skin. His attention was first drawn to an itching on his scalp, in the axilla, and over the scrotum and perineum. This was followed by thickening of the skin and beginning pigmentation. This thickening and pigmentation steadily increased until at the time of examination practically the whole skin was involved to a greater or less degree. The itching was also present and so severe at times that it prevented his sleeping at night.

I was fortunate in obtaining the following previous history of this patient from Dr. M. Trueheart. "I first examined Mr. P.'s stomach August 13, 1908, giving him an Ewald test meal. Time on stomach one hour and fifteen minutes. Amount expressed 500 c. c. Contents were of a rusty color, and rancid smelling. Free hydrochloric acid 6. Combined hydrochloric acid 21.4. Total acidity 25. Volatile acid present. Blood absent. September 2, 1910, free hydrochloric acid 11. Total acidity 23. The stomach was dilated and came down to within two fingers' breadth of the umbilicus. First blood count was August 3, 1910; leucocytes 3,400, red 3,940,000, hemoglobin 30 per cent. Blood examined at frequent intervals after that and it gradually climbed up toward normal until March, 1911, when his hemoglobin was 95 per cent, and red cells about normal, although I do not have the exact figures. Have not made

a record of his clinical symptoms, so you could probably get his clinical history by questioning him as accurately as I could give it to you. At that time or soon after, I advised a gastroenterostomy, which he refused. The medicines given him consist principally of an acid mixture for his stomach and iron preparation for his blood."

Present condition: When the patient was first examined by me, he was somewhat anemic in appearance. He complained of acidity in the stomach and bowels which came on several hours after meals. He said phosphate of soda relieved it in the stomach, but not in the bowels. The bowel movements had a sour odor and sometimes gave a burning, scalding sensation; he was not constipated. He had lost weight slightly during the previous two months. The skin of the entire body itched. This itching was especially severe when the skin became warm after being chilled.

The greatest amount of acanthosis and pigmentation was on the neck, in the axillae and perineal regions. These parts were thickened and furrowed to such an extent as to present a verrucous appearance. The color varied from a yellowish brown to a bluish black. On the neck were a number of soft moles or pedunculated tags of skin. Over other parts of the body were to be seen many small lesions of this character just beginning to make their appearance. The skin was somewhat pigmented over the entire body. The pigmentation was a yellowish brown in the greater part of the skin. This was the color in the beginning stages of the darker lesions also. The pigment was not evenly distributed, but presented a somewhat macular appearance. The macules were of variable size and irregular in shape. Over the upper part of the arms the skin was nearly normal. On the flexor surface of the elbow and half way up the arm the skin presented a verrucous appearance, but the color had not become as dark as on the neck, hands, and perineal regions, but was rather a dark brown. The patient informed me that at this point the process had been in existence only about two months and consequently had not had time to become as dark as the other. The skin over the backs of the hands, especially over the joints, was quite dark thick and uneven in appearance. The palms of the hands were much thickened and furrowed. The feet presented very much the same appearance as the hands. The flexor surfaces of the knees were also thickened and uneven in appearance and pigmented to a dark brown. The skin of the face up to the eyes presented a dark reddish brown appearance, while the forehead, especially the places where the hat band pressed, was yellowish brown. The scalp was thickened and the hair quite dark with a grayish tinge. The hairs themselves were dry and wiry to feel. From the rough uneven surface of the skin, particularly in the places where it was most thickened and furrowed, one might expect a harsh dry feeling such as we have in other conditions where the horny



FIG. 3.—Acanthosis of the tongue, lips, and cheeks.

layer of the skin is in excess. Such was not the case. Touching the surface of these thickened patches gave a soft velvety sensation, instead of the rough sensation presented in other hypertrophied conditions of the skin. The surface of the tongue was thickened and deeply furrowed, the furrows running in different directions. The mucous

condition of the hair and follicles was also greatly thickened and hypertrophied. The papillae and subcutaneous tissue were not pigmented, the only change in color being the paleness due to his anemic condition. The patient's principal complaint, aside from the itching he experienced, was of weakness and inability to do his usual work on the



FIGURE 3.—Section from the back showing acanthosis.

farm. This he attributed to the fact that he was not able to sleep well at night on account of the itching. Along with this was the disturbance still present in his digestive tract. There was no tumor to be felt in the abdominal cavity. There was no indication of malignancy, unless the anemic condition could be construed as such. We called several competent internists to assist in this examination and all came to the same conclusion, that there was no growth of any kind in the abdominal cavity. Dr. C. C. Conover thoroughly examined the patient at this time and concluded that his trouble was and had been duodenal ulcer for several years past. This diagnosis agreed with the previous diagnosis of Doctor Truehart and seemed to be concurred in by all those who examined him at this time. The patient, in the latter part of January, went to Excelsior Springs, where he died February 20, 1912. A letter from Dr. H. J. Clark, the physician who took care of him there, contains the following explanation: "I was called to visit Mr. P. on February 16th; he had severe gastric irritability, marked tenderness over the stomach and bowels, complained of pain all through abdominal region. Temperature 104° F., pulse 130, respiration 26, bowels acting freely. I could not make out any palpable tumor."

#### HISTOLOGY.

A small piece of skin from the back of the neck and one of the tags, or soft fibromas were excised and examined. The stratum corneum was but slightly increased in thickness. The stratum lucidum was almost entirely absent. Stratum granulosum was present and contained pigment, but was not increased in thickness. The prickle cell layer was greatly increased in thickness and contained pigment throughout in moderate quantity. The basal cell layer was intact and contained more pigment than any of the others. Very little increase in the subcutaneous tissue, except in the papillae. There was a moderate round cell infiltration in the subcutaneous tissue. The soft fibromata or tags appear to be papillae pushed out of their place and on to the surface of the skin with the epithelial coverings all intact, and with rather more increase in the connective tissue of these papillae than in any of the others. The yellow elastic tissue appeared to be normal. The examination of the blood gave hemoglobin fifty per cent, red blood cells 3,920,000, white blood cells 6,000. The urinary findings were normal.

The patient was examined, which we very much regret, as it might have served definitely to solve

if there was any cancerous involvement or if the trouble was inflammatory, due to the duodenal ulcer believed to be present and finally causing his death by perforation. This latter was believed to be the case by all those who examined him, and if so, would serve to corroborate the opinion of some other observers that the existence of cancer in the abdominal cavity is not at all essential to the development of this condition of the skin, but that other things interfering with the abdominal sympathetic nerves may produce the same result. In Brandweiner's (15) case, in a woman thirty-six years of age, examination of the internal organs revealed no recognizable malignancy, but an appendicitis and a parametritis. The case reported by Juan de Azua (17) improved with administration of salvarsan. The case reported by Cavagnis (21) was that of a thirty-one year old man in whom the disease began in the third year of life and has apparently been stationary since he was eight years old. Porias (20) reported a case in a woman thirty-six years old, which entirely disappeared under indifferent treatment after one year's duration. Doctor Dyer writes me that his case, which began in a child seven years of age, twelve years later was still present and developing. Doctor Heidingsfeld writes me of his case, which began in a boy seven or eight years of age, who recovered entirely and, ten years later, was in robust health and a fine specimen of physically developed young manhood.

#### REFERENCES.

1. *Journal A. M. A.*, 100, 1909, 1909. 2. *New Orleans Med. and Surg. Jour.*, 11, 201, 1898. 3. *Verhandl. d. deutsch. dermat. Gesellsch.*, 18, 128, 1909. 4. *Monatsch. f. prakt. Dermat.*, xlix, 27, 1909. 5. *Archiv. f. Dermat. u. Syph.*, 11, 377 (abst.), 1910. 6. *Ibidem*, cxvii, 496 (abst.), 1913. 7. *Brit. Med. Jour.*, 11, 548, 1909. 8. *Ibidem*, 11, 547, 1909. 9. *Archiv. f. Dermat. u. Syph.*, xcix, 443, 1910. 10. *Brit. Med. Jour.*, 11, 1530, 1909. 11. *Jour. Cut. Dis.*, xxxi, 306, 1913. 12. *Ibidem*, xxx, 179, 1912. 13. *Ibidem*, xxx, 660, 1912. 14. *Proc. Roy. Soc. Med.*, 1909, 1910. 15. *Ibidem*, 1911. 16. *Ibidem*, 1912. 17. *Ibidem*, 1913. 18. *Ibidem*, 1914. 19. *Ibidem*, 1915. 20. *Ibidem*, 1916. 21. *Ibidem*, 1917.

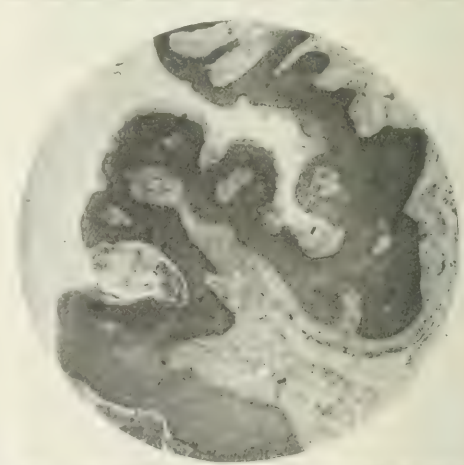


FIGURE 4.—Section from tag, showing the elongated papillae, with coverings about the same as in Fig. 4.

15. *Archiv. f. Dermat. u. Syph.*, 685, 1912. 16. *Jahrb. f. Dermat.*, iv, 248 (abst.), 1908. 17. *Archiv. f. Dermat. u. Syph.*, 737 (abst.), 1913. 18. *Archiv. f. Dermat. u. Syph.*, 737 (abst.), 1913. 19. *Dermat. u. Syph.*, 1914. 20. *Ibidem*, 1915. 21. *Archiv. f. Dermat. u. Syph.*, cxv, 59 (abst.), 1912. 22. *Ibidem*, 1215, 1912.

1010 RIALTO BUILDING.

# CANCER OF THE UTERUS.\*

*With Special Reference to Radium.*

BY HENRY SCHMITZ, A. M., M. D.,  
Chicago.

The treatment of cancer of the uterus to be curative must be instituted early when the cancer is still in its incipency or is a localized disease. It is only under these exceptionally favorable conditions that we may promise an anatomical, i. e., a complete and permanent cure, because we can destroy all, absolutely all cancer tissue and cells.

An early and correct diagnosis is therefore a fundamental prerequisite for a successful cancer treatment. If a patient succumbs to cancer nowadays, the surgeon cannot be blamed for the bad outcome. He is very well able radically to cure a cancer if the case is referred to him when the disease is still localized and has not extensively invaded neighboring tissues and organs, or has not metastasized. In other words, a successful treatment of cancer depends on its early recognition. This is assured by two facts: 1. The patient must be taught to seek medical advice immediately at the occurrence of a hemorrhage from the genitals. It does not matter whether it is a menorrhagia or metrorrhagia, whether the amount of blood lost is large or whether it is only an oozing characterized by a reddish colored discharge from the vagina. 2. The physician consulted in this instance must make a correct and immediate diagnosis and thus bring the case to operation as early as possible.

To secure the cooperation of the patient, we must instruct the public by publicity agents about the nature of cancer, its first symptoms, which usually mean hemorrhages from the genitals, and the fact that the disease is curable if competent medical assistance is had early.

To obtain the aid of the medical attendant, we must increase his diagnostic efficiency by continuously improving and advancing his college education and by requesting him never to treat a uterine hemorrhage without making a careful physical and microscopical examination to detect the cause and thus render possible the institution of a curative treatment. A well instructed physician would not resort to symptomatic treatment if scientific, curative treatment were possible.

The treatment of uterine cancer is: 1. Prophylactic; 2, curative; and, 3, palliative.

It is prophylactic if we remedy abnormal and so called precancerous conditions by the remedies indicated. Precancerous states frequently terminate in cancer. Such conditions are old inflammatory lesions, scars, and long continued irritations, such as chronic endocervicitis, ectropion of the cervical mucosa, erosions of the cervix, chronic endometritis, particularly the polypoid form, lacerations of the cervix leading to scar formation, relaxed vaginal outlet due to a diastasis of the pubococcygeal portions of the levators with a subsequent descensus et prolapsus uteri, the cervix then being continually exposed to external irritations and injuries.

The curative treatment of cancer implies a radical extirpation of all cancerous tissues and cells from

the patient's body followed by a thorough application of both radium and x-ray. This is perfectly possible if the neoplasm is still localized, but it is rendered difficult and at times unsurmountably so if metastases have formed or if the cancer has invaded neighboring organs and tissues. An anatomical cure may even under these circumstances be obtained if we can still remove all the cancer tissue and cells. Finally, however, a limitation to our surgical possibilities is reached and the case becomes incurable. The limits of the extent of the radical operation depend, 1, on the extent of the cancer disease; 2, on the surgical risk offered by the patient; and, 3, on the training, skill, and ability of the surgeon. Modern radiotherapy has extended the operability of uterine cancer remarkably, as even deeper and farther reaching destruction of cancer tissue is possible, than the knife alone could bring about.

The treatment of cancer of the uterus can only be palliative if the cancer is so extensive that it cannot be removed *in toto*. The different forms of

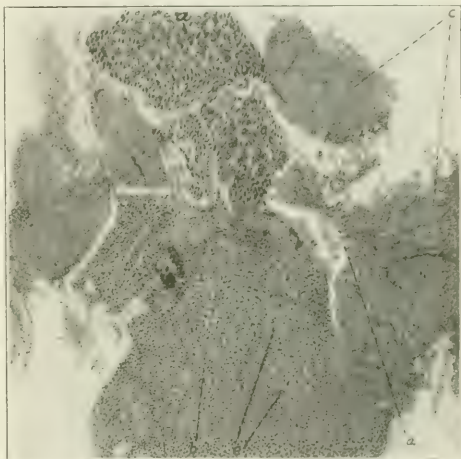


Fig. 1. Typical medullary cancer. a, masses of carcinoma cells; b, lymphocytic infiltration, including single carcinoma cells at c; c, represents hemorrhagic areas; d, a carcinoma cell nest.

treatment are therefore, 1, surgical; 2, radiological; and, 3, symptomatic or medical.

An operable cancer must be treated by a radical extended abdominal panhysterectomy, the Bumm-Wertheim operation. No other plan of treatment should be advised. A surgical removal of all cancer tissue, together with the enlarged regional lymph nodes, offers the best chance for a permanent cure according to statistics available. As it is at times impossible to determine by a careful bimanual and rectal examination, proctoscopy, cystoscopy, and ureteral catheterization, the operability of a given case, we are compelled to resort to an exploratory laparotomy to establish the advisability of a radical panhysterectomy. If we find extensive metastases of the pelvic lymph glands, if the lumbar lymph nodes are involved, or if the invasion of the bladder, rectum, bowels, or ureters would render a resection of these organs impossible,

\*Read at the meeting of the Northwest Branch of the Chicago Medical Society, February 5, 1915.



the case is hopeless from a surgical standpoint. The operation must be terminated at this stage.

The radiological treatment, i. e., the treatment with radioactive substances, is indicated in inoperable, recurrent, and operable cancers, and is either pal-

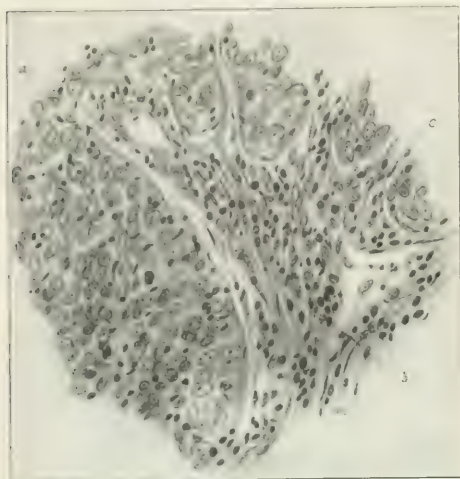


FIG. 2. Large tumor masses, a; large tumor masses, b; atypical epithelial cells in lymphatic tissue, c; lymphatic tissue now being replaced by atypical epithelial cell growth.

lative, curative, or prophylactic, to prevent recurrences. It is palliative if the rays either cannot reach all the cancer cells or cancer cell nests, or cannot reach them with a sufficient intensity to kill them. The rays influence only the cells which are within their reach. Cancer cells not within the area of the rays, of course, continue to proliferate and eventually cause the death of the host. Radioactive substances will cure a cancer if they destroy all, absolutely all cancer cells. The rays are used as a prophylactic after extended radical removals of cancer to destroy cancer cells or cancer cell nests which inadvertently have been left behind during the operation.

With our present knowledge of cancer, and the results of the surgical and radiological methods of treatment, it would be folly to treat the disease solely by the latter. On the contrary, the patient must be subjected to the best surgical treatment if the case is operable, and this must be augmented by applications of radium and x rays. Radiotherapy, therefore, is an adjunct of surgery, and the best results are obtained when it is combined with surgical treatment.

The biological and therapeutic action of the gamma rays of radium and mesothorium and of hard filtered x rays is identically the same. The gamma rays of radium are about forty times stronger in intensity than the hardest Röntgen rays. Gamma rays of radium and mesothorium penetrate the tissues within a radius of four to 4.5 cm. Hence an area of a diameter of eight to nine cm. is sub-

jected to the action of radium. These conditions for treatment are excellent in uterine and vaginal cancers, as we can insert the radium applicator directly into the tumor mass. It is thus seen that the use of the radium therapy is practically limited to internal cancers that can be reached through the natural passages of the body, or into which an opening through which we may insert the radium applicator can be made. The parametria, metastatic lymph glands, and neighboring organs which do not lie within the sphere of the radiointensity of the gamma rays, are attacked with the filtered massive x rays. The success of their action depends on the principle that a sufficient radiointensity must be attained in the cancer tissue. To obtain 500 x in a depth of ten cm., 3,500 x must be applied to the body surface.

The amount of gamma and x rays necessary in a given case depends on the results obtained. The initial amount of gamma rays is from 3,000 to 4,000 milligram hours, that of x rays at least 1,000 to 1,200 x. These amounts should be given within one week. An interval of two weeks must intervene before the next series of treatment is begun. As soon as the tumor masses, invasions, and metastases have disappeared, we interrupt the treatment. It is, however, advisable to give a prophylactic raying every six weeks of about 1,000 mg. hrs. radium element and about 500 to 600 Röntgen rays to prevent recurrences.

An inoperable cancer of the uterus often becomes operable within three weeks after one séance of radium and x ray treatment. A radical panhysterectomy may now be performed, which of course must be followed by prophylactic rayings as already described.

The late results of radium treatment in inoperable and recurrent uterine cancers are unfortunately very discouraging. After the "clinical" cure has

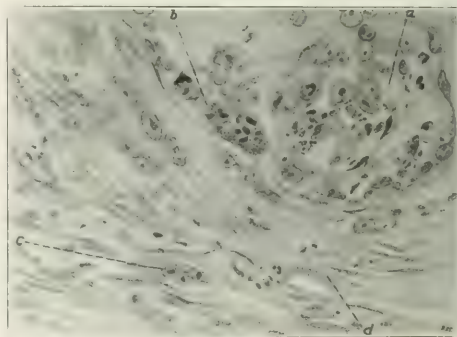


FIG. 3. a, cells modified by vacuolization and accumulation of the nucleus and carboxyls of the cell nuclei; b, a giant cell; c, solitary carcinoma cells in lymph vessels; d, parenchyma containing young fibroblasts.

existed for a short period (three to six months), a recurrence of the cancer is seen. The latter seems now to often become refractory to radiotherapy. The cancer has lost its radiosensitivity, it is "radium fast." The action of the x rays applied in combi-

nation with the radium rays is identical with the latter. The patient also after a period of an apparent symptomatic cure loses the x ray sensibility and further applications are negated. Out of nineteen cases of inoperable and recurrent cancers, we



Fig. 4.—Enormous lymphocytic infiltration; a, bloodvessels surrounded by muscle and connective tissue; b, horseshoe-shaped mass of atypical cells; c, solitary necrobiotic carcinoma cells, surrounded by lymphocytes and connective tissue.

have only three which so far have not recurred. Radiotherapy, therefore, is usually only a palliative measure in inoperable and recurrent cancers of the uterus, but as such it ranks in first place.

The use of radiotherapy after extended radical abdominal panhysterectomies for carcinoma uteri is undertaken as a prophylactic treatment to destroy cancer cells or tissues that have been left behind and to prevent recurrences. The stumps of the broad ligament are usually covered with necrotic tissue which gives rise to a penetrating odor, purulent discharge, and low continued temperature, irregular pulse, and retarded convalescence. The radium changes these conditions as if by magic. Healthy granulations replace the necrotic masses, the putrid purulent discharge is changed to an aqueous, scanty secretion, convalescence immediately becomes normal. Our cases are too recent to permit opinions as to the remote results of the prophylactic use of rays after extirpation. All our patients so far have remained well. Krönig rayed twenty cases after radical operation. Seventeen of these cases which have been treated one and one half to three years ago are at present still free of recurrences, while cases not rayed have shown sixty per cent. recurrences within the first year after operation.

Recurrent cancers after radical operations must be treated according to the same principles as laid down for operable cancer, i. e., if the cancerous tissue can be removed surgically, we remove it, and follow the operation by prophylactic applications of radium and x rays. If the recurrence is inoperable, we must resort to radiological treatment. Recur-

rent cancers are unfortunately very refractory to treatment, yet we must institute it as the only possible hope for the patient.

Inoperable cancers are treated solely by combined radium and x rays. They will cause a subjective cure, i. e., the hemorrhage, pain, and purulent discharge will cease. At times the cancer improves, so that it becomes operable, when, of course, surgical treatment is indicated.

If the condition of the patient, finally, becomes hopeless, we must resort to symptomatic treatment. We relieve the pain by aspirin, hypnotics, and lastly opiates in their various forms. We must abate the putrid vaginal discharge by cleansing douches, such as solutions of potassium permanganate and zinc chloride. Hemorrhages are arrested by applications of tincture of iron chloride, hot vaginal douches, or vaginal packings with gauze saturated in solutions of vinegar or acetate of lead. The general subjective condition of the patient is influenced favorably by administering wine, brandy, or whiskey. We may thus ameliorate the terrible agony of the unfortunate patients until death finally brings relief.

In conclusion, I wish to speak about the therapeutics of radioactive substances. The ideal treatment of tumors consists in the destruction of the pathological cells, without injuring the neighboring healthy tissue and the general organism. Such results are completely attained by radiotherapy. The action of the rays consists in a destruction of the atypical cells by an inhibition of their vitality, metabolism, and proliferating powers causing a necrobiosis of the cells, which now are completely absorbed. Young fibroblasts and lymphocytes are im-

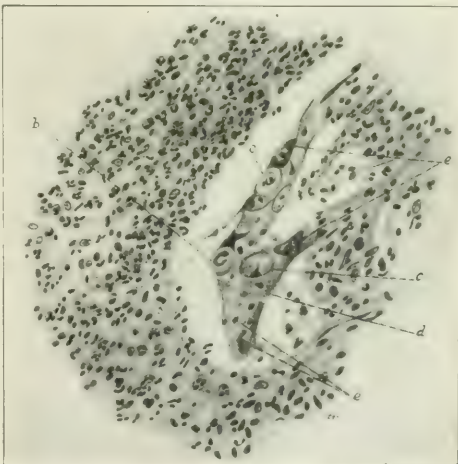


Fig. 5.—High power magnification of carcinoma. a, cell with distinct cell wall; b, cell with hazy outline and horseshoe shaped nucleus without nucleolus; c, cells with vacuolization of the protoplasm, nuclei seen as fragments; d, remnants of cell nuclei, without other cell structures.

mediately forced into the places formerly occupied by the malignant growth. In other words, the tumor is removed. Atypical malignant cells are much more sensitive to the actions of the rays than the



surrounding normal tissues. Therefore, pathological cells are already affected by rays which would not injure the surrounding healthy tissues. The employment of an ideal technique which would only kill abnormal tumor tissue and not injure normal tissue is possible. However, it will take years of the most painstaking investigation to perfect the technic of the application and use of radioactive substances so that normal tissue remains uninfluenced or uninjured by the rays.

The following histological studies substantiate these statements. The specimens were obtained from a Mrs. R., Augustana Hospital, No. 40,202, admitted June 4, 1914, referred by Dr. A. J. Ochsner. Clinical diagnosis: Carcinoma cervicis uteri inoperable. Figures 1 and 2 were obtained from tissue removed from the cancer ulcer on June 7, 1914; figure 3 from tissue of the same region on June 19, 1914, after 4,350 mg. hrs. radium element had been administered from the 9th to the 14th of June; figures 4 and 5 from the cervix August 5, 1914, after an additional application of 4,550 mg. hrs. radium element. Bimanual palpation now revealed a freely movable uterus of a normal size and form and normal annexa and parametria. The uterus, annexa, and parametria, appendix and parts of the sigmoid were removed on this date by Dr. A. J. Ochsner. Microscopic examinations were also made from the parametrial tissue, the sigmoid, and annexa. These were either normal or did not differ from the preparations here reported.

If we study the reproductions, we see that Fig. 1 represents a typical medullary cancer. Dense masses of carcinoma tissue are seen at *a*, lymphocytic infiltration at *b*, enclosing single carcinoma cells at *c*; *c* represents hemorrhagic areas and *d* a carcinoma cell nest. The structural details of the carcinoma cells can better be studied in Fig. 2, which presents a high power magnification of part of the former preparation.

In Fig. 2, *a* indicates homogeneous masses of large carcinoma cells; many of them show mitosis and other signs of a progressing growth; *b* solitary large atypical epithelial cells in the lymph vessels of the original stroma; *c* that new connective tissue is no longer being formed and is replaced by the atypical epithelial cell growth.

Fig. 3, *a* shows an entirely different picture of the cancer cells, due to vacuolization and granulation of the protoplasm and caryolysis of the cell nuclei, which latter are divided into two, three, and more parts; *b* indicates a giant cell, *c* solitary carcinoma cells in lymph vessels with distinct granulation of the protoplasm, and *d* parenchyma, containing many young fibroblasts. Active mitosis and other signs of a progressing growth of the cancer cells are no longer present. The lymphocytes advance between the cancer cells so that the tumor loses its continuity and compactness. In many places it appears as if the phagocytes entered the atypical epithelial cells to devour them. The connective tissue shows undifferentiated young fibroblasts and other signs of an active regeneration.

We recognize in Fig. 4 an enormous lymphocytic infiltration; *a* indicates a bloodvessel surrounded by muscle and connective tissue, *c*; *b*, a horseshoe shaped mass of atypical cells which show a marked

retrogression; *d*, solitary necrobiotic carcinoma cells surrounded by lymphocytes and connective tissue. The rest of the preparation is composed of lymphocytes, fibroblasts, connective tissue, endothelial cells, and young capillary and lymphatic vessels.

Fig. 5 represents a high power magnification of a portion of 4. We see at *a*, cells with a distinct cell wall; the protoplasm contains many small granules; at *b*, a cell with a hazy outline and a horseshoe shaped nucleus without a nucleolus; at *c*, cells, hardly recognizable, with vacuolization of the protoplasm; the nuclei are seen as fragments; at *d*, a cell with an indistinct cell wall; the protoplasm contains many large and small granules; at *e*, remnants of cell nuclei, without any other cell structures. Carcinoma cells are also seen in the surrounding tissue. The latter is made up of lymphocytes, leucocytes, and connective tissue cells.

What now is the significance of this investigation? 1. Radium causes an arrest of growth and development and necrobiosis of the cancer, and a simultaneous new formation of connective tissue, and blood and lymph vessels and a lymphocytic and leucocytic infiltration. 2. Under the influence of leucocytosis the connective tissue becomes rich in fibroblasts and other cell elements. It assumes a renewed activity of growth. 3. Finally the last vestige of carcinoma disappears, and connective tissue takes its place.

Whether the action of radium on cancer is also a biological one, is open to dispute. It is known that x ray applications cause a transitory leucopenia and a condition almost identical with the negative phase of vaccine treatment. As soon as a reaction sets in, an enormous leucocytosis follows with the simultaneous occurrence of evidences of a degeneration of the cancer cells, which latter may be due to a phagocytosis. This in turn activates a proteolytic toxin or ferment which disrupts the rest of the cancer tissue, leading ultimately to the complete death of all the cancer cells. On careful microscopic examination cancer cells may be seen that are being invaded by the leucocytes and are thus being devoured. Whether the leucocytosis is a direct result of the action of radium, or whether it is caused by the destruction of lecithin and the subsequent formation of cholin from the cancer cells by the elective action of radium on carcinoma cells, as Schauta asserts, it is impossible to state. The process would represent a form of autovaccination and a subsequent immunity of the entire organism. The action of radium on cancer, therefore, is twofold, i. e., local and serotherapeutic or chemotherapeutic. Locally it destroys cancer cells and chemotherapeutically or serotherapeutically it forms an autovaccine and thereby establishes an immunity of the system of the bearer. Therefore radium alone should suffice for the destruction of cancer. If it does not, it simply means that on account of an advanced cachexia or extensive metastatization, the body cannot react. The leucocytes are in a state of phagolysis. The phagolysis could be changed to a phagocytosis by the injection of autolysates, ascitic fluid, or auto-serum, as suggested by Vaughan. Further experiments along this line will be followed up and reported at a future time.

25 EAST WASHINGTON STREET.



# GENERAL FARADIZATION (BERGONIÉ) IN THE TREATMENT OF OBESITY AND OTHER PATHOLOGICAL CONDITIONS.\*

By HEINRICH F. WOLF, M. D.,  
New York,

Chief of the Department of Physical Therapy, Mt. Sinai Hospital.

It is most likely known to my readers that in the last electrical exhibition, electrical apparatus were shown which are used in the treatment of obesity. They created great interest among the general public and even the daily papers took the matter up. Many of them published articles, dealing with the subject extensively. For this reason I think it advisable to bring the subject for discussion before medical men, that the profession at large may be able to form an opinion on the merits of this treatment.

It is interesting to note that Dr. Sigismund Cohn, of New York, published a paper in the *NEW YORK MEDICAL JOURNAL* for September 6, 1902, in which he recommended the static current in the treatment of constipation. In some of his cases he has observed a distinct loss of weight. It is not necessary to explain that the muscular energy is maintained by the oxidation of foodstuff, especially fat and carbohydrates. A daily experience tells us that vigorous exercise prevents an accumulation of fat and helps in reducing.

While this is correct in patients who have become fat on account of lack of exercise, we know that there are a great number of people who cannot reduce in this way. This fact only illustrates that there are two forms of obesity, one due to overfeeding, the other due to some disturbance of metabolism or of an internal secretion. We all know that the latter statement has not much practical value. It is, so to speak, an attempt to explain the peculiar fact that human beings exist that can live on nothing and still gain in weight.

The calculations made by various scientists as to the necessary amount of food sufficient to maintain the equilibrium, does not hold true in these cases, and even if the amount of food is 1,500 calories below the standard, they still gain. It is evident that our knowledge on this subject is very limited. We do not know yet, why food agrees with some people and not with others; why some people, though apparently normal, can eat an unlimited amount of food without gaining, while others, just as healthy in all other respects, cannot indulge in the slightest degree. There are undoubtedly great individual and racial differences, which will be understood when we have fathomed the working of the various ferments. For the present we shall do well to remember the words of Zuntz, that human beings are machines of various degrees of efficiency. The one fact we must never forget, that obesity, genuine obesity, is always the result of relative overfeeding, of a discord between supply and demand.

We know from physiological experiments that a muscle uses up food in contracting, no matter how the contraction is brought about. It was therefore natural to try to replace the voluntary exercises by muscle contraction produced through electrical stimulations, as the latter cause neither mental

fatigue nor a strain on the circulatory system. It was necessary to make the stimulation as little disagreeable as possible. The methods of stimulation that we previously had at our disposal were such that a general application to all parts of the body, strong enough to be effective, was not possible. It was in this respect that Bergonié has assisted us.

The apparatus of Bergonié consists of a reclining chair with four broad metal electrodes forming the back and the seat. These electrodes are covered with a wet sheet and the patient is seated. Five broad electrodes are placed respectively on the abdomen, arms, and thighs of the patient. Sand bags are then placed on various parts of the body, especially the abdomen, with the object of increasing the amount of work the contracting muscle has to do, as it is known that the amount of food used up by the working muscle depends upon the amount of resistance it has to overcome.

After the patient has been placed, the electrodes are connected with an apparatus which, in the main, is nothing but a faradic battery. In the construction of this apparatus special care has been taken to make the current as regular as possible and to change its direction periodically. A series of resistance coils are provided, which enable us to increase or decrease the amount of current for each part of the body, at our will, according to the endurance of the patient. The construction of this apparatus, together with the size of the electrodes, makes it possible to administer a strong current without causing unpleasant sensations. I wish to say in connection herewith that there are some, though few patients, whom we found difficult to treat on account of their aversion to all electrical treatment. The cause of this idiosyncrasy I do not know, but these people do not necessarily belong to the so called nervous type.

This method of treatment is certainly very well thought out, but I am sorry to say that the results have been, at least to some degree, a disappointment. Shortly after this method had been introduced in Germany, numerous physicians complained of having had the same experience and Verth tried in a short paper to explain the cause of these failures. He pointed out that restriction of diet is absolutely necessary, which is in accord with Bergonié's instructions. It was a great shock to the advocates of this treatment when Durig and Libesny published the experiments they made in Vienna. They measured the gas metabolism by means of the Zuntz apparatus and found that, judged from the oxygen used up, and the carbon dioxide produced by a person who was treated in the chair for an hour with 250 pounds weight on his body, the energy expended was only equal to the muscular work done by walking three quarters of a mile in the space of an hour. We shall realize that such results are not likely to produce enthusiasm. It is necessary to add that the same investigators have been able to reduce the weight of some patients in the course of treatment, but are unable to account for it.

Returning to my own experience with this apparatus, I have to say that I can corroborate this statement. We have been able to reduce some of our patients five or six pounds in a course of about seven to eight treatments without a change of diet, but

\*Read at the Meeting of the Medical Society of the County of New York, January 28, 1915.

the majority either kept their original weight or gained considerably. This certainly was discouraging in the case of a young girl who lost weight in the beginning of the treatment, but later gained about eighteen pounds.

I think it is necessary for me to explain in this particular case why I continued the treatment for so long a period.

This young girl was suffering from epilepsy, and the examination showed that she was very constipated, which condition disappeared entirely after the first few treatments. At the same time the frequency of fits decreased so much that the patient herself insisted on continuing the treatments. Her general condition improved very much, but I have to add that after a few months the fits again became more frequent, although not so severe as before. In another case I had a similar experience.

The value of the bergonization is decidedly greater when the diet is restricted, and there is no doubt that the combination of diet and electrical treatment is to be greatly recommended. Only last week I treated a patient whom Dr. Alfred Meyer sent to me. She lost five pounds after two treatments and felt better than ever before after other reducing treatments.

And here is the point which I want to bring out strongly. All patients, even those that had not lost weight or gained, noted spontaneously the improvement in their general condition. This is especially important, as we know the other reducing treatments frequently leave the patients in a weakened and nervous state.

One patient whom I and others have treated for years for indefinite rheumatic symptoms, was continually complaining of cold hands and feet and stiffness of joints. This condition did not improve, but got steadily worse in spite of various courses of hydropathic and spa treatments taken abroad. It was interesting to note that the patient told me spontaneously of the remarkable improvement in these symptoms.

The improvement in the general health of the patients, the increase in strength and vitality, has been the one result which we have been able to get in nearly every case. This fact can be readily understood if we consider the influence of muscular action on the general circulation.

For many years I have been able to observe that patients whose muscles were atrophied on account of affections of the joints, improved rapidly, not only in muscular power, but in general condition, when electrical stimulation of the muscles for fifteen to thirty minutes was applied. We can readily understand how such a change may come about, if we bear in mind that hand in hand with the contraction of the muscles, no matter whether voluntary or artificially produced, a dilatation of the vessels of the muscles takes place from which ensues an improvement in the general circulation.

According to my experience no other method of physical therapy except gymnastics, can compare with this treatment. It is true that various hydropathic procedures may stir up circulation, but the effect depends greatly upon the intensity of the vascular reaction. Massage, though very valuable to increase circulation, works only in a passive way,

and the effect passes quickly. Gymnastics does essentially the same as the general faradization, but while the voluntary contractions of muscles cause fatigue, increase of blood pressure, and increased frequency of the pulse, the bergonization has no influence on the blood pressure and frequency of the pulse. In one case of arteriosclerosis the pressure sank from 215 mm. Hg. to 205.

I do not advocate this treatment as a lazy man's exercise, but there are a great many people, especially among women, both stout and thin, who, for various reasons, stoutness, weakness of heart, lack of strength, anemia, etc., are not able to undertake any kind of strenuous exercise. For these patients the general faradization should be strongly advocated.

I use the word general faradization and not bergonization to emphasize the fact that the method used is of no importance. The difference between the Bergonié apparatus and that of Nagelschmidt and Schnee is only a technical one, Nagelschmidt using the Leduc current, Schnee the condenser discharges. It is wrong on the part of these authors to allege superiority. It is quite obvious that the results obtained by either of these apparatus must be the same, as the muscle reaction is the same, no matter by which form of electricity, *ceteris paribus*, it is obtained.

There are a few more remarks I wish to make. As already mentioned, the general faradization has great value in the treatment of constipation. This is not surprising to physicians in this country, as the electrotherapeutists have used various forms of electricity, Morton wave, static induced, sinusoidal currents, for this purpose with good results. The failures are not due to the treatment, but to the wrong indications, as only such cases are likely to be cured in which constipation is a symptom of weakness of the muscles of the abdominal wall and related conditions.

It is of interest to know that bergonization has been used for the treatment of the abdominal muscles after confinement, and that the results were excellent. The rationale of this method is obvious. At least two of my patients have spontaneously informed me that they have lost their dysmenorrheal complaints in the course of treatment. As I had not known of these complications before and did not examine the patients to ascertain the cause of the trouble, I do not intend to go into the discussion of this fact.

The conclusions that I have come to are as follows:

1. The value of the general faradization as such for the reduction of weight is very problematical.
2. In combination with a rational diet bergonization seems to aid it in various degrees, sometimes quite considerably.
3. The treatment is very advisable for patients with obesity who complain of general debility, weakness of heart, anemia.
4. It stimulates the circulation without increase of blood pressure or frequency of the pulse.
5. It cures certain forms of constipation.
6. It seems to benefit certain forms of dysmenorrhea.

The reader may ask what prompted me to report a method of treatment which gives practically nega-

tive results. One of the greatest feats Billroth accomplished was to publish his bad results with his good ones. The deplorable state of physical therapeutics in this country is to a great extent due to the unlimited allegations of its adherents. Physical therapeutics is not taught here in the medical school, and, what is even worse, the attempts made in the College of Physicians and Surgeons have been given up. The result of this unbelievable situation is that much more is expected from these methods than is possible; that they are used in unsuitable cases and these failures are attributed to the method, instead of to the mistaken indications. This state of affairs is by no means indifferent to the community, as all the modern hospitals are equipped with an outfit for physical therapy, which is utterly unsuited for the purpose, which means that money donated for charitable purposes has been wasted for the benefit of some manufacturers. One of the worst cases of this kind seen is in one of the city institutions for tuberculous patients, where a complete hydropathic outfit has been placed on every floor in each building. Even laymen must realize that such apparatus have been installed, not for the benefit of the patients, but for grafting contractors and architects.

I am aware that this has nothing to do with the topic in question, but I thought it essential to show that even a strong believer in physical therapeutics can cheerfully report the shortcomings of these methods. It is possible that the confidence in physical therapeutics which has been lost by a great part of the profession, may be restored by limiting ourselves to accurate statements.

101 WEST EIGHTY-SIXTH STREET.

### PSYCHOTHERAPY.

By OTTO LERCH, A. M., PH. D., M. D.,  
New Orleans.

Professor of Medical Diagnosis and Treatment, Post-Graduate School,  
Tulane University.

(Continued from page 178.)

Mind and body or the body endowed with an active nervous system is the self, it is born, it grows and decays, it is an entity, we are aware of its existence through consciousness, that connects in a continuous chain, interrupted by sleep through memory, past, present and future. If the evolution of the mind and its functions is understood it can be readily seen why psychotherapy is such a powerful agent in the treatment of disease. With psychotherapy we stimulate higher centres to reach the lower centres and through them modify organic functions, purify the blood and bring it where needed. As far as this is concerned, psychotherapy does not differ from any other therapeutic method and it is finally immaterial whether the effect is produced by a cold water application, by the electric current, by a simple rest in the recumbent posture, by drugs, or by suggestion; in any case centres are stimulated and motor impulses are sent out to affect the organs and through them the composition and distribution of the blood. The cortex is the great regulator of all organic functions, and every disease causes cortical changes through the impulses sent from the diseased organs to the centres.

A purely mental disease does not exist, it is preceded or accompanied by cortical changes, even if we do not recognize them with our instruments. Continued disturbance of mental function causes structural changes of organs. Mental strain is a more frequent cause of arterial, kidney, and heart disease than is generally admitted; it is known that physicians die from it more frequently than saloon keepers. It keeps the arteries contracted and on a tension to furnish the brain with blood and forces the heart and kidneys to overwork. Emotions, fright and anger have caused and cause numerous cases of epilepsy, collapse, and death due to the sudden and severe disturbance of the circulation. Functional diseases do not exist; the name merely indicates ignorance. I have found in all cases of hysteria and neurasthenia, splanchnoptosis, the cause of the palpitating heart; the asthma, the contracted vessel, the cold extremities, the chills, the varied numberless pains, digestive and mental disturbances all are due to the serious disturbance of the circulation in this condition.

Mind does not exist separate from brain, and every organic function is due to brain activity. If a pain is felt, it is real, no matter whether the irritation of the centre is due to injury at the periphery or is central, produced by impure blood and a disturbed capillary circulation. Pure blood and a perfect circulation mean harmonious functioning of all organs, they mean good health. All therapeutic methods now in use may be aided by psychotherapy to increase their efficiency. A drug will not be absorbed and food will not be well digested if the physician himself is not agreeable to the patient, or bad news has upset him. Cheerful company and hope for recovery are good tonics, and a bad prognosis may make the patient miserable for the rest of his days. The physician is called to cure and if that is impossible, to prolong life, soothe, and relieve. Besides, with all diagnostic skill and intricate diagnostic methods, we yet make mistakes and no man can tell in any given case how much resisting power a patient possesses, how much parenchymatous tissue is left in an organ, capable of reconstruction. We must fight disease to the very last. Expectancy leads onward to recovery and protects in danger, or may cause disease, observed in any epidemic. The cold sweat, the pallor, and the tremor of fear illustrate this. Expectancy strengthens or depresses the resisting powers of the organism. This explains why the confidence of the patient is such an important factor, and why some physicians will obtain results with the same treatment that has failed in the hands of others. No physician ought to treat a patient unless he has his complete confidence secured. We have to adapt ourselves to new situations. This can be done only successfully by fixed habits. An effort to that effect will be noticed by the patient. Some are born physicians, their inheritance favors them. The best work is automatically performed; consciousness interferes with established habits. We are often unable to spell a word that we have used hundreds of times, or execute a simple act when consciousness meddles with the process. It helps in new situations and hinders in familiar acts. It is linked to and controlled by knowledge, habits stored



away in the unconscious, that continue to work even in our dream life. Only a small portion of this activity enters consciousness, though it modifies past impressions and not rarely influences us during the day of which we are not always aware. The greater part of our knowledge is beyond consciousness, where mental activity is constantly at work, called forth by suitable stimulation to appear in consciousness. The mind constantly arranges and rearranges perceptions and conceptions breaking down and building up, consciously and unconsciously. Sometimes when we listen to the strains of music, or lie down to sleep, we find a train of ideas rising into the margin of consciousness. They rise from the long ago or continue the thoughts that have occupied us during the day, preventing sleep against our will. This process continues during sleep in dreams, occasionally remembered, always influencing our actions. Many times we rise depressed or cheerful unable to account for either state of mind. Unconscious mental activity influences every organ in the body, every physical and mental act. The impulses are efferent, and the movements produced correspond to the intensity of the mental process. Suggestion may be divided in persuasion, suggestion in the waking condition, and hypnosis. Suggestibility is a normal characteristic of every normal brain, and Bernheim defines suggestion "every process by which a perception is introduced and accepted by the brain."

It plays a very important part in life, though it is rarely recognized. We receive and accept constantly suggestions from our environment, and education and training are synonyms for it. We believe what we are told to believe, do what we are told to do, and imitate what we see others do. The press forms public opinions, and the clergy religious beliefs. There is not a single act that is not influenced by it, and every impression received through the special senses is a suggestion. When using it for therapeutic purposes, we have to make a strong impression upon the mind, and this is frequently better secured by reasoning and persuasion than by an authoritative statement addressed to credulity, which is usually taken as a pure suggestion. Reasoning with the patient secures often better attention, increasing the efficiency of the measure. We may be left, however, under the impression that the desired effect has been secured by reasoning, when on close scrutiny we find that after all, suggestion has been at work. Each blends into the other and it is often difficult to decide whether suggestion or reasoning has been effective.

Hypnosis is in some cases preferable, as it secures the fixed attention needed, which occasionally cannot be produced in any other way. Hypnosis resembles sleep, and sleeping persons can be often influenced by suggestion, and hypnosis can be converted into ordinary sleep. In sleep, the condition of the mind is altered, a general dissociation is its characteristic feature, and this is the characteristic of hypnosis. A sleeping person reacts to stimulants, groans, and stops snoring when requested, answers questions, and by remembering dreams we know sleep. The lighter the sleep, the more it resembles waking. Feelings are exaggerated in dreams. Perceptions and conceptions are loosely connected and,

faultily associated, simulate real occurrences. Anemia, a slowed cerebral circulation and a retraction of the dendrites of the cells (cells have a different appearance in rest and in activity) are thought to be the physical basis of sleep, owing to the accumulation of waste in the blood, to a racial habit, and instinctive action. Usually the greatest nonsense is dreamed, though occasionally problems are worked out and remembered. In sleep, the brain is relatively inactive, repairing damage sustained during the day. The blood current is slowed, favoring this process.

Hallucinations, dissociation, exaggerated feelings, and partial or complete amnesia are characteristics of dream life, and time is accurately measured in sleep and hypnosis. Everybody dreams and is frequently able to recollect at least a portion of his dreams. An external stimulus rarely calls forth an exactly corresponding perception. Rattling of the window may cause the sleeper to dream of burglars entering the house, etc. Light sleep and light hypnosis differ less from the waking condition. In both, a patient may perceive everything that goes on and declare that he did not sleep at all. The mechanism of sleep does not differ from that of hypnosis. Suggestion produces both, fatigue favors sleep, exhaustion may prevent it, and hypnosis like the normal sleep, varies from a mere drowsiness to a deep sleep. Owing to the slowed circulation, only some of the centres are stimulated, and active respiration and circulation keep up. Fixed attention and obedience to stimulation are the essentials of hypnosis; the nature of the stimulation is not important.

A normal person is more alive to a particular class of excitants, he is preoccupied and may be absolutely blind and deaf to all others—insensibility to pain of wounds received in battle, the "absent mindedness" of the scholar, etc. In the hypnotic state the subject is nonsensitive except to certain objects, persons, or ideas. A person in a natural sleep exhibits slight differences of excitability toward the items of his environment; he is, however, more easily awakened by the sound of his name. A professional man is more susceptible to his professional stimuli, an exhausted waiter wakes up to the whispered call of waiter, and the slightest wail of the infant wakes the mother. A slight stimulation is effective under these conditions owing to the firmly established habit, the deeply cut path. The mind is awake, as it were, to such stimuli.

The criminal and the immoral cannot resist the slightest temptation. The path is ready for the impulse to travel, predominant to all others, many of which may be normal, etc. A hypnotized person exhibits inequality of excitability pushed to the extreme. The prescribed stimulus acts, while all others are without effect; he feels, hears, and sees only what the operator wishes the patient to see or to feel, yet we know that the stimuli produce their usual effect. This is due to narrowed consciousness, to attention fixed, just as in the waking condition, though more pronounced. The hypnotized subject acts in obedience to suggested ideas. Most of our acts are automatically performed, those of the hypnotized are all and purely automatic acts.

A bread pill given with the assurance that it is a purgative pill, will likely produce purging, and an injection of water, sleep, if the patient is told that he

has received an injection of morphine. Suggestion can counteract and increase the effect of any drug. Nothing succeeds like success, and expectation of failure frequently causes failure and the confidence of the leader gives confidence to his men. Hypnosis embraces all the phenomena of suggestion, and a suggestion given in this condition stands out with sharp and crude distinction in the brain, dissociated from all others, depending on attention. We have four stages:

1. Normal consciousness.
2. Consciousness and suggestion.
3. Consciousness and extreme suggestion.
4. Consciousness and hypnosis.

Three states of No. 4 are generally recognized: 1. The light drowsiness or somnolence in which the person can resist and open his eyes; 2, the light sleep in which the person is unable to open his eyes and is obliged to obey some of the suggestions; and, 3, deep sleep or somnambulism with the phenomena of catalepsy, anesthesia, and amnesia. In some subjects this state can be produced in the waking condition; all are produced by the suggestion, the operator remaining *en rapport* with the subject. If anybody suggests something to himself or persuades himself of something, it is called autosuggestion; the effect is that of suggestion. In either case a partial or complete dissociation of ideas is produced and the person acts in obedience to the suggestion. It may be accepted subconsciously or unconsciously and yet act powerfully, the person, unable to remember, does not know that his acts are prompted by suggestion in such a case. Everybody is more or less autosuggestive, and expectation renders autosuggestion more acute and pre-conceived ideas increase the effect.

Telepathy, thought transference, has not been proved, though it would find a ready and natural explanation if it could be done. It has been aptly compared with wireless telegraphy. We feel the stare of a person, who may be walking or sitting behind us, and on entering a dark room we become conscious of the presence of a person, even if we do not hear the breathing. Monroe, in his work on suggestive therapeutics, reports a very interesting instance. He hypnotized a young man, whom he had frequently treated, blindfolded him, and wrote upon a piece of paper, "go to the mantelpiece and get the baby's photograph." He then removed the blindfold, told him to open his eyes and do what was ordered on the piece of paper. The young man went at once to the mantelpiece, put his hands upon the first photograph nearest to him, which was the wrong one, but put that down, then to another, which he also put down, and lastly took the baby's photograph indicated, held it in his hand, and turning around with a blank expression on his face handed it to Monroe. Similar experiments were repeated with the same success. This and similar phenomena could be readily explained by thought transference. There is another condition to be considered with hypnosis, double consciousness or double and multiple and altered personality. At times another identity, then the one with which we are familiar takes possession of us, and we commit acts, in this state, that surprise us and our friends; we have not been ourselves. This peculiar feature is more or less common to all; men

show often an entire different character at home, than the one known to their business friends and in some instances both pass apparently along together, the one weak, the other strong, the one gentle and the other violent; the one quite unconscious of the other. This condition exaggerated and pronounced, is well known as double personality or successive personality. A man loses suddenly the memory of his past, forgets his name, his home, his friends, and is forced to start afresh with a new name and a new occupation; formerly gentle and cheerful, he is now violent and pessimistic. The new character may be the entire opposite of his former self. A girl may play the piano, paint, sing, and be cultivated in the one, and stupid and ignorant in the other. Though the character of the patient is entirely changed and his acts appear rational to strangers, they are recognized as entirely foreign to him by his relatives and friends. The patient may leave his family without any cause, commit theft, arson, or murder, and on awakening find himself miles away from his home or accused of a crime. In a few weeks or months the condition changes and the former personality is resumed with complete amnesia of the altered self. Sudden onset, changed consciousness, and partial or complete amnesia are characteristic of this state. This puzzling and apparently miraculous condition is easily explained when we remember that the self is a continuous flow of conscious states influenced by and linked to the unconscious in which are imbedded the experiences of a lifetime. Consciousness shifts and does so more or less definitely and permanently and assumes new relations with the past; then we have these peculiar conditions that rise out of the depth of unconsciousness. The process is one of dissociation. Hysteria and epilepsy produce these states not infrequently, and the circular forms of insanity, melancholia, and mania are similar conditions. Hypnosis also gives an altered personality, an altered consciousness, depending entirely upon the suggestions of the physician, with whom the hypnotized remains *en rapport*. It is a narrowed consciousness not entirely dissociated from the background. The patient can resist and does so more or less, depending on the state of hypnosis and on his unconscious self, that is, whether the suggestions of the hypnotist finds tendencies and predisposition. A moral person will not likely accept an immoral suggestion, steal or murder. In fact it has been questioned whether such a suggestion ever would be acted on. Amnesia if suggested, follows the somnambulant state.

In successful hypnosis the attention of the hypnotized is entirely controlled by the physician, he is blind and deaf to everything but the suggestions of the hypnotist, which he carries out. Religious ecstasy is self hypnosis and a conversion may change the entire personality. The hypnotist determines the ideas of the hypnotized, only more so than the preacher or orator whose speech is attentively followed. There is nothing unusual in hypnotism, and the greater attention is explained by the state of abeyance, a partial sleep in which the mind has been placed. The hypnotist suggests an idea which is executed in the usual way and with the usual apparatus. In the waking conditions there is a struggle between opposing ideas before any one, the strongest is executed. In the hypnotic state all the opposing

ideas are suppressed, with the exception of a few that are well and firmly established. Suggestions are accepted with varying readiness on this account as well as on the state of hypnosis and the confidence the hypnotized has in his physician.

A suggestion given during hypnosis is to be executed at a certain time after waking is usually obeyed; it is known as posthypnotic suggestion and is valuable for therapeutic purposes. The hypnotized is not aware that the act to be performed at a certain time has been suggested to him, and if asked why he did it, gives varying explanations that may or may not suit the case.

It has been mentioned that it is impossible to make anybody do anything to which he is strongly opposed, and the accepted suggestion is always modified by the habits and interests of the subject. Just as an orator cannot arouse the same feelings and the same ideas in various persons, all will feel and think differently as influenced by their unconscious knowledge. Time is well measured in sleep and in hypnosis and in the waking condition without our being aware of it, the suggestion is acted on at the stated time automatically. The process does not differ from many others similarly performed in the waking state. By this means sleep can be produced at a certain hour. The idea compels the subject to perform the acts at the time suggested.

Hypnosis is usually easily produced by suggesting sleep, and anything that will suggest sleep will be of assistance to produce hypnosis. A quiet and darkened room, a soothing, monotonous, but convincing voice are all helpful. Sleep depends upon fatigue and suggestion and so does hypnosis. If the patient is told to look at a shining object and that he will fall to sleep, tiring of one sense coupled with auto-suggestion is used for the purpose, and the same when the patient is directed to look into the eyes of the operator. Hypnosis ought not to be produced against the will of the patient, and this is certainly possible with susceptible persons, and the physician for his own protection ought to have a witness in the room. Every physician who employs this measure finds a mode with which best to succeed. Self confidence is absolutely necessary; the slightest doubt as to his own ability is readily observed by the patient and will prevent success. Like begets like and thoughts produce like thoughts. I commence by explaining the measure according to the intelligence of the patient, avoid the word hypnotism, finding my patients have a preconceived idea of something miraculous and supernatural about that, and therefore use the word suggestion. I tell them that to make an impression strong and lasting, attention is necessary, and this is best secured when the patient is dozing, with eyes closed, all the outside influences removed, and not able to hear or pay attention to anything else except what I have to tell him. During all this time I give suggestions of cure and restfulness, place the patient in a comfortable position, half darken the room, take his hands lightly in mine, direct him to look at me, continuing the conversation in a low monotonous voice. I tell him that I can see how his nervousness is disappearing, that I can see him getting sleepy and feel the blood coming to his hands, that they feel warm and heavy, and that his eyelids commence to drop and get heavy,

that they will close right away, that they will be closed by the time I count three—even before that, he has often closed them—making a few light passes to enhance the effect. I then continue the conversation with impressive suggestions of cure and hopefulness, tell him that he will improve from day to day, that the various methods and drugs for treatment adopted will cure him, that he will now have patience and not interfere with the process, suggest cheerfulness, sleep, bowel action, normal digestion, etc., and whatever may be necessary in each particular case. I do not trouble whether I have produced somnolence or somnambulism, all I want is the attention of the patient and to convince myself that the suggestions are accepted. After having given the suggestions, I tell patients that they will wake up refreshed and without pain when I count three. I do this slowly and do not raise the voice, and avoid during the whole process any shock or jar or excitement, but on the contrary do all I can to quiet and to soothe.

Confidence comes with success and practice. However, as stated before, hypnosis is rarely necessary and we get along in most cases at least with suggestion in the waking conditions. Only in very nervous and hysterical subjects I employ it, in those in whom it is next to impossible to secure attention otherwise. Contrary to the opinions of many observers, I find these patients very susceptible.

Psychotherapy is useful in the treatment of every disease. There is no nervous disease without a physical basis and there is no organic disease without nervous symptoms and the functioning of organs is disturbed in every disease. With this method we can restore the organs to better and more harmonious work. It is true that this method often is insufficient to cure, but what method is sufficient? All have to be combined for one purpose, to produce pure blood and to restore its normal distribution. With psychotherapy we can influence extensively every function of the nervous system; circulation and respiration, digestion, menstruation, micturition, defecation and perspiration, reddening or blanching the skin *ad libitum*, alter the mental activity, stop fright and excitement, quiet and soothe, and replace habitual morbid thoughts with healthy ideas of hope, improvement, and cure that extend into the normal condition of the mind and influence the patient constantly and profoundly during his life. If disease has made a deep impression upon the mind, the slightest stimulus will produce the original painful sensation. The "railroad spine" or the woman that falls and hits the end of the spine, and feels the pain years after physician and Röntgen rays have failed to show any trace of injury, illustrates this. A strong and opposing idea of improvement and cure will gradually obliterate the trouble, and this can be best achieved with this method of treatment. We can directly influence, stimulate, and paralyze sections of the vasomotor system and increase or decrease the amount of blood passing through an organ, increase its function or decrease it. We stimulate the cortical centres which send motor impulses along beaten tracks to the lower centres that preside over and regulate organic functions.

Amnesia can be suggested and pain stopped, and a wound made by thrusting a pin through the skin,



lip or cheek does not pain or bleed if the suggestion is given that it will not do so or that the part is dead, showing absolute control over the vasomotor system. Moods and feelings can be changed and a gloomy and pessimistic disposition made cheerful. Appetite can be increased, insomnia and will power strengthened. How much can be done depends on the quantity and quality of the brain, inherited and acquired. An absolute dissociation is not possible; some linking remains. Every suggestion is taken according to the intelligence of the hypnotized, just as the speaker influences his audience. If any object is suggested, no matter which, it will be seen as the hypnotized knows it best. For instance, city, house, dog, etc., everybody will see it differently, unless it is distinctly specified. Autosuggestion is frequently used by the patients and very successfully. They wear medals of some saint, of silver, copper, or brass, around the neck, a string around the belly or wrist, or some amulet. They remove warts and moles by stroking them and murmuring some formula, looking at the moon in the wane, etc.; their number is legion. Physicians use suggestion in their daily practice, injecting water instead of morphine, giving the assurance that a medicament will cure, suggest sleep and improvement, and unfortunately do harm with a bad prognosis or an unguarded statement or expression of the face.

If suggestions can be transformed into firmly and well fixed habits of thought and action, they are bound to become permanent. Forming new habits with this means we associate dissociated and dissociated associated ideas.

Faulty habits often produced by autosuggestion can be removed by suggestion, also the best method of education. The suggested idea, based upon the past experience, appears so vivid in the narrowed consciousness of the subject that he thinks that he experiences it at the time. If using suggestion in any of its forms for therapeutic purposes, we aid its effect by touching the painful parts or rubbing them lightly when giving the appropriate suggestion—the pain is disappearing, I remove the congestion, it is getting warm, etc.—we associate the sensation of touch and strengthen thereby the suggestion. If we wish to cure constipation atonic in character, depending on lack of innervation, we send a strong wave of force down the usual tract, causing increased peristalsis, and if due to spastic contractions of the colon, we soothe central irritation, establishing a new and firm habit of evacuation as to time. Defecation is an automatic act and must not be interfered with when once the habit is established, which is more readily done by associating it with an accustomed task, getting up in the morning, drinking a glass of water, smoking a pipe, eating an apple or a soft boiled egg, taking a spoonful of honey, etc. Most patients have found this out for themselves.

The action of psychotherapy does not differ from that of any other therapeutic measure; it restores disturbed functions to the normal, stimulates when organs are working below par, and slows overaction, and with it improves the composition and distribution of the blood. We live by sensations and they are the means to produce the desired effect. We can influence every cell in the body, every activity of the

brain, and the function of every organ. There is no difference whether the suggestion is given with or without hypnotism or by autosuggestion, the effect is the same. Everybody is apt to feel nauseated and to throw up on finding a few flies or hairs in his soup, or have his bowels upset on receipt of shocking news, and every patient who expects to get well, eats better, sleeps better, and has every organic function well stimulated. The application of suggestive therapy like any other method is based on a correct diagnosis, and without it, cannot be used with full advantage and may do harm. Pure blood and its perfect distribution is health, and with this method intelligently used we can purify it and bring it where it is needed.

In writing this article I have consulted many books and papers on psychotherapy in the works of Bernheim, Forel, Du Bois, and many others, to whom I feel under obligation.

1628 UPPER LINE STREET.

## HERNIA IN THE CHRONIC INSANE.

### *Frequency and Treatment.*

By J. ALLEN JACKSON, M. D.,

Philadelphia,

Chief Resident Physician, Philadelphia Hospital for the Insane.

Early in the fall of 1911, a patient in the Philadelphia Hospital for the Insane was taken critically ill with symptoms indicative of strangulated hernia. Dr. T. Hershey Thomas, visiting surgeon of the institution, was called and rendered surgical relief. Doctor Thomas suggested that it would be interesting to know the ratio of insane patients suffering from hernia and the advisability of operating in these cases in order to prevent strangulation and possible sudden deaths. In looking up the data, several interesting points were noted.

In 1911, a survey of all male patients stationed at Thirty-fourth and Pine Streets was made. Of the 1,237 patients examined, seventy-nine showed hernia. Of these, thirty-one had right sided inguinal hernia; twenty-seven left sided inguinal hernia; and twenty-one double hernia. Table I shows the psychoses, site of involvement, as well as the ages of the individuals; also that the highest number is to be found in senile dement, with manias a close second, and paresis third, with approximately an equal distribution among the others.

Such a high number of hernias in the senile group would be attributed by some to old age with subsequent muscular deterioration; such is not the case, however, as all hernias were of years' duration, and the development of hernia after admission is a very infrequent occurrence. The high percentage (comparatively) found in manias would lead one to infer that excitement, trauma, etc., would account for the hernia. This is not true, however, as all hernias antedate the psychoses, and practically no cases are seen in the insane after commitment which result from violence, trauma, etc. Constipation, which is regarded by some as the cause, is also eliminated, as all patients receive weekly purges if there is no contraindication.

A survey made a few days ago gives the results shown in Table II. Perusal shows that of 629,



ing and evening rounds. It is almost a fixed rule that if a patient presents any abdominal symptoms and has hernia, the site of the hernia is always examined. Constant examination of these patients by highly trained special attendants on bathing days, twice weekly, as well as the daily baths of those patients confined to bed, prevents the oversight of strangulation in a terminal dement. The hernia, as a rule, if seen early, can be reduced by taxis if symptoms are indicative of trouble. Weekly purges are given.

As to trusses, one should be governed by the mental condition of the patient. It is needless to say that trusses prescribed for patients who are excited and confused would be of little value and even dangerous in homicidal and suicidal subjects. Only those patients who are up and around in the wards and are possessed of considerable intelligence, or employed, should be permitted to wear trusses. To the question, Is this not conducive to strangulation?—we reply that strangulation is a very infrequent complication. Of the patients studied in the institution at the time Table I was prepared, four years ago, very few had trusses and none have had unfavorable developments.

#### OPERATIVE TREATMENT.

The question naturally arises: Would it be advisable to offer these patients' relatives and friends operative procedures to make the patients physically comfortable as well as prevent strangulation? Years ago, hospitals for the insane were making efforts to secure well equipped operating rooms, and every argument was used to show the necessity of operating on insane patients for almost every known surgical condition. Having secured these operating rooms, we are now assuming an entirely different attitude and trying to be a little more conservative in consenting to operations on the insane. Our studies and experience based on this particular group of cases would not lead us to insist on an operation for hernia for the following reasons:

1. The highest percentage occurred in senile dement, whose time, as a rule, is limited on this earth.
2. In paretics, general anesthesia is distinctly contraindicated, and the advisability of giving anesthetics is questionable owing to the susceptibility to excitement which, at times, is of a prolonged type. However, in our experience, anesthesia, as a rule, has no influence on mania one way or the other, and even though the patients have been restrained after operation, the surgical results were gratifying.

It is needless to add that every hospital should be equipped with an operating room wherein to render surgical aid in case of strangulation.

#### SUMMARY.

1. From five to six per cent. of the male chronic insane in the Philadelphia Hospital for the Insane have hernia, usually inguinal.
2. Hernia rarely develops after admission to the hospital. Hernia does not develop in the insane during excitement or as a result of confinement and physical degeneration.
3. Is hernia due to the muscles suddenly acting directly opposite to each other, whereby the inguinal canal is weakened?

4. Palliative treatment consists of careful examination by physicians and trained attendants.

5. Trusses may be used in a selected class of cases; the absence of trusses, however, does not aggravate the condition nor increase the tendency to strangulation.

6. Operations are not necessary, except in the case of strangulation or for physical comfort.

7. Strangulation is an infrequent complication.

THIRTY-FOURTH AND FINE STREETS.

#### SEX DISCUSSION.

BY LEE ALEXANDER STONE, M. D.,  
Memphis.

William Marion Reedy has said that it is "sex o'clock." He is right, it is sex o'clock. Already have the hands on the dial of the clock of destiny begun to point to a new era in our civilization. Society is ready to lay hands on the false structure it has builded in the past. Its members are being prepared for the crash that will mark the downfall of tradition and superstition, and the birth of a new ideal that is destined to precede a change in social conditions. The dead lumber room of yesterday is being piled high with cast off standards which have been for so long established around mock modesty and prudery, and from which secret vices have so frequently emanated. A social revolution is impending. "Finer and stronger ideals and the truth!" will be the battle cry of its warriors. It will arouse men and women, cause them to throw off the shameful shackles of the past, and rally around the flag of progress. The impending revolution will mark an epoch in the efforts of teachers of social hygiene, who are even now trying to arouse society from the lethargy of past centuries and force it into reconstructive action based upon present day knowledge of natural laws.

That the members of modern social systems have not been willing to recognize the ever ruling sex instinct is unfortunate. It always has been the controlling power. Without the controlling elements of sex, society and civilization would never have developed. Everything would have remained just as it was in the beginning, cold and passionless. The creating of human beings of opposite sex caused man to aspire to the establishment of higher ideals; this ambition resulted in a fixed determination to excel. Men and women became controlled by sex hunger; thus may sex hunger rightfully be called the inventor of an ideal.

If man had never been hungry for woman, and if woman had never been hungry for man, none of the finer traits of human character could have been developed. Love, art, music, poetry—in short, all of the finer qualities that have gone so far toward making life beautiful could never have existed. Nothing would be known of religion; human beings would not have felt the need of the exaltation that comes with it had they not been controlled by sex hunger.

Modern religion after all is nothing more than the offspring of sex worship. The establishment of a Deity resulted from the act of procreation and its product. The worship of the generative organs



primitive man caused him to conceive the god, Phallus or Priapus and the Yoni. The Phallus was the symbol of the male organ of generation and the Yoni the symbolic example of female procreative power being used in shape. These symbols were probably the first ones worshipped by man. Remnants of ancient phallic and yoni worship may be found in all religious teachings even today. The Bible is full of the symbols of phallicism and especially is the old Bible full of sex discussion. The Catholic church searched the pagan world for material from which to construct its ritual. And it is not hard for the student who has a knowledge of the worship of Priapus and the yoni to recognize in certain parts of the ritual, survivals that came directly from temples dedicated to the worship of the organs of procreation. Pope Constantine was a far seeing man in that he realized that to construct a religion which took no cognizance of sex and procreation would be a mistake, and that it would be hard to correct such a mistake after it had once been made. He realized that to establish a religion which would live, he must recognize the sexual act between man and woman as being necessary to the existence of society and the church. He placed the control of marriage in the hands of the clergy, and made certain fixed rules governing the mating of human beings which, if disobeyed, destroyed the transgressors' chance of attaining heaven through the mediation of the church. So throughout the ages man has recognized the power of sex and sex hunger and built his religious ideals to conform to them.

Even today in Ireland are to be found remnants of phallic worship. In certain sections of the country may be found upright pillars of rock with Celtic inscriptions around their bases bearing a message to the husbands of wives who have not borne children. Close to the top of each of these pillars is a square hole, and it is said that the husband shakes hands with his bride through one of these apertures, and both say a prayer for children. They come away fully convinced that their prayer will be answered. These remnants of the most ancient of all religions may be found in every part of the known world.

During the time of nature worship (the worship of the organs of generation was real nature worship), a finer and nobler civilization in many respects existed than that which is being enjoyed today. There can be no doubt that when man worships at the shrine of nature and not the idols of Mammon he surpasses those worshippers before altars wherein may be found the causes for race decay. More nature worship and less dollar worship will elevate all peoples of the world to a higher plane of civilization and intellectuality than that which they are now enjoying, and cause them to race toward an Utopia and the birth of the Superman.

The advent of ancient man into power, succeeding as he did, woman, marked the birth of sensuality. Prior to that time, when women and the worship of the female principle in reproduction were the strongholds of an advancing civilization, a finer element was present in their civilizing qualities than has been noted since man assumed the reins of statecraft. Whenever a nation holds the

female sex in great respect, and attention is paid to their qualifications to advise, that nation ascends to heights not to be reached by one which respects only the male intellect. This statement may be verified by viewing closely the causes of the rise and fall of ancient nations.

Nearly all of the gods worshipped by the people of ages ago belonged, according to some ancient writers, to the female sex and were worshipped as mothers of creation. After the birth of the patriarchal age, because of man's conceit and his desire to render himself more important as a factor in controlling the action of his mate, he appropriated the gods to himself, they were changed by him from female to male, and he eliminated entirely all trace of female characteristics. Had it not been for the deteriorating influences of priestcraft, man would still be worshipping at the shrine of motherhood; superstition, false modesty, and prudery would never have existed. Prior to the advent of man power, it has been observed by writers and investigators that the opinion of the women was peculiarly adverse to all sensual indulgence and especially that of the sexes. Although the creative principle was adored, and the organs of sex were the gods worshiped, purity in mind and in thought was maintained and none of the vices produced by sensuality were to be seen.

There must be in all sex discussion a dissociation of the terms sexual and sensual. Sexual matters are the result of physiopsychic love and a desire for offspring, with a feeling that there can be no peace of mind for the male or the female unless they can be joined together by the bonds of conjugal joys; while the sensual marks a desire for erotic pleasures to be obtained from sexual congress outside of lawful wedlock without ambition for offspring or marriage. Sensuality destroys love and allows only lust and a desire for fleeting pleasures to control the intellect and the better and saner judgment.

The sexual life is a holy as well as a socially necessary one, and to look on the discussion of those subjects that will produce a higher race in the future as being unclean, is foolish in the extreme. No harm can possibly result from discussions of sex questions if they are reverently entered into and undertaken intelligently and from a scientific standpoint. Hysterical discussion by those who are not acquainted with the subject should be forbidden. Fortunately, all discussions and questions involving the developing of a higher ideal come out from under the influences of radicalism and sentimental hysteria unhurt.

Sex discussion, it may be repeated, is the oldest of all the factors that have gone toward developing a strong intellectual entity in the past and at present. It has engaged the thoughts of almost all of the ancient philosophers and certainly has interested modern writers to the extent of causing them to establish a fictional literature and drama around it. It is believed by some that the trend of the modern mind will gradually obliterate, except to the curious student, the whole literature as well as the drama of former generations. The novel since its very inception has been built around the relations of the sexes. The drama has followed closely in its footsteps. The play of seduction is no longer of vital force, and the novel with this theme will soon be-

come very scarce. The new adjustment of sex relations will result in a literature purer and stronger and more uplifting than the world has ever known.

Within the oldest temples of Egypt are still to be observed sacred apartments which contained the Holy of Holies, and to which in past ages, none might gain access but priests and priestesses of the highest order. Within these apartments are pictured the mysteries of birth, together with the symbols of generation—emblems of procreation. The priests and priestesses were the instructors of young men and young women in all matters pertaining to sex. It is needless to say that as a result of this broad education their views of life were purified, and as a consequence of their early training they developed into physical as well as intellectual giants and gave Egypt the wonderful civilization it once enjoyed, a civilization mighty in its proportions.

It is to be hoped that we are approaching an age wherein intellectuality will reign supreme, and wherein the problems to be solved will admit of no answers other than those based upon a scientific foundation. The internal constitution of the individual member of society must change so that his external environment may be altered to benefit society in general. The Bluebeard's closet in modern institutions must be got rid of and light must be let into rooms in the brain of man that have remained dark for so long.

If the progressive things that should live and be of benefit to all mankind and be of aid in the raising of higher ideals are to come, men and women must stand together and put forth their best efforts toward developing the young in order that they may profit by and not repeat the mistakes their elders made by stunting their intellectual development.

Let this present war among some of the greatest nations of the world mean the death knell of hypocrisy in order that truth may appear naked before the eyes of all mankind and not be offensive; as Holley says: "Let it be to us as it was to the early Christians, a flame to purge every value of its false accretion, in every aspect of life to show forth its new caught reality. Like them, I tear my calendar from the wall; it is not the year 1915, it is the year One."

It may be truly said that the gods are entering the twilight of their great day, a night of Stygian darkness is approaching for them. When the sunrise of a new day comes, it will be found that truth and knowledge slew them while they slept. The time has come when the spiritual and the material are ready to blend into one mighty whole for the good of mankind. Knowledge and intellectual power are bound to replace tradition, myth, and superstition.

1190 LINDEN AVENUE.

**Treatment of Dementia præcox.**—N. J. Lemei, in *Zentralblatt für innere Medizin*, June 10, 1915, it is stated instituted thyroid treatment in twelve cases of dementia præcox, with excellent results. Capsules each containing five grains (0.3 gram) of desiccated thyroid substance were used; one to three capsules were administered three times daily. In eleven cases complete recovery is asserted to have taken place.

## WHAT SHALL WE DO WITH SING SING PRISON?

BY CHARLES D. RIES, M.D.  
New York.

Considering the strenuous efforts of the various health departments and antituberculosis societies, and the laws and regulations enacted to prevent the spread of tuberculosis, viz., the punishment for spitting in public places, observation of suspicious cases, the supervision of tuberculosis patients (which becomes almost a persecution from the activity of the visiting nurses, and the postal cards sent by the health department to delinquent patients), the ordinance which compels a landlord to fumigate or renovate all apartments vacated by a tuberculosis patient, the school inspection of children, the abolition of drinking cups in public places, etc., does it not seem a pity that men placed under the care of the State should be neglected? Men who, deprived of their liberty, of family ties, of even the privilege of complaint, whose identity has been lost, must remain in an atmosphere of dampness and darkness, unable, owing to ironclad rules, to ward off the dread white plague.

I am speaking of the prison at Sing Sing. Oh! you will say, of criminals, malefactors, etc. I grant you all that, but men, nevertheless, human beings fashioned as you and I are fashioned, with the same sensibilities, with the same love of life, men who, perhaps, in the final judgment may pass ahead of many canting hypocrites who today are lolling about in comfortable armchairs, lifting their white hands in holy horror at the thought of such places as the one I shall try to describe.

To begin with, let me describe the cell house. Imagine a grim, gray building of thick stone, built ninety years ago, containing six tiers of cells, one hundred in a row, placed one on top of another, each cell six feet six inches long, forty-two inches wide, and about seven and one half feet high. The walls are of thick stone, reeking with moisture; the door is a grated affair. Backing this are another 600 cells exactly like the first; in all, 1,200 cells accommodating 1,740 prisoners. Many of these cells hold two prisoners. How about the cubic air space required for each adult? There are two doors to the cell house, one at either end, which provide the only means of ventilation. The cells are aerated through the barred doors. There are no toilets, so each man is provided with a bucket on going to his cell. Can you imagine the stench emanating from 1,740 buckets, in which as many men have expectorated, urinated, defecated, and perhaps vomited throughout the night. Even during the day when it is empty, the cell house reeks of the tomb.

The kitchen, a large stone paved room, is filthy; the cooking is done by steam. Leaky steam pipes and refuse make the floor a puddle of dirty water, through which the men prisoners, who do the cooking, slop along.

The bakery, in which five tons of bread are baked daily, is a large, well lighted, and well ventilated room, as rooms go in Sing Sing, but the bakers knead the bread while wearing the undergarments in which they have slept. Some of the men are syphilitic; many are tuberculous; but that is a mat-

ment of health forces us to report all the cases of tuberculosis we treat; and it is only a short time ago that all people applying for a peddler's license were obliged to submit to a Wassermann test. If society really wants to stamp out disease, what a field for activity is furnished by Sing Sing prison.

Thanks to the efforts of one man, a man who can look beneath the surface, and see beneath the rough exterior the spark of manhood, conditions have improved incalculably.

The day I visited the prison was a holiday. The men were playing ball and there was the inevitable "rooting"; others were playing games, others chatting, reading, smoking. The yard looked like the playground of a public school at recess time; no prison stripes, only a gray cloth uniform; no prison haircut, only smooth shaven faces; no lock step, the men walked two by two. The men were orderly, clean, hopeful; they were on their honor and showed it. Keepers and prisoners were apparently on friendly terms; there was no dodging of a keeper's club. The grounds were patrolled by delegates chosen by the men from among their ranks, and the discipline was perfect.

They have bank accounts at the office. Any money sent to a prisoner is kept at the office, and a receipt is given him. He draws against this account, and can buy tobacco, fruit, tea, coffee, to keep in his cell. At night boiling water is given to the men, and they can make a cup of tea in their cells. They have lectures, moving pictures, a library, and schooling. Treating them too well, you will say; no, it is giving them a chance to reform, treating them as human beings, and showing them that the world is not against them, or to use the motto of the welfare league, "Be good and make good."

All this has been done by the untiring efforts of one man, the Honorable T. M. Osborne. What has been the result? Efficiency and discipline have improved wonderfully. There are no keepers in the shops, and yet the output has increased forty per cent. The men are trusted and are making good. They are losing that feeling that for them all is over and lost, which was so prevalent not so long ago, for after all, these men, prisoners though they are, are human beings, who a long time ago had perhaps lofty ideals.

They surely had a natural desire to live and an ardent wish for happiness. They could laugh and be gay like other people. Their smile is different now. Their body is whole, but their soul is warped. They are physically alive, but their soul has departed prematurely, leaving their automatic body to run out by itself. They love the din and noise of the cell house and their stone room shaped like a coffin; it represents their world, which has narrowed down in its dimensions. The atmosphere reeks of the tomb and they are its dead. The past is blotted out; the future is a blank. They have a vague naive idea that at some future time, still years distant, they will be allowed to go and lose themselves far away from human habitation, and live quietly, if the world will let them. You will hardly dare tell them of the misgivings you feel. You know that they will fail, and that then they will die, to be forgotten by all righteous men. They had their fill of punishment anyway, and of man made justice. Their tortured

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spirits will break away from the hateful body in which a cruel Nature had imprisoned it, and which was the cause of all their misery. A few people will gather around the body trying to determine whether it died from tuberculosis, suicide, alcoholism, or starvation, as if that made any difference. Their spirit will look down upon this earth for the last time, as a boy would look at an ant hill, but with one difference. The boy would say, "What intelligent animals"! The spirit will say, "What fools these mortals be!" and soar away to the arms of its Maker.

If one man can make 1,740 men, more or less hardened, love, honor, respect, and obey him, does it not show that there is good in these men, that they are grateful and willing to return good for good, trust for trust, decency for decency, and faith for faith? And yet, the State, with all its power, leaves these men to rot in a stinking prison, turns them over bound hand and foot to disease. The new warden, by lengthening the hours of recreation, abolishing the rule of silence, and giving the men an incentive, has overcome to a wonderful extent the apathy and discouragement of his charges, and in that way has gone a long way in the right direction. There is a limit, however, to his powers. He cannot rebuild his cell house, nor prevent the cold, damp air from the river striking the poor shivering wretch in his tiny cell.

We read with perfect equanimity of a man being condemned to twenty years' imprisonment. Picture to yourselves twenty years in the place I have so inadequately described. We read of the iron maiden, the rack, the thumbscrews of the inquisition with horror. We now are more refined, and do things in more elegant style. We condemn a man for twenty years, let him wear the garments of a syphilitic, breathe an air infected with tuberculosis, share a reeking stone room with another adult. Have we advanced so much? Is it not high time that our State Department of Health stop theorizing and do something? Instead of pursuing a lone patient from house to house, is it not time to wipe out this blot on humanity, to try to stamp out disease in its breeding place?

Transgressors of the law, I grant you, but how many of us have never transgressed some law. How many of those poor men can trace their downfall back to environment, lack of Christian charity, and to early influences? Will it reform these men to cast them into filthy holes with the world against them, or will it give them a chance to nurse their bitterness and come out with murder in their hearts? And we, of the medical profession, who talk so glibly of preventive medicine, whose work is to go among the sick and needy, to alleviate the ills and pains of humanity, can we do nothing to help these poor wretches!

Most of us have gone down in the slums and tenements to help the poor and the needy with no thought of recompense, or even of gratitude. Thousands of our calling have met death bravely in laboratory or lazaretto, are courting it on the battlefields of war or pestilence, simply because we consider it our duty to mankind, and yet, here at our very gates are men, deprived of liberty, even of free speech, with none to heed their plight, and we pass them by.

We have no right to judge, but we are bound to help those in distress. Can we not get together and help these poor wrecks cast on the shores of despair, to refit themselves, and, after digging away the quicksand of disease, help them set sail for fairer shores? In this case we shall earn and receive gratitude. That in itself will be a novelty and worth trying for, and if by aiding them to regain their health and self respect, we can put five per cent. on the right road, will it be love's labor lost?

If Mr. Osborne, with the strength of his convictions, has been able to accomplish all that he has done in the face of almost unsurmountable obstacles, can we not as a body see to the carrying out of laws which exist for the citizen, but have been forgotten for the unfortunate men who sinned and were caught at it. Sinners, yes, but let him who is without sin cast the first stone. It will be hard enough for these men to earn a living on their release without adding to their handicap, a tuberculous or syphilitic lesion. This is worth considering, but above all, remember the words of the Great Teacher, To all sinners mercy.

### Therapeutic Notes.

**Sugar as an Oxytocic.**—Roig, it is stated in the *Canadian Practitioner and Review* for July, 1914, recommends sugar as an oxytocic, especially toward the end of labor where delay is due to uterine inertia alone. He confirms the original observations of Keim. In the system of pregnant women at term there is an unusually large quantity of sugar, and at the start of labor, the uterine muscle is amply supplied with it as a source of muscular energy. In protracted labor, however, or under various other conditions, the supply may prove insufficient, and abnormal weakness of the uterine muscle result. Cane sugar acts as well or even better than milk sugar, and is more quickly absorbed. It should be given in small, frequently repeated amounts, and in concentrated solution, between meals; six drams (24.5 grams) of sugar, dissolved in a half glassful of water, may be repeated several times at half hour intervals.

### Treatment of Some Common Ocular Affections.

—T. F. Wickliffe, in the *Kentucky Medical Journal* for August 15, 1914, referring to catarrhal conjunctivitis, recommends the following solution for office use by the general practitioner:

R. Zinc sulphatis, ..... gr. x (0.6 gram);  
Aque destillate, ..... 50 (3.0 c. c.);  
S. Sig.: Zinc sulphate solution, two per cent.

This should be applied to the everted lids with cotton on an applicator, and the excess washed out with a solution of boric acid. For home use the following should be prescribed:

R. Acidi borici, ..... gr. x (0.6 gram);  
Alcoholis, ..... ℥xxx (1.25 c. c.);  
Aque destillate, ..... 50 (3.0 c. c.);  
S. Sig.: Three drops to be placed in the eye three times daily.

With the foregoing treatment catarrhal conjunctivitis can be readily cured, unless it is due to eye-strain, when proper refraction will also be required. In phlyctenular ophthalmia textbooks recommend



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CHARLES E. DE M. SAJOUS, M. D., LL. D., Sc. D.

CLAUDE L. WHEELER, A. B., M. D.

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## HYSTERIA AND PSYCHANALYTIC INTERPRETERS.

Since the middle of the nineteenth century interest in mental healing has been intense. After much study the mysteries of Mesmer became the simple hypnosis and suggestion of Bernheim. The errors due to ignorance of neuropathology were replaced by the diagnostic precision of Babinski, who showed us clearly how to distinguish hysteria from organic disease, in the treatment of which psychic measures lead only to disappointment. Bernheim himself has long since transcended the exaggerations of his earlier assertions. Across this trail of progress kept intruding the notions of hysteria advanced by Charcot and his pupils. The confusion they caused was hopeless until the Paris Neurological Society, at the persistent instigation of Babinski, clarified the whole matter in the memorable discussion of 1907. (See editorial article, What Is Hysteria? NEW YORK MEDICAL JOURNAL, June 13, 1908, page 1159.)

Against the general acceptance of the conclusions then reached are three powerful influences. The first and greatest is the class of men who do not think for themselves, but derive their notions from authority, professor, textbook, or neurological pundit. The second is those teachers and writers whose very reputation has been made by maintain-

ing doctrines now superseded. The third counteracting influence is the mystical tendency of certain persons. The minds of these are fascinated and seize upon whatever doctrine is least comprehensible and shows the greatest complexity and apparent profundity; the type, in fact, which at the time blindly followed animal magnetism now loses itself in the mazes of a psychology fast developing into a dogma which its founder Freud must view with alarm when he looks back upon the tentative gropings and frequent changes of viewpoint of the real investigator. Even the use of a good method, a merit of psychanalysis which no one gainsays, no more gives immunity from false conclusions than a good bacteriological technic saved Sanarelli from imputing to his bacillus the contagion of yellow fever, and others from numerous "discoveries" of organisms causative of carcinoma. If trained observers can commit such errors in the concrete science of bacteriology, with what suspicion must we view the interpretations upon which is based a dogma at such variance with a body of facts carefully observed by competent modern and equally advanced neurologists.

## THE ARTHRITIC DIATHESIS.

Diathesis, considered as a constitutional state which predisposes to disease, is somewhat lightly regarded in these days of ultrascientific research. Not many years ago, diathesis was looked upon as a most important aid in judging whether an individual was likely to contract a disease, and was consequently of value in initiating preventive measures. The patient was the soil and the disease the seed. If the soil was favorable and the seed was sown, or chanced to fly in that direction, it would develop and flourish. On the contrary, if the soil was unfavorable the seed would fall on barren ground.

Recently, there has been published in an American contemporary a paper on the arthritic diathesis, contributed by a well known British physician, in which a great many interesting points are brought out, and which corroborates previous editorial remarks in this JOURNAL. The writer tabulates the diathesis or habits of body as follows: 1. The arthritic; 2, the scrofulous or strumous; 3, the lymphatic; 4, the nervous; and, 5, the bilious. As for the arthritic or rheumatic habit of body, the subjects of it present several peculiarities. In early years there is often no appearance of marked weakness. Perhaps the most conspicuous feature is sore throat with recurrent tonsillitis, and, as Poynton and Paine and others assert, the tonsils are a site of lodgment



of the specific germs of rheumatic infection. Arthritis more or less acute is apt to occur in children and the existence of this arthritic tendency entails a special liability in the textures of the individual to receive and encourage the development of the specific germs of rheumatism. Again, many manifestations of true rheumatism are articular and plainly declare themselves in various textures; hence occur varieties of erythema, purpura, and cutaneous nodules. Carditis in all its forms, meningitis, cerebral and spinal, and chorea come into this category. The lymphatic and glandular systems appear to be singularly immune from rheumatic disturbances. It is further pointed out that, in the third decade and after, under provoking conditions persons of the arthritic habit are liable to manifest symptoms which plainly depend on the onset of gout, which is to be regarded as a branch of this basic diathesis. There is a tendency to obesity in arthritic families. As is well known, one of the most noteworthy features of arthritism is its resistance to the inroads of tuberculosis.

The writer makes out a strong case for the need of studying the diatheses. As already stated, if the physician knows the diathetic proclivity of a patient he is able to employ useful preventive measures. Moreover, the intelligent physician always takes the personal equation into account, he treats the individual rather than the disease, and when the tendencies and proclivities of the patient are known, the disease can be more successfully treated. Therefore, it is strongly recommended by the British writer that diathesis be a carefully taught part of clinical medicine in the schools, for with the acquirement of this knowledge some of the puzzles of practice are understood, owing to the blending and interaction of mixed diathetic tendencies which present themselves and are naturally inevitable in all communities.

There is a good deal of sound common sense in the contention that the diatheses are worthy of study. It is obvious that such diatheses exist, and from the standpoint of prevention alone it is well, indeed would almost seem imperative, that the physician should have a working knowledge of the subject.

### DISINFECTION

For many centuries there has been a widespread belief that if an odor is sufficiently strong and unpleasant, no disease will make its appearance in its neighborhood. Various ill smelling substances have been hung around children's necks to ward off diphtheria, and feathers are burned to assist in preventing epidemics. To this day the laity determine the

efficiency of an advertised disinfectant by the degree of odor.

As the value of such materials became more and more questioned, bacteriological examinations showed that most of them had little if any action upon pathogenic organisms. It was found that most of such bacteria were unaffected by these solutions, except in such concentration as to make their employment impossible. Certain disinfectants, however, survived the experiments and came to be used extensively after recovery from many of the infectious diseases.

When the patient who had suffered from measles, whooping cough, etc., was declared convalescent, the quarters which he had occupied were disinfected. To the afflicted family it was an ordeal, but one submitted to more or less readily, on account of the feeling of safety that was acquired. As information concerning these diseases increased, it became evident that ordinary disinfection was not the final word, particularly in measles in which the chief infectious period is before the disease is recognized. In the course of time disinfection ceased to be a fetish, and various cities began to modify greatly the methods of the board of health. If patients were no longer infectious later in the course of the disease, and disinfection did not disinfect, what was the use of going through the accepted forms of incantation? In certain localities the authorities have had the courage of their convictions and reliance is placed largely upon the ordinary methods of mechanical cleaning with a vacuum cleaner, aided by hot water, soap, and scrubbing brush. If, however, a gaseous disinfectant is deemed appropriate, formaldehyde evolved by the permanganate method is the simplest and most effective.

It is evident also that any information that tends to simplify the methods of control or shorten the term of quarantine, will be received with open arms by the community in general and by the wage earner in particular.

### DO WE BEAR INSPECTION?

Tenements, restaurants, bakeries, and other public places are being inspected by physicians, or at least at their instigation; the very existence of boards of health is due to suicidal efforts by the profession. This tendency to examine into health conditions is rebounding upon its inventors, and the doctor's professional premises had better be kept at all hours in proper condition for examination by those he has himself educated to ways of cleanliness.

One of these nonofficial sanitarians, expert at least in the matter of detecting the presence or absence of dirt, recently sent an open letter to a

prominent newspaper on the unsanitary condition of some effects in the doctor's waiting room. It was written in kindly spirit, but the physicians who read the letter must have been set both thinking and doing. This critic called special attention to the condition of the literature by which the physician entertains and hopes to retain his patients while they await his convenience. Often these have been used by patient after patient, until they are filthy, though magazines are so cheap that there is no excuse for such a condition. In fact, one could almost afford to furnish each patient with a new one and ask him to carry it home as a souvenir. The physician is doubtless aware that there is little likelihood of the transmission of any save skin diseases by means of books and magazines, but the public is not so sure of this, and it naturally connects disease with filth. Moreover, one is apt to judge the condition of the man in the office by the condition of his waiting room.

The general condition of the waiting room is not always what it should be, and with some clientèles it is not so easy to keep it in fresh and inviting condition, but the furniture and floor coverings need not be of such a character that they hold dirt and are difficult to clean, and an effort at least might be made to make the most of what one has.

The more prosperous a physician is, the more careless he is apt to become in these matters, and too many of us become not only careless in our offices but slovenly in our personal appearance. Though we may not spread disease, we are not setting an example in that quality which is next to godliness and which makes for health.

#### THE VALUE OF ASCITIC AUTOTHERAPY.

The technic of ascitic autotherapy comprises two different methods: 1. Small subcutaneous injections are made with three to ten c. c. of liquid withdrawn by puncture from the abdominal cavity, and after making sure that this liquid is not purulent, it is injected subcutaneously, withdrawing the needle just far enough to thrust it into the subcutaneous connective tissue. 2. The method of massive subcutaneous or intravenous injections, which demands the use of from 200 to 1,000 c. c., although in practice 500 c. c. appear to be sufficient. Two different methods may be resorted to; either an inoculation is made each time the liquid has been freshly withdrawn, or fluid withdrawn aseptically at an aspiration of the abdominal cavity is used, being preserved in sterile, hermetically closed jars, each jar being used for only one injection. The liquid thus preserved may give rise to chills and a rise in temperature and pulse, but inoculations with the fresh

fluid usually cause no general reaction. 3. Intravenous injections, which are performed according to the usual technic. No matter which method is resorted to, the injections should be repeated at intervals of from two days to a week and a milk diet insisted upon.

Autotherapy has been resorted to in the most varied forms of ascites, and the only contraindication is a purulent ascitic fluid. Small subcutaneous injections should be tried first. It is the only method permissible in tuberculous ascites and here it is advantageous to combine it with laparotomy and proteolysis. In Laënnec's cirrhosis massive intravenous injections may be successful, but they are absolutely contraindicated in tuberculous ascites as they contribute markedly to generalization of the process. Another contraindication is renal impermeability, because in such cases the toxic substances which should be contained in the urine, pass into the pleural collection.

Apart from the accidents just mentioned, ascitic autotherapy appears to be a method of remarkable innocuousness. Pron, alone, has mentioned a local complication, a hard edema on the entire right side, without the redness of a lymphangitis, which lasted several days. This innocuousness is not to be wondered at, at least as far as the fluid of Laënnec's cirrhosis is concerned, La Play (*Société de biologie*, November 26, 1910) having demonstrated that repeated injections in the rabbit of isotonic solutions of this fluid are less injurious than physiological serum.

The cases reported allow one to affirm that ascitic autotherapy is really effective. This has been denied by some who have thought that the good results were merely coincidences and really due to repeated puncture. But coincidences such as these cannot explain the diuresis following the injections and occurring only then, as is so often the case; the action *per se* of the punctures has often been negative until these punctures have been followed by the injection of the fluid withdrawn.

As to the mechanism of ascitic autotherapy, it may suffice to say that in all probability it is the result of reciprocal changes in the superficial tension of the ascitic fluid and blood serum.

#### THE DRUG MARKET.

The war has increased the activity of the market in many ways. In the *Hospital* for June 19th we find an interesting view of the market. Makers of morphine, codeine, caffeine, bromides, bismuth preparations are kept busy in their efforts to meet the colossal demand from the armies. Naturally prices tend to move upward. *Nux vomica* is getting scarcer and dearer: it is not unlikely, therefore, that

Some of these supplies will continue to advance, the salicylates move upward, and larger supplies have not kept the price down. It is a matter of regret that America, from which greater supplies of salicylic acid and the salicylates had been expected, has also advanced the price of these drugs, an advance really unprecedented on account of the rise in price of carbohc acid—the raw material required for the manufacture of synthetic salicylic acid. In connection with this subject, it is remarked that carbohc acid is much dearer in America than in England for the very unusual reason that much larger quantities are needed by America for the manufacture of explosives. Italian manufacture of drugs has had little change, but citric and tartaric acids are much dearer. Potassium permanganate is dearer. Balsam of Peru brings a very high price, and sodium sulphate steadily advances. Mercury, of Italian origin, and its salts have risen greatly in price. These reports show that war is an opportunity for peaceful nations, and such is the closeness of the bonds of trade that war can be carried on very successfully by humanitarian nations.

## DENTISTRY IN THE BRITISH ARMY.

In response to a parliamentary inquiry the under-secretary for war of Great Britain recently explained the status of the dentist in the British army as follows: In some places there are specially appointed dental surgeons who devote their whole time to the troops. In others the work is done by selected civilian dental surgeons on terms arranged between them and the local military authorities, subject to a limit laid down by the War Office. A number of whole time dental surgeons have received commissions, but there is no army dental corps and no need for one. The Government has no laboratory for supplying dentures, but in certain places, including France, there are dental mechanics' shops for making and repairing dentures. At other places dentures are supplied by civil dentists on terms arranged locally, subject to a maximum fixed on the advice of expert dentists. The Government is getting dentures at reasonable rates and the taxpayer is carefully protected.

## SEA WALLS FOR WOUNDED

M. de Fleury communicated to the Académie de médecine on July 6th (*Presse médicale*, July 8, 1915) that as his surgical unit was on the seacoast, he had been using as a dressing for wounds sea water, boiled for twenty minutes and then filtered. If these applications are frequently renewed, the results in cleanliness and speedy healing are all that could be desired. Ch. Monod, however, in the subsequent discussion, observed that he believed as good results could be obtained from ordinary salted water, physiological serum.

## News Items.

**Boston Floating Hospital.**—The trip of this hospital on the aqueduct of more than usual interest as a conference held on the boat was of importance in relation to the future work of the hospital. Those present included Dr. Charles H. Brown, former bacteriologist at the station.

hospital who is now associated with the Harvard Medical School. Dr. Henry I. Bowditch, the physician in charge on the boat, and Professor Alfred W. Bosworth, now serving his third year as biological chemist and released for this work by the New York State Board of Agriculture, by which he is employed at the experimental station at Geneva, N. Y.

**Changes at the Post-Graduate.**—Dr. Ward J. MacNeal has been appointed director of laboratories of the Post-Graduate Medical School and Hospital, succeeding Dr. Jonathan Wright, resigned. Dr. Morris Fine has been promoted adjunct professor of pathological chemistry; Dr. Richard M. Taylor, adjunct professor of pathology, and Paul A. Schule, lecturer on bacteriology.

**American Aid for Belgian Physicians.**—The report of the treasurer of the Committee of American Physicians for the Aid of the Belgian Profession for the week ending July 24, 1915, is as follows: Contributions—Dr. Charles N. Dowd, New York, \$25; Dr. Emil Löfgren, Rockford, Ill., \$5; Columbia Medical Society, Columbia, S. C., \$20; receipts for the week ending July 24th, \$50; previously reported receipts, \$7,700.84; total receipts, \$7,750.84. Previously reported receipts: 1,625 standard boxes of food, at \$2.20, \$3,575; 1,274 standard boxes of food, at \$2.30, \$2,930.20; 353 standard boxes of food, at \$2.28, \$804.84; total disbursement, \$7,310.04; balance, \$440.80.

A Summer Clinic.—Dr. Richard Cabot's summer class of physicians had a clinic on July 22d at the Rutland, Vt., State Sanatorium. The doctors came from Boston that forenoon, arriving at Worcester shortly after 10 o'clock. A short lecture by Doctor Cabot was heard, and patients from the sanatorium were examined. Dinner was served at 12.20 o'clock in the officers' dining hall, and after dinner there were other lectures, and subjects were examined in the assembly hall. The doctors visited the several wards and were shown about the institution by Superintendent Dr. Elliott Washburn, and Dr. James H. Lyon and Dr. Willard B. Howe. About every section of the United States was represented in the party.

the Medical College of the University of Cincinnati has received several large donations. Mrs. Mary M. Emery promised the university the sum of \$250,000 for a new medical building, on condition that an additional \$250,000 be raised by July 1st. At the appointed time, Dean C. R. Holmes, of the College of Medicine, announced that \$250,000 had been secured. The new structure will be built on grounds adjacent to those of the Cincinnati General Hospital, which offers unusual opportunities for clinical instruction. The sum of \$30,000 has just been raised by citizens of Cincinnati for the purpose of maintaining for three years a chair, to be named in honor of the late Dr. Frederick Forchheimer, who was for years professor of medicine. Dr. Robert S. Morris, of New York, formerly of Ann Arbor and of Johns Hopkins University, has been appointed to the new position.

**Vaccine in Whooping Cough.**—As the result of an extensive investigation of the prophylaxis and treatment of whooping cough carried on by the Research Laboratory of the Department of Health of the City of New York, Luttinger draws the following conclusions: 1. Pertussis stock vaccines as prepared by the Bureau of Laboratories seem to have a prophylactic value when given in high doses. 2. In the treatment of pertussis, these vaccines seem to have shortened the duration and severity of the paroxysmal stage; the average duration of the whoop being twenty-five days, compared to forty days of those treated with drugs. 3. Further experiments with the view of obtaining more effective vaccines and a closer cooperation of the profession in public health education, may help in the eradication of pertussis, this scourge of childhood which kills yearly ten thousand American children. In view of these results, the Bureau of Laboratories seeks the collaboration of private practitioners in more extensive tests of these vaccines. The necessary quantity accompanied by direction for administration and a history card will be given to any city practitioner who promises to report the results obtained. In doubtful cases the sputum may be sent to the research laboratory for diagnosis. To be of any value, the sputum must be obtained early in the disease from the bronchus. The characteristic sputum is obtained by inducing a paroxysm by tickling the child's fauces with a wooden tongue depressor, and appears as a grayish white tenacious plug of mucus. [See NEW YORK MEDICAL JOURNAL, May 22, 1915.]



**The Caledonia County (Vt.) Medical Association met** at Luc's Pond on July 20th, and after discussing papers by Dr. C. H. Beecher and Dr. C. K. Johnson, of Bradford, voted elected officers as follows: President, Dr. W. J. Melrich, of St. Johnsbury; vice-president, Dr. George C. Rublee, of Bradford; secretary and treasurer, Dr. H. A. Milmore, of St. Johnsbury; delegates to State meeting, Dr. J. M. Allen, of St. Johnsbury, and Dr. A. A. Cheney, of Lyndonville.

**Cretinoid Journalism.**—An imaginary "foot disease," imported from Russia, is described in the *New York Times* for July 23, 1915. It is stated: "Enderteritis obliterans has appeared in New York. Physicians who have come in contact with it say it is as bad as it sounds. Partly because the disease has been a comparatively little known (sic) among English speaking peoples, it has not acquired a simpler or an English name. . . . The disease is believed to have come here from Russia, Poland, and parts of Austria, practically the only countries in which it has been common in the past," etc.

**Typhoid Fever and Paratyphoid Fever in the British Army.**—In response to a recent parliamentary inquiry, the under secretary for war of Great Britain stated that in the expeditionary force in France there had been 247 cases of paratyphoid fever with 10 deaths and 827 cases of typhoid fever with 128 deaths. Of these 508 occurred among the un inoculated, 106 of whom died. Of the remaining 319 cases which occurred among the inoculated there were 22 fatalities. The ratio of attacks was fourteen times and of deaths forty-two times greater among the un inoculated men than among those who had been inoculated.

**Mr. Asquith Pleads for a Medical School for Women.**—Not Mr. Asquith alone, but Mr. Balfour and Lord Curzon draw the attention of the public to the work of the London School of Medicine for Women. They have signed a statement of their views. The school is being doubled in size in an effort to cope with the war time increase in openings for women doctors. The school is a charity of the Duchess of Marlborough, who heads the committee for assisting the institution. The statement begins: "The war constitutes the turning point in the position of medical women, for whom there are new openings and new opportunities in many directions."

**Service without Honor.**—A judge in Keene, N. H., has disallowed the fees of medical experts in a murder trial. The bill of \$300 for attorneys was allowed, as were the bills of the stenographer and interpreter. Some of the bills which were reduced were as follows: Medical experts, Professor E. R. Angell, of Derry, from \$925 to \$275; Professor Perley C. Voter, of Middlebury, Vt., from \$750 to \$250; Dr. A. F. Weston, of Keene, from \$250 to \$125; O. H. Hubbard, of Gilsom, \$100 to \$80; Dr. George W. Pierce, of Winchester, from \$150 to \$75; Dr. E. A. Tracey, of Keene, from \$10 to \$2.74. The total amount of the bills was \$2,683.75, and the amount which was allowed was \$1,244.89.

**The Week's Mortality.**—Figures prepared by the New York department of health show that during the week ending July 17th, 1,376 deaths were reported in greater New York, an increase of ninety over the number reported during the corresponding week of last year. Forty-two of these are accounted for by the increased population; the other thirty-eight by the virulence of certain diseases, particularly measles and lobar and bronchial pneumonia. Bright's disease showed an increase over the corresponding week of last year for the first time in several weeks; nor was this increased offset by a saving of lives from chronic heart disease.

Despite the warm weather that prevailed during the latter part of the week, the death rates from diarrheal diseases was decidedly lower than during the corresponding week of last year. The increase in the number of deaths was evenly distributed among all age periods, the group under five years showing the largest proportion, an increase of forty-three deaths. The group under one year of age escaped with a small increase of seven deaths.

The death rate for the first twenty-nine weeks of 1915 is 13.94 compared with 14.42 for the corresponding period of last year.

**A Fraudulent Health Department Nurse.**—Commissioner Goldwater has sent out a warning to New Yorkers to be on the lookout for a tall, womanly nurse who secures her introduction into homes where there is contagious disease by representing herself to be from the department of health. In an instance reported by Dr. L. D. Broughton, of 304 Lewis Avenue, Brooklyn, the mother of a child ill with measles was visited by a woman who said she had received word of the case and had called to tell how to treat such cases. The mother was induced to sign her name to a blank and pay one dollar down. After a while, she began to realize that she was buying a book on health and longevity which was to be paid for twenty-five cents a week for many months. She thereupon demanded her money back, which was refused, and the woman departed saying that the book would be sent the following Monday. The receipt she left tells of a book on health through which people are taught how to get along without doctors by treating their own families according to the prescriptions therein. The book is to cost twelve dollars, and there is no address on the blank. Almost needless to say, the department of health is not promoting the sale of any particular book on health.

**Possible Withdrawal of the American Red Cross from Europe.**—American Red Cross doctors and nurses may be withdrawn from the European battlefields October 1st because of lack of funds to maintain them longer at their stations. It is possible that the two units in Belgium, where the greatest need exists, will be continued, but the other fourteen detachments will return to the United States. The Serbian sanitary commission and other work supported by special contribution will go on as long as those conditions are available, but the general fund collected in the United States, amounting to \$1,560,000, will be exhausted on October 1st. The American Red Cross, by that time, will have maintained its personnel in each country a year, with the exception of the Belgian units and the sanitary commission. The tour of duty required of each surgeon and nurse does not exceed six months, so that some have already returned and substitutes been sent. By October a large number of those now in Europe will return. The cost of the transportation of these surgeons and nurses, going and coming, makes a constant and considerable financial demand upon the Red Cross treasury. The monthly payroll is also a large item of expense. Much as it regrets the necessity for withdrawal, no Red Cross of a neutral country ever before rendered so long and active service in the way of personnel to nations engaged in war.

**The Association of Clinics.**—Much is being done by this association in the most practical way. There is the Welfare Bureau, described as a research and experimental agency; it is occupied in fitting up a food supply store, a laundry, in publishing articles for the instruction of the poor. The medical inspection of schools, of the buildings, and pupils is another item. The association, it is hardly necessary to remark, works with the department of health. The results are manifold. One in particular should be mentioned. In company with an inspector of the New York health department a representative of the Welfare Bureau inspected every store in a district on the East Side involving in all a population of 100,000. The grading of shops was recommended and a score card suggested. The report of this work will be sent forth in a bulletin of the health department. Efforts have been made for the standardization of foods, flour, the vegetable oils, canned products, etc., so that they may be purchased on a rational food value basis. Other efforts have looked to the establishment of lunch service for the employees of industrial concerns and a sample lunch room has been put into operation for the employees of the health department, and aid afforded in the development of a similar room for the employees of the municipal building. Still other functions, less directly in the line of health work, have included an investigation into the cost of food distribution, with some attention to short weight and inferior quality. Between city terminal and consumer in New York the cost is thirty-four cents for every dollar paid by the customer. And since the poor pay always more than the rich, even more than the third of the workingman's grocery bill is his contribution to distribution methods.

## Bibliography of Current Literature.

PRESSE MEDICALE.

**Clinical Signs and Operative Indications in Wounds of Large Nerve Trunks**, by Dejerine, Alfred, Dejerine, and F. Almon. The aim of the authors' pamphlet is to show that the condition of a injured nerve can be ascertained with considerable precision by a painstaking clinical examination, and that by this means complicated and sometimes dangerous exploratory manœuvres can be obviated. They group the clinical manifestations in these cases into four distinct syndromes, representing, respectively, nerve interruption, compression, irritation, and functional restoration. The chief signs of complete nerve interruption are stated to be complete motor paralysis; entire absence of tonicity, with evidence of tonicity of the antagonistic muscles when the limb is at rest; absence of all sensitiveness of the muscles to pressure. The muscles are even less sensitive to deep pressure than those of the sound side. The most constant sensory signs are absence of a zone of hyperesthesia and of all paresthesia in the distribution of the affected nerve; loss of sensitiveness of the nerve to pressure below the lesion; persistence of the disturbances of objective sensation; loss of bony and articular as well as cutaneous sensation in the distribution of the affected nerve. The actual lesion is either a complete section of the nerve with separation of the two ends, or a species of fibroma or nerve keloid. Surgical treatment, where no signs of regeneration exist, is definitely indicated, and consists in free resection of indurated tissues and end to end union of the nerve extremities, preferably by means of silk sutures passed solely through the neurilemma. The syndrome of functional restoration, manifested in a return of sensory and motor activity, contraindicates operation, unless only a partial return of function, e. g., only sensory and not motor, takes place, in which case treatment as in complete interruption is advisable, with care to avoid, if possible, injury to any fibres presenting a normal appearance.

**Peritoneal Complications in Typhoid Fever and Their Treatment**, by Maurice Villaret.—In a series of six hundred cases of typhoid fever treated in a military hospital near the front under the author's supervision, but 1.5 per cent. had actual intestinal perforation. A large number, however, exhibited peritoneal reactions, disappearance of which under medical treatment appeared to disprove perforation as a cause. These reactions were of three kinds. A number of cases, all of an especially adynamic type, showed typical manifestations of acute peritonitis at the beginning of convalescence or, occasionally, in the first or second week; these phenomena soon disappeared under medical measures. More frequently there was noted a peritoneal reaction characterized by abdominal pain and, especially, tenderness, together with slight rigidity and often tympanites, nausea, rapid pulse, and slight hypothermia; this condition was most pronounced at the outset of the disease, then disappeared, a few

days later. Still oftener it was necessary to distinguish from intestinal perforation a pseudoperitonitic state due to such complications as cardiac collapse, rupture of the rectus abdominis, hepatic disorder, and sudden hypothermia, with parietal muscle cramps, occurring sometimes during convalescence. Institution of appropriate medical treatment in these cases as soon as there is the least evidence of a peritoneal reaction is advised. The measures recommended comprise absolute starvation for a few days, absolute rest, substitution of wet packing or even warm baths for cold baths, application of icebags to the abdomen and, in particular, the precordium, subcutaneous injections of epinephrine, free subcutaneous administration of camphor oil, injections of colloidal gold or silver, and the institution of fixation abscesses. Among 100 cases of distinct, but nonperforating, peritonitis, or of peritonitis with possible—unconfirmed—perforation, the foregoing treatment was followed by recovery in sixty instances.

## BULLETIN DE L'ACADÉMIE DE MÉDECINE

May 18, 1915.

**Indirect Intraocular Disturbances in Military Practice**, by Lagrange.—Disorders of this class are: 1. Traumatism of neighboring tissues; 2, injuries produced by violent displacement of the air after the explosion of a shell. In the first group there were ten cases of detachment of the retina, tear of the choroid, or chorioretinitis, wounds of the malar region, temporal fossa, or orbit. In the second group were three cases illustrating the fact that the membranes of the eye may be ruptured like window panes by the explosion of a shell. In one case subluxation of the lens was produced; in another, serous chorioiditis, and in the third, a posterior staphyloma causing progressive myopia, together with macular chorioretinitis and extensive uveal tears. Complete examination of the eyes in wounds of the head is enjoined.

**Tremor in Typhoid Fever**, by R. Mercier and R. Meunier.—In typhoid fever in soldiers a special tremor was observed, tremor of physiological, alcoholic, or emotional origin being excluded. The tremor was rapid (eight a second), of intermediate amplitude, between that of paralysis agitans and that of alcoholism, continuous, though exhibiting periodical exacerbations lasting a second and a half and very brief pauses, and was purely reflex, i. e., entirely independent of the will. The amplitude of vibration was greatest during the acute phase of the disease, but the frequency was constant. The tremor was traced through all sequelæ of the disease, and is ascribed to reduced neuromuscular tone. Its intensity was observed to be proportional to that of fatigue and reflex disturbances during the course of the affection.

**Destruction of Lice and Treatment of Phthiriasis**, by Henri Labbé.—A study of the destructive effects of various chemicals on lice was made. Of all compounds investigated anisol, a methylic ether of phenol, was found by far the most efficacious, both in paralyzing and in killing the parasites. Methylated cresols were also found very active. In phthiriasis, the use of a 2.5 or five per cent. solution of anisol in dilute alcohol is advised. One

drop of this solution will kill the parasite in one half minute. Spraying the solution over the scalp, beard, axilla, pubis, and intergluteal space kills the grown parasites as well as their nits. The application should be repeated two or three times, if required. The skin is unaffected. Lice on clothing are destroyed if a spray of 2.5 per cent. anisol is applied and the clothing kept in air tight closets for three hours. Where, as may be the case at the front, removal of the clothing is impracticable, anisol solution should be freely and repeatedly sprayed between the outer clothing and underclothing as well as over the outer clothing. The color and solidity of the fabrics are unimpaired by the agent, which dispenses with the use of live steam or steam under pressure.

#### SEMANA MEDICA.

May 25, 1915.

**Gonococcic Periarethral Abscess**, by P. I. Elizalde.—An enormous periarethral abscess, about the size of an ostrich egg, containing 600 c. c. of pus was found on incision and microscopical examination to contain gonococci. This prompted the use of gonococcic vaccines, which resulted in such rapid healing that in eighteen days there merely remained a faint scar.

May 27, 1915.

**Cauterization and High Frequency Current in Neoplasms of Bladder**, by E. Canton.—This method of electrocoagulation by high frequency currents introduced by Beer and Keyes is easily employed, harmless, painless, and efficacious. A newer modification consists in using short spark lengths of high tension and is now the method of election in treating vesical neoplasms. Seven cases are reported where excellent results were obtained without the use of an anesthetic.

#### RIFORMA MEDICA.

June 26, 1915.

**Modification of the Indol Producing Powers of the Cholera Vibrio**, by L. Mazzetti.—Very thorough experiment shows that when the cholera vibrio becomes adapted to a saprophytic existence or when it is subjected to anaerobic conditions, as in sewage water, it loses in part its indol producing powers. On the other hand, in sea water or earthy material this property is increased.

July 3, 1915.

**Treatment of Typhoid Fever at the Front**, by M. Ascoli.—Transportation over long distances should be avoided, as prostration and collapse frequently follow, and when unavoidable it should always be in special trains with experienced attendants. Oral hygiene is of the utmost importance, as well as attention to the skin, with absolute rest and proper ventilation. Antipyretics are usually necessary to control the fever. Hypodermic and rectal administration of 0.5 per cent. glucose solution is of great service.

**New Method of Finding Foreign Bodies**, by V. Maragliano.—This is a method whereby one radiograph shows the exact location and depth of a foreign body. It is practised by means of two squares of waxed cloth in which are imbedded pieces of lead, one being square and the other triangular. One is placed on the side of the body nearest the x ray

plate, and the other on the side farther away and by comparing the finished plate with a pasteboard chart, the exact location of the foreign body is obtained.

**Cardiac Arrhythmia**, by O. Cantelli.—Treatment includes attacking the cause, tumors, alcohol, tobacco, syphilis, and rheumatism. Atropine is of service in cases of respiratory origin, while digitalis is best in sympathetic irritation, although it may do harm in mitral lesions, especially stenosis of rheumatic origin. Rest during attacks is important.

#### REVISTA DE MEDICINA Y CIRUGIA PRÁCTICAS.

June 27, 1915.

**The Telephone in Surgery**, by M. Gil.—A method is described in which a telephone receiver with its battery is attached to a metal sound in searching for foreign bodies, especially bullets, in the human anatomy. Forceps may then be introduced, guided by the probe and the foreign body removed. This method was introduced by MacKenzie in the Military Hospital in London in January of this year. Great aseptic precautions must be observed and rubber gloves worn to insulate the operator's hands from the patient's body in order to avoid interference with the electrical current, which is quite weak.

#### BRITISH MEDICAL JOURNAL.

July 10, 1915.

**Treatment of Gunshot Wounds of the Knee Joint**, by H. M. W. Gray.—The frequency of permanent ankylosis of this and other joints arising from severe infections can be greatly reduced by proper measures; measures in common use are largely irrational. The first four or five days should be devoted to reducing the severity and extent of the local infection. At the end of this time all of the wounded tissues and superficial soiled structures should be cut away and the wound freely enlarged if necessary. All foreign bodies should be removed. The synovial cavity should be flushed with five per cent. saline solution and the blood clot thoroughly removed. If sepsis is not acute, the synovial membrane should be sutured and a drain introduced into the superficial wound. In acute sepsis the synovial membrane should be left open, but no drain should ever be introduced into the joint cavity. The wound, outside of the joint cavity should be filled with wet dressings and the joint should then be rigidly immobilized. The immobilization must be maintained for several weeks and the wound can be dressed frequently during this time. If required, the joint may be injected with glycerin and formaldehyde or with ether at the beginning. In most cases such a course of treatment will not only save the extremity but will ultimately yield a useful mobile joint.

#### LANCET.

July 10, 1915.

**Loss of Personality from Shell Shock**, by Anthony Feiling.—A young man was buried in a trench by the explosion of a shell and when rescued, he was unconscious. Consciousness was regained in a few hours, but he was totally amnesic so far as his whole life was concerned prior to and including the



ence of the accident. No efforts to recall his past life were successful, but the practice of hypnotism brought out a startling result. While under hypnosis, subject lost his new personality completely and returned to his original one with equal completeness. During this state he was able to recognize his father, remembered all of his past life to the minutest detail, and could even give an accurate account of the accident which caused his mental disturbance. Upon recovery from hypnosis each time he would relapse into his new personality and have no memory of his former one. During the studies made of him in each of his two personalities, it was observed that his voice and his handwriting were different in the two states. In one respect his original personality was retained to a certain extent, namely, his ability to play a certain musical instrument. No explanation could be given of the mechanism of the phenomena in this man, but it was obvious that he was not shamming and that he had suffered a total obliteration of his previous existence, although his faculties were quite fully retained.

**Risks from Tuberculous Infection Retained in Books**, by Henry Kenwood and Emily L. Dove.—Experiments were undertaken to test the possibility of transmitting living tubercle bacilli in an infective form by means of books used by tuberculous patients. Patients were allowed to cough upon sheets of paper and these were then washed and the washings injected into guineapigs. An interval of twenty-four hours elapsed between the contamination and wash of the papers. Tuberculosis was produced in pigs from eight of the pieces of paper, while six papers caused no infections. The test was repeated with papers kept one month after their contamination; guineapigs inoculated from these papers manifested nothing. Similar tests were made with thumb marked pages from books from the public library which had been recently used by tuberculous patients; no infections resulted. Sheets of paper were then thumb smeared with diluted tuberculous sputum and six of these were washed twenty-four hours later and the washings injected into as many guineapigs. Of these one died of sepsis, four manifested tuberculosis, and one was uninfected. Six other sheets similarly treated were kept for a month, and of these only one produced tuberculosis in guineapigs. Further, it was found that the exposure of such contaminated sheets to moist heat at 95° C. for half an hour served to kill all the tubercle bacilli. The same result was secured with pieces of contaminated handkerchief immersed for fifteen minutes in water which had been brought to the boil and which was then removed from the flame. From these results the authors conclude that the danger of transmitting tuberculosis through the use of books by infected persons is very slight and can be practically removed by the temporary withdrawal of such books from circulation. Moist heat is a simple means of completely destroying tubercle bacilli on books which would not be hurt by an exposure for fifteen minutes.

**Treatment of Septic Compound Fractures and Wounds by Ionization with Salicylate of Sodium**, by Robert McQueen and Leslie H. Boothby.—The

wounds were first cleaned and syringed thoroughly with sterile water or a four per cent. solution of sodium salicylate. They were then firmly packed in all their pockets with gauze wet with a warm eight per cent. solution of sodium salicylate and subjected to ionization for fifteen minutes daily. A current of five to thirty milliamperes was used, being turned on and off very gradually. The positive pole was applied over the wound. This method had favorable results in three directions; the infection was made to subside quite promptly, the pain usually disappeared in less than four days, and the granulation tissues were stimulated. Salicylic acid was found useless for ionization, and the salicylate of sodium was tested as a dressing without ionization but was found no better than ordinary saline solutions.

**Nuclear Division and Phagocytic Power in Polymorphonuclear Leucocytes**, by Frank E. Taylor.—Adopting the classification of Arneft for this form of leucocytes, it was found that those of the second class—with bipartite nuclei—were the most actively phagocytic. These were also found to be relatively the most numerous forms present in cases of acute toxemia. Leucocytes of the first class were found to have relatively little phagocytic power, and this power also declined progressively in the third, fourth and fifth classes, reaching its lowest in the last group. From these observations Taylor believes that leucocytes of the first class are the youngest and are still immature; while those of the second class are mature, the last three showing progressive signs of aging with loss of functional activity. This agrees fairly well with the original contentions of Arneft and supports them from another point of view.

#### BOSTON MEDICAL AND SURGICAL JOURNAL.

July 15, 1915.

**Newer Views of Cancer**, by Edward Reynolds.—The essential facts are that malignant disease is at first strictly localized and curable during this stage; there is no sharp line of demarcation between the benign and malignant new growths or ulcerations, but that the malignant often, if not usually, follow the benign and originate from them; while it is perhaps true that only a minority of even long continued benign neoplasms or ulcerations ever undergo a malignant change, such an occurrence is nevertheless so frequent that every continued neoplasm or ulceration should be considered so far potentially malignant as to demand serious consideration; and that a heavy responsibility rests on any physician who declares that a new growth or ulceration is benign and therefore unimportant. The mass of the profession adhere to what all but the youngest were taught in their student days, that benign and malignant neoplasms and ulcerations are totally distinct phenomena, which may be differentiated, and that benign cases will remain permanently benign, a belief that is a serious error. Reynolds discusses cancer of the breast, uterus, digestive organs, surface and orifices of the body. Mammary lumps of benign appearance are sometimes unexpectedly malignant, or delay may convert an undoubtedly benign tumor of the breast into a malignant growth, so any definite chronic lump in a

breast should be removed while that is possible by a nonmutilating operation. Benign growths of the uterus do not necessarily remain benign, so where the tumor can still be regarded as fairly benign the possibility of complete functional cure, as opposed to the inevitable suffering which results from the development of malignancy, should never be ignored in making the decision. The general principles that should govern the prophylaxis of cancerous growths at the orifices or on the surface of the body are that care should be taken to promote healing of any crack or ulceration, and that any persistent wart or mole which is observed to increase in size, or change in appearance, after its possessor is reaching middle age, should be promptly removed, either by the knife, a freezing mixture, or by the use of radium or the x ray, before it undergoes any definite malignant change.

**The Surgical Treatment of Cancer of the Cervix uteri**, by Farrar Cobb.—Over three fifths of the patients presenting themselves at hospitals come too late for any attempt at a radical cure, and over three fourths of those operated on by surgeons not especially experienced in the radical operation die inside of five years. Cobb says this is due to popular ignorance as to the nature of the disease and its insidious onset, to the neglect of practitioners to examine their cases or to recognize the importance of conditions found upon examination, and to the lack of knowledge on the part of many surgeons as to what is an operable case. In the palliative treatment of advanced cases he has come to believe that curetting should not be done. He prefers Percy's method of cauterization, but emphasizes his opinion that this operation is not one to be done by unskilled men, and that there is danger in its indiscriminate use of depriving certain women of their chance of life by radical operations. He discusses what cases should be operated in radically and gives the technic of extended abdominal hysterectomy.

#### JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

July 17, 1915.

**Intraspinal Therapy in Syphilis of the Central Nervous System**, by H. F. Swift.—Intraspinal injections of autosalvarsanized serum, or of serum to which a small amount of salvarsan or mercury is added, are believed to be of distinct help in certain cases of tabes and cerebrospinal syphilis. Not all patients of this class, however, require intraspinal treatment, as many of them respond well to intravenous injections of salvarsan combined with mercury and iodides properly administered. It is in those cases in which the symptoms and abnormal cerebrospinal fluids are not controlled by general therapy that the addition of intraspinal therapy appears to be of value. In the early stages of syphilis, it has been learned, by means of frequent lumbar punctures, that there are often slight pathological alterations of the cerebrospinal fluid during the time of the outbreak of the first cutaneous eruption; and this appears to support the conception that at this early period there is practically a universal distribution of the virus—that there is a rash on the meninges much the same as on the skin and mucous membranes, which usually responds quite readily to

treatment. There may, however, be an extensive meningitis, with profound functional disturbance, which requires the most heroic treatment; though the functional cure in this stage is much more complete than is usually attained with a late lesion of the same extent, probably because the early lesions are exudative, and not ordinarily attended by actual destruction of nervous elements. The demonstration of *Spirochæta pallida* in parietic brains has resulted in a new classification of the later nervous lesions into, 1, interstitial types, which include the lesions previously classified under cerebrospinal syphilis, and, 2, parenchymatous types, which include the affections previously known as parasyphilis. There is also a third type, in which the lesion is essentially vascular and the secondary nervous disturbances are similar to the changes seen in cerebral arterial sclerosis. While tabes and paresis have been classed together as a distinct type, there are many striking differences in the two, and whereas tabes often responds readily to treatment, both as to arrest of the degeneration and in marked diminution or disappearance of pathological elements in the cerebrospinal fluid, it is most difficult to obtain a favorable response in the fluid of paretics in spite of energetic treatment. In the treatment of syphilis of the central nervous system both the clinical side and laboratory evidences of active disease should be considered, and any treatment should be controlled by repeated examinations of the blood and cerebrospinal fluid. Although the treatment of these diseases should be systematic, it should not be so rigid that individual indications are disregarded. Not infrequently one sees improvement only after active treatment has been discontinued, while other cases seem to require constant treatment until all evidences of active disease have disappeared. Only by considering all these factors can consistent beneficial results be obtained.

**A Reaction of the Pupil Strongly Suggestive of Arteriosclerosis with Increased Blood Pressure**, by M. Wiener and H. L. Wolfner.—The pupil is larger than the average normal pupil, with a usual minimum size of 4.5 to five mm. in width, and contracts promptly to light stimulus, but immediately returns to the original size; at which it remains, although the light stimulus has not been changed. About six years ago the authors began to observe this condition of the pupil, which seemed always to occur in patients registering a high blood pressure, and a review of the literature and a careful clinical study of a large series of patients appear to confirm their original deductions as to the significance of this sign. While it is not believed that the reaction is pathognomonic of arteriosclerosis with high blood pressure, they maintain that its association with that condition is so nearly constant as to make it strongly suggestive, and therefore of undoubted clinical value.

**Immediate Results of Splenectomy in Pernicious Anemia**, by R. L. Lee, B. Vincent, and O. H. Robertson.—Eppinger, Moffat, von Decastello, and others have discussed the theoretical and experimental evidence for the assumption that the etiological factor of pernicious anemia resides in the spleen, and recently splenectomy has been advo-

acted as a therapeutic measure in this affection, while isolated case reports of splenectomy for its relief have appeared in medical literature. The authors present five out of seven cases of typical pernicious anemia which were admitted to the West Medical Service, Boston, during a period of approximately two months. Two of the patients were in such desperate condition on admission that the operation was not performed. The immediate results of splenectomy in these five cases were a prompt postoperative recovery and a definite remission of the disease in every instance. Study of the cases shows, however, that, in spite of marked improvement, the blood picture still exhibits the accepted characteristics of pernicious anemia, with the exception of the color index, which has been altered from high to normal or low. Furthermore, in three of the five, evidence of increased blood destruction was present several months after splenectomy, as shown by the urobilin estimation. These facts can be interpreted only as evidence that the disease is not cured, and the only conclusions which can safely be drawn from these cases, together with the published reports of others, are: 1. Splenectomy is not a very serious operation in pernicious anemia, and it offers a definite means of inducing a remission. 2. The remission thus brought about is more marked in the majority of cases than that from any other known therapeutic procedure.

#### MEDICAL RECORD.

**The Autonomous Nervous System and the Gastroenteric Functions**, by C. S. Fischer.—The autonomous nervous system plays an important part in gastroenteric function, in controlling and shaping the course of defect of function up to the point of profound organic change; the study has rendered possible a broader conception of gastroenterology. There are two phases of our digestive diseases. Every gastrointestinal disease possesses three aspects: The purely local, the metabolic, and the neurological. The last can again be subdivided into the distinctly psychical and the neurophysiological; and it is the study of the neurophysiological which marks a decided advance, for it can be applied with advantage in most of our digestive disturbances.

**Internal Aspects of Prostatic Suppuration**, by Harlow Brooks.—This condition, which is extremely common, may exist without localizing symptoms of definite character, and induce a clinical picture almost identical with that of typhoid fever; but it is readily diagnosed when one considers the possibility of its existence. When the infection extends in from the urethra, the urethral discharge almost invariably ceases, at least temporarily. Pain, while present in a very large proportion of instances, may be entirely absent; but tenderness is much more marked and constant. The tumor caused by the inflammation, or the resulting edema, may give rise to tenesmus, ardor urinae, and a reflex constipation; swelling and actual prostatic tumor usually accompany such symptoms. Undoubtedly the most striking general manifestation is prostration. The condition is often described by genitourinary surgeons as a typhoid one, and in this term are included with the general picture of pros-

tration, coated and tremulous tongue, fetid breath, sordes on the teeth, herpes about the lips, and abdominal inflation, commonly with constipation, but occasionally with diarrhea. Mental depression, which in some cases amounts to somnolence approaching coma, is very generally seen. Fever is almost invariably present, and in cases seen early the temperature is found to mount slowly, corresponding for the most part with the grade of prostration. Proportionate to the temperature, the pulse rate is low, though it varies, following gradually the temperature curve. Throughout the entire course of the process, until the pus finds escape, the chief clinical characteristic is the prostration, which in many, if not most, instances exactly approximates that of a true typhoid. A very astonishing feature of the disease may be the lack of localizing symptoms; in several instances no local complaints whatever have been made by the patient. The chief points in early differential diagnosis are mostly those of laboratory detail. The Widal reaction is, of course, always absent, though, as in most febrile conditions, it may be simulated at times. Blood and urine cultures are negative as to typhoid and paratyphoid bacilli. For a long time after typhoid fever has been excluded, there remains the possibility of a paratyphoid infection or a miliary tuberculosis of the typhoid type. In regard to the latter, lumbar puncture, with the thorough centrifugation of the cerebrospinal fluid and examination for tubercle bacilli, should be very helpful. Of course, the final and absolutely diagnostic feature of the syndrome is the examination of the prostate per rectum and the consequent discovery of an abscess or a prostatitis. In all the cases observed, diagnosis has been easy, once the rectal examination has been made. The treatment of the condition is, of course, surgical. Where operation is refused, or is deemed unwise, the possibility of successful vaccine treatment is suggested.

#### SOUTHERN MEDICAL JOURNAL.

July, 1915.

**The Cancer Problem**, by J. C. Bloodgood.—Good surgery should promise 100 per cent. of cures in all cases in which the carcinoma is still a local growth. The figures, fifty per cent. inoperable and fifty per cent. cured of the operable, giving about twenty-five per cent. of cures, vary to a slight degree with cancer in different regions and with different types of cancer in the same region. It is a question whether bad surgery ever cured a case. We should try to educate the public to get this good surgery at once, when it promises most. Delay after the first warning is dangerous. Trifling with any other treatment is gambling with death; and physicians are often responsible for such procrastination and trial of doubtful methods of treatment. In instructing the public and ourselves as to warnings which may or may not indicate cancer, we must also present the information in such a way that patients will act upon it; giving them the courage, as well as the conviction. Many physicians have the knowledge of what the warnings may mean, but often not the courage. The first important step is a thorough examination. It is unfortunate that pain is not an early symptom of cancer. There is no doubt that pain brings a patient early for treatment,



but it should be our aim to give the public proper information as to the significance of other less annoying, but appreciable symptoms. At the present time there seems in the treatment to be no substitute for good surgery, because we do not know all the etiological factors in cancer.

**Diagnosis and Treatment of Ectopic Gestation,** by W. C. Gwyn.—Before rupture, the diagnosis is frequently very difficult and at times impossible. The changes in the breast, skin, and nervous and circulatory systems may be the same as in normal gestation. They are, however, less distinct. There is usually no menstruation for one or two periods; after which there is a return of the menses, with profuse bleeding. The discharge is often mixed with threads of decidua membrane tissue, and the clinical picture of an ordinary abortion may be present. Until the uterus has been cleared of all debris a differential diagnosis cannot be made. In this condition the pain is usually the most characteristic symptom; being extremely sharp and cramp-like in character, occurring periodically, and generally reflected down the leg. The bloodvessels in the broad ligament of the affected side pulsate with greater force than those of the opposite side. There are softening of the cervix and enlargement of the uterus, but the enlargement is not so marked as in normal pregnancy, and is most noticeable in the long axis of the uterus. When a differential diagnosis cannot be made in a case in which there is strong evidence of ectopic gestation, such a suspicion can almost invariably be confirmed by making an opening in the posterior cul-de-sac, through which the uterine annexa can be outlined with the finger. Rupture may be either into the peritoneal cavity or between the folds of the broad ligament. With the first there is sudden and severe abdominal pain, often of a tearing or agonizing character, with symptoms of intense collapse. If bimanual examination reveals the presence of hematoma or hematocele, with tubal enlargement, a tentative diagnosis may easily be made. In extraperitoneal rupture these severe symptoms are not present, though usually a limited hemorrhage occurs. The fetus may continue to develop, and the patient possibly may not suffer at all. If the physician is so fortunate as to recognize ectopic gestation before rupture, immediate operation is indicated. As to the proper course at the time of, or immediately after rupture, the consensus is also in favor of immediate operation. If the patient survives, and immediate operation is not done, there will be either a destroyed or a developing pregnancy. In either case surgical interference is indicated, the time and exact character varying in accordance with special circumstances.

#### INDIAN MEDICAL GAZETTE.

June, 1915.

**Betanaphthol Poisoning Occurring during the Treatment of Ancylostomiasis,** by W. B. Orme.—A Chinaman, twenty-eight years old, was found to be suffering from ancylostomiasis, given half an ounce of Epsom salts followed by three doses of betanaphthol of thirty grains each at two hour intervals, the last dose followed in two hours by another dose of Epsom salts. The next day the treatment was repeated; Epsom salts were given in the evening, and the next morning one dose of beta-

naphthol. This caused vomiting; so no more was given. By evening the temperature had risen to 102.8° F. The next morning it had fallen to 99° F., but the vomiting continued, the urine had become extremely dark and the patient was slightly jaundiced. Collapse followed, the temperature rose to 101° in the evening, and the patient died in the early hours of the morning. The urine was acid, of a specific gravity of 1010, with a cloud of albumin. On post mortem examination the liver was found to weigh three pounds five ounces, to be a deep yellow in color and to contain numbers of *Clonorchis sinensis*. The right and left kidneys weighed four and five ounces respectively, and had a somewhat fatty appearance on section, though the most characteristic feature was the color, which was that of the liver but not so deep. There was no congestion. The writer concludes that betanaphthol should be used with caution if at all in persons suffering from disease of the kidneys, and that it would probably be wise to go back to the old Egyptian rule of leaving an interval of at least a full week between any two treatments.

#### SURGERY, GYNECOLOGY AND OBSTETRICS

May, 1915.

**Oil-Ether Colonic Anesthesia,** by J. E. Lumbard.—The writer clears the bowel by a compound licorice powder a few hours before operation, and irrigates it with plain water until the return is clear. This should be done two hours before operation. It is well not to use soapsuds to cleanse the bowel before giving the anesthetic mixture, as the soap will form an emulsion and retard the action of the anesthetic. A hypodermic of morphine and atropine should be given one half hour before the anesthetic solution is administered. Thirty minutes after the morphine and atropine the patient should be placed upon the left side with knees well drawn up. Introduce a small, well oiled, soft rubber catheter, with a funnel attached, into the rectum for about three inches. The patient is now ready for the anesthetic mixture, which usually is composed of three parts of ether and one part of olive oil (by measure). One should never use more than eight ounces of the mixture, usually allowing one fluid ounce to every twenty pounds of the body weight. Age, weight, fever, anemia, and general weakness modify the dose as in other methods of general anesthesia. After measuring the ether and oil, they should be poured into a bottle, corked, and well shaken for one minute. The writer mentions the following advantages of this method of anesthesia: In head and neck operations where the anesthetist is in the way, patients can be anesthetized without their knowledge. This is of great advantage in operations for exophthalmic goitre and in operations on nervous and insane patients. It removes the dread of the usual inhalation methods. There is no excess of mucous secretion about the air passages. This is of great advantage in bronchoscopy. The respiration and pulse are more normal than in any other method of general anesthesia. It does away with the mask or inhaler. There is less hemorrhage in head operations. There is less tax on the heart, lungs, and kidneys. The apparatus is simple, cheap, and can be carried in the vest pocket. There is less nausea and vomiting than

with other methods of general anesthesia. There is no postanesthetic excitement.

**Bone Transplantation.** By Dean Lewis. In *orthopaedic and general work*, demonstrates that the compact bone of a bone graft is gradually absorbed; it is replaced by new bone formed from the periosteum and endosteum of the graft. The periosteum of bone into which the graft is inserted also plays an important part and should be saved and brought in contact with the periosteum of the transplant or over its ends. The viability of bone grafts is especially indicated by their reaction to infection, for involucrum and sequestrum formation occurs in infected grafts or in those placed in infected areas. Bone grafts placed in cavities resulting from curetting of central giant cell sarcoma or fibrous osteitis, will not survive in most cases, for the hematoma which occurs within the cavity prevents vascularization of the graft. The inlay graft in the treatment of old ununited or recent fractures is more satisfactory than the intramedullary splint, for the endosteum of the graft comes in contact with the endosteum of the bone and periosteum of the bone can be sutured to the periosteum of the graft. Compact bone dies in the graft because of its physical properties, which do not permit of rapid permeation of serum. The best bone graft contains enough compact bone to give form and maintain fixation and also contains periosteum and endosteum from which the compact bone is substituted. Grafts taken from the anteromedial surface of the tibia are to be preferred to those taken from the crest.

**Empyema of the Thorax,** by A. O. Wilensky.—The following summary was made from a critical study of eighty-two cases of chronic empyema sinus of the chest, treated at the Mt. Sinai Hospital, New York: In seventy-five per cent. of the patients, the cause of the formation of the chronic sinus was present from the very inception of the disease. These can be grouped as follows: Fifty-two per cent. had uncollapsible cavities. Seven per cent. had lung abscesses or bronchopulmonary fistulae, or both of these together. Fifteen per cent. were tuberculous in origin. Excluding the tuberculous cases, which present a special problem—that of the cure of tuberculous infection—sixty per cent. of the patients owed their chronic sinuses to conditions which were present and were not remedied at the primary operation. The method of operation for acute pyemia must permit a thorough examination of conditions in the chest and the removal or correction of any lesions which tend to the formation of chronic sinuses. The remaining twenty-five per cent. of the patients owed their chronic sinuses to faults in aftertreatment, which with good care can and should be eliminated.

#### ANNALS OF SURGERY

**Autogenous Bone Grafts versus Lane's Plates,** by H. H. Trout.—From a series of animal experiments the writer concludes: 1. Lane's plate or any foreign material will limit osteogenesis in the region of fractures. 2. In the various types of infections, Lane's plates have to be removed—autogenous

grafts seldom do. 3. Lane's plates placed in the region of the epiphyseal line in the young, limit the growth of that bone in the long diameter in many cases, while autogenous pegs do not. 4. A certain percentage of Lane's plates have to be removed, whether in the presence of infections or not.

**Transplantation of Entire Bones,** by A. B. Gill.—Certain conclusions which are of practical clinical value in surgery have been drawn by the writer after the transplantation of entire bones in dogs: 1. Bone is only a particular form of connective tissue and is readily transplanted. 2. It contains within itself all the elements necessary to its life, function, and regeneration provided it receives sufficient nourishment. 3. Periosteum, medulla, and bony tissue should all be included in the graft. 4. After transplantation, the bone grows and moulds itself to perform its functions efficiently. 5. Performance of function as soon as is consistent with its fixation in its new position is of great advantage. 6. A mild infection is not necessarily fatal to the graft. 7. Transplantation of long bones with their joint surfaces is clinically possible. The inclusion of cartilage and joint surface in no way adds to the difficulty of the transplantation. While this statement is particularly true of the smaller bones, yet there seems to be no reason why as large a bone may not be transplanted with its joint surfaces as may be transplanted without such surfaces. Bier reports a large piece of tibia used to replace almost the entire shaft of the humerus, which has been under observation for fifteen years. If a large bone should be transplanted it might be well to remove a portion of its shaft longitudinally in order to permit the ready access of a blood supply to the medulla. 8. Half joints are clinically transplantable, and whole joints have been successfully transplanted by Lexer.

**Osteogenic Power of Periosteum,** by J. S. Davis and J. A. Hunnicutt.—The appearance of MacEwen's monograph caused considerable discussion among those interested in the growth of bone. His experiments seemed to show that periosteum was not a bone producing tissue, but that its function was simply that of a limiting membrane. As this, of course, was not in accordance with the principles accepted for many years, the writers have carried on a series of animal experiments to adjust themselves to his ideal—with the following conclusions: Free periosteal transplants did not produce bone in the large majority of experiments, even though osteoblasts were adherent to the transplants. Pedunculated flaps of periosteum did not produce new bone. Free periosteal transplants and pedunculated periosteal flaps with bone shavings attached produced bone in each experiment. The removal of periosteum had little, if any effect on the nutrition of a bone. Absorption of bone occurred when a silver ring was snugly applied around a bone over the periosteum, and also at times when it was applied around denuded bone. Both autografts and isografts, without periosteum, were effective in repairing skull defects. Bone, without periosteum, from the patient or another, when transplanted into the periosteal tube after subperiosteal resection of a rib, causes stimulation of bone growth from the periosteum, and also from the rib end.

Transplants covered with periosteum and foreign bodies stimulated bone growth only from the rib ends. Transplants of the same size in a periosteal tube, after subperiosteal resection, under exactly the same conditions, acted quite differently. After subperiosteal resection of a portion of a bone, the growth of bone in repairing the defect was from the bone stumps, the periosteum acting as a limiting membrane. Bone, both with and without periosteum, lived and was successfully transplanted to fill defects in bone. Clinically, it is advisable to transplant bone covered in part, at least, with periosteum. Bone in a bone defect acted as a scaffold for the growth of new bone from the living bone stumps, but there was ultimate absorption of the transplant. Bone, both with and without periosteum, was absorbed when transplanted into soft parts. The periosteum seemed to have some protective influence against early absorption.

#### JOURNAL OF NERVOUS AND MENTAL DISEASE

July, 1915.

**Experimental Subarachnoid Injections of Trypan Blue**, by William Cavan Woolsey.—These experimental observations seem to indicate that salvarsan administered subarachnoidally reaches the central nerve tissues more certainly and with greater intensity than when given intravascularly or subcutaneously. When administered intraspinaly its diffusion to the cranial cavity is less intense than in the cord, and perhaps for intracranial lesions direct injection into the cranial and subarachnoid space through a trephine opening would be less dangerous and more effectual.

### Proceedings of Societies.

#### AMERICAN ASSOCIATION OF IMMUNOLOGISTS.

*Second Annual Meeting, Held at Washington, D. C., May 10, 1915.*

The President, Dr. GERALD B. WEBB, of Colorado Springs, in the Chair.

**The Value of Vaccines in Certain Diseases of the Ear.**—Dr. GEORGE M. COATES, of Philadelphia, observed that successful vaccine therapy of the ear, nose, and throat did not consist in buying a bottle of mixed vaccines and giving hypodermics according to the label on the bottle. Some good results might be thus obtained, but there would be many sad failures. A stock vaccine should be ready at a moment's notice and was of value in cases in which an autogenous product could not be used, as for prophylaxis. For immunization against acute rhinitis, in which a variety of organisms were usually found, a commercial mixture of some or all the organisms was selected, and three or four injections given at three or four days' intervals, the dose depending somewhat on the individual, age, weight, etc. Whatever the initial dose, it was usually doubled for each succeeding dose, unless there was too marked a general or local reaction. This should insure the ordinary person against an attack for two or three months, but in very susceptible individuals the en-

tire course might have to be repeated. The treatment for acute rhinitis was exactly the same as for prophylaxis, except that it was pushed a little more vigorously and continued until the trouble had been conquered. Following the first dose, and this was true of all the conditions considered, there would probably be some exacerbation of the patient's condition with increased discharge, which soon cleared up in favorable cases. This reaction was considered as a favorable omen. In chronic rhinitis the treatment must be extended and the patient watched lest he be overtreated. Suppurations of the accessory nasal sinuses were not much relieved by vaccine therapy until adequate drainage had been secured, and in chronic sinusitis it was usually necessary to enlarge the normal ostium or make an artificial opening before much could be expected from these vaccines. In acute cases the results were good for the most part and a stock suspension could be used in order to get quick results, at least until an autogenous one could be prepared. The results of this treatment in atrophic rhinitis and hay fever were not particularly gratifying. The treatment of diseases of the ear by bacterins had yielded surprisingly good results. In chronic catarrhal deafness and in acute suppurative otitis media of scarlatinal origin most satisfactory results had been shown. During the past year they had made autogenous vaccines for forty-two chronic cases of suppurative otitis media at the Pennsylvania and Polyclinic Hospitals and so far they had obtained dry ears in about forty per cent. These were all carefully selected cases which had resisted all the usual methods of treatment. There were many factors which militated against the potency of the vaccine, and in nose and throat work a frequent cause of error was in taking the culture. The external canal, membrana tympani, and middle ear should be thoroughly cleansed by means of suction apparatus and cotton swabs. Alcohol and bichloride were then rubbed as far back as the drum to sterilize the external canal. By inflation through the Eustachian tube or by suction to the external meatus, pus was forced from the recesses of the attic by a tube mouth. The culture was then taken with a platinum loop or a very small amount of cotton on an applicator thoroughly sterilized. Since employing this technic pure cultures were frequently obtained, whereas by the older methods it was not unusual to find two or three organisms in the culture.

Dr. FREDERIC E. SONDERN, of New York, was interested in Doctor Coates's paper because it had been his good fortune to see specimens of the type he described and he would like to agree in reference to what he said in regard to the use of autogenous vaccines. He had seen good results repeatedly to follow their use. The speaker was present when Nagel read his paper before the Triological Society in Washington and his results in vaccine therapy were astonishing. His description of the negative and positive phase interpreted clinically was beautiful and showed a very close observation. The speaker knew many otologists who tried to follow out the methods of Nagel, but with little or poor result. In ear cases the successful outcome from the vaccine depended upon the condition of the ear.



If there was dead bone, they would not get the desired results. This also applied in using vaccines in case of sinus disease and inflammations of the mucous membrane of the nose. The speaker had seen gratifying results follow vaccines; but if the nose was occluded so that the patient could not draw it through, especially if there was a sinus obstruction with pus, the vaccine was useless.

Dr. A. PARKER HITCHENS, of Toledo, understood there was no preparation for stock vaccine in the market for the treatment of hay fever. This might be true in the United States, but there was a stock vaccine from Wright's laboratory in London which he had been using for two years; it was called the pollen vaccine and was the result of the work of one of Wright's assistants. He had produced a diagnostic outfit which was used to determine the susceptibility of the patient; it was dropped into the eye to test the conjunctival reaction. This method was troublesome because the patients objected to having the vaccine instilled in the eye; they feared injury to that organ. He had had twenty or thirty cases which gave him encouraging results. It was his practice to give small doses of the vaccine, usually 0.1 c. c., twice a week and then increased 0.1 c. c. unless there were untoward results, focal, local, or constitutional. The preparation must be imported. If the package was marked "for experimental purposes" and was unsealed it would come through the custom house free. He had had only a limited experience in the treatment of hay fever. He had used injections of the pollen extract in both the treatment and prevention of hay fever, and a few things he had observed might be of interest. One of the most interesting was the difference in the intervals necessary between the doses if they wished the patient to be entirely free from symptoms. He did not know just what the pollen extract accomplished; this remained for the future to explain. A dose of the pollen extract was followed in nearly every case by a relief of the symptoms; that was, if they gave the specific pollen or protein. The majority of the cases of hay fever were undoubtedly due to certain pollens. In the fall they met with the rag weed; in the spring orchard grass and red top were chiefly responsible. He had had one patient whose paroxysms were produced by proximity to the magnolia tree. This individual had hay fever through both seasons. The speaker first tried him on injections every seven days, but soon noticed that he began to have symptoms about the end of the fifth day. He then shortened the time to five days and the patient had no more symptoms. The giving of these injections at longer or shorter intervals depended upon each individual and the reaction. He believed that every rational treatment for the prevention of hay fever should be preceded by the diagnostic test. The experience of many men with the ophthalmic reaction in cases of tuberculosis would make them hesitate to use this method in the eye, and he did not really think it was necessary to use the eye test at all. The endermic test gave as good indications as the ophthalmic reaction. His experience with nasal and respiratory conditions was limited but interesting. He had had under his care a young woman who had been afflicted with

asthma and after the use of autogenous vaccines once a week, she was relieved of her asthma. He believed that one of the most important things brought out in Doctor Coates's paper was that bacterial vaccine must be used with brains. If they got no results, they would assert that the vaccines were of no value. No benefit could result from the employment of vaccines unless the antibodies formed came in contact with the bacterial factor. Every practising physician should take this into account. He had given about 1,500 injections and had never had the slightest cause for alarm. Vaccines were valuable before operations for infections of the upper respiratory tract; a shorter or longer course of vaccines should be given. He had seen no harm from anaphylaxis.

Dr. GERALD B. WEBB, of Colorado Springs, thought it was a reproach to the medical profession that it never dealt with the so called common colds. He believed that all of them had seen benefit from the plan outlined by Doctor Coates. Possibly the colds were not all caused by the organisms under suspicion. In London many cases of pseudodiphtheria were called colds. As was well known, influenza came in waves. In Colorado they had not met with the influenza bacillus for some five years. During this time, however, they had met with cases that looked like grippé, but no influenza bacilli were present. In hay fever it was well known that patients were susceptible to more than one pollen. Cotton wood caused the trouble in some. In their treatment, they sometimes combined the catarrhal organism with the pollen vaccine. In one half of the cases, successful results followed.

Dr. GEORGE MORRISON COATES, of Philadelphia, thought that colds treated lasted about ten days; if untreated, probably eleven days. The pyocyaneus bacillus infection was not considered always a secondary infection. A few days ago he did an operation for acute mastoiditis and obtained a pure culture from the mastoid cells. In all his operations for mastoiditis, cultures were made and vaccines regularly used after the operation, and his patients seemed to get well in a shorter period of time. Dr. James F. McKernon, of New York, in cases of mastoiditis following scarlet fever or measles, used the autogenous vaccines, and he believed that this reduced the time of healing to a considerable extent. In ear cases, the results of Nagel brought about much skepticism, but his work could be vouched for. In certain ear cases of the chronic type, even when narcosis was present, they could raise an artificial immunity and terminate the necrosis.

**Comparative Results of the Wassermann Reaction.**—Dr. A. A. UHLE and Dr. WILLIAM A. MACKINNEY, of Glenolden, Pa., stated that, under no circumstances should a diagnosis of syphilis be based on the Wassermann reaction alone. A negative Wassermann did not exclude syphilis, since such a reaction might be obtained in the early stages of chancre, might be the result of active treatment, or might exist in latent syphilis in which the foci of disease were not active to the extent that antibodies might be detected by the test. In latent syphilis a negative reaction at times became positive after active treatment. In certain cases of nervous syphilis the serum Wassermann reaction might be nega-

tive and the spinal fluid Wassermann positive. After an intraspinal injection of salvarsanized serum, a formerly negative spinal fluid Wassermann might become positive. Certain factors irrespective of the test itself were considered responsible for discrepancies: these included the age of the serum, infected serum, nonsterile test tubes, changes in the blood as a result of a faulty metabolism, influence of alcohol, etc. It could be readily understood why discrepancies existed in reports from different laboratories, but conflicting reports from the same serologists upon specimens from the same individual withdrawn at the same time under identical conditions were not easy to understand. After discussion with several serologists the speakers had decided to determine to what extent the above mentioned factors influenced the Wassermann reaction. Blood specimens from approximately 3,000 patients were submitted to seven serologists, all representative men connected with teaching institutions. The blood was collected from normal individuals, from patients in private and hospital practice, suffering from diseases other than syphilis, and from syphilitics in practically every stage of the disease. The fifteen tables and the summaries showed the results of these tests. From these they concluded that the extreme variations of the results of the Wassermann test on blood serum, taken from the same individual under identical conditions, were not due to any of the factors frequently considered responsible for such discrepancies. The same variations occurred when the blood was collected in sterile or nonsterile tubes, when infected by certain pathological bacteria and irrespective of the time lapsing between the collection of the blood and the time of the examination. In nonsyphilitic cases a positive Wassermann report might be expected in from two to eighteen per cent. of the cases. In active primary, secondary, and tertiary manifestations of syphilis, with the exception of the first few days of chancre, a positive Wassermann was present in from ten to 100 per cent. of the cases. In syphilis under active treatment, or when the condition was latent, the result of the Wassermann reaction was of the utmost importance to the clinician, and it was in these conditions that the most extreme variations occurred. In the study of these cases it became clear that the discrepancies in the Wassermann reports, made by different serologists, were due to errors in technic, or lack of proper standardization of the reagents.

**Pseudopositive Reaction in Uremia and Intestinal Toxemia.**—Dr. JUDSON DALAND, of Philadelphia, exhibited a patient, a man fifty-five years of age, whose illness began January 16, 1911, when he felt as though a nail had been driven into his left knee; a few minutes later a swelling was observed in the feet and knees, rapidly involving the legs; this was followed by ascites. The physical examination showed extreme pallor, poor musculature, cyanosis, and a few enlarged glands in the neck, axilla, and groin. The pupils contracted equally and responded normally to stimuli. The teeth were absent. The apex of the heart was one half inch to the left of the nipple and the pulse was heaving. The area of heart dullness was increased, more especially to the left. The pulse was regular

in pulse and rhythm, compressed with difficulty, and the radial arteries were sclerosed. The first sound was rough and accompanied by a blowing systolic murmur, transmitted to the left axilla. A similar sound was heard over the aortic cartilage and transmitted to the neck. The aortic sound was accentuated. The liver was slightly enlarged. The diagnosis was chronic interstitial nephritis and uremia in association with intestinal toxemia. The four Wassermann tests taken at intervals during the two weeks following the patient's admission to the hospital, showed one three plus Wassermann, two positive, and one plus minus reaction, this being the last of the four. The urine showed a moderate amount of albumin with hyaline and granular casts and a large amount of indican.

Dr. JOHN A. KOLMER, of Philadelphia, felt that the other side of the question as to the specificity of the Wassermann reaction needed some defense. He had been interested in the question of the antigens for several years, especially with the cholestrated extract. He had followed many patients through the clinical course of the disease and had made comparisons with the aid of several clinicians as to the Wassermann findings, and was of the opinion that the reaction was due primarily to a difference in the antigen. With a proper understanding of the mechanism of the Wassermann reaction, the proper use of the antigen would modify their results more than anything else. He did not believe that the alcoholic extract of a syphilitic liver was a specific antigen. Two years ago he worked with a pure culture furnished by Doctor Noguchi, of New York, who believed the specificity of the Wassermann reaction not to depend upon the antigen but upon the nature of the antibody. The antibody played a big part in the Wassermann. It was their purpose, for three or four years, to use three different extracts; one to be reinforced with cholesterol; another, the alcoholic extract of syphilitic livers, as used in the United States and Germany; and another, the use of an acetone which was insoluble, the extract prepared after the method of Noguchi. They found that the highest percentage of reactions was obtained when they followed the method of Doctor Uhle. The use of the alcoholic extract of syphilitic livers yielded the poorest results. He believed that the reports given by the members differed in the Wassermann reaction, coming from different laboratories, not because of any difference in the technic, but because of differences in the antigens. A review of the literature regarding the specificity of the Wassermann was entirely misleading. The reports concerning scarlet fever were misleading. In his experience with 250 cases, only seven gave a reaction, and two had either a macular or papular rash of syphilis. From the standpoint of the laboratory man, they respected the specificity of the Wassermann reaction. He had found it on three occasions in the tuberculous variety of leprosy, also in yaws. Syphilis should be diagnosed in the laboratory. The statement, however, that the patient did not have syphilis did not exclude this disease; many of these patients had their symptoms cleared up when under treatment and made it presumably evident that they suffered from true cases of syphilis.

Doctor KINYON, of the Municipal Laboratory, Washington, D. C., agreed with what had been said regarding the specificity of the Wassermann reaction and the importance of reinforcing it with antigen. Many of the discrepancies found in the laboratory were due to the fact that many different antigens were used. He believed there was one very important thing that should be kept in mind, i. e., to ascertain at what time the reaction was made in the given blood. It was well understood that those who partook of alcohol in considerable quantities had the Wassermann reaction very much modified. He had ascertained that in many cases where the reaction was negative during the first twenty-four hours, if the reagent was continued for one week or ten days and at a proper given temperature, many of these serums would become positive.

Captain VEDDER, of the United States army, was in accord with what Doctor Kolmer had stated, also with what he said regarding a proper diagnosis which should not be made entirely upon a positive Wassermann reaction. They all knew that lesions of syphilis might occur without history or clinical signs being manifest. A prominent physician had called upon him at the laboratory and given a very positive Wassermann reaction. He was a prominent dermatologist from one of their largest cities and said that he might have a positive Wassermann reaction, but he had never had syphilis. There was found a serious heart lesion due probably to lues. The patient was positive, however, that at no time had he acquired syphilis. The speaker had just completed a series of surveys with regard to normal cases in which the reaction varied from 0 to ten per cent. Among 1,500 soldiers he could obtain a positive reaction in about three per cent only. Did a positive reaction mean syphilis, or did it not? There were without doubt many cases of lues which could be detected only by the Wassermann, and Dr. William H. Park, of the New York health department, said that he had given 500 consecutive serums and the discrepancies were not so great as might have been supposed.

Dr. RICHARD DEXTER, of Cleveland, agreed with Doctor Kolmer that the antigens were a variable factor. The results of his observation showed that the cholesterin antigen gave a finer test than did others.

Dr. JUDSON DALAND, of Philadelphia, said that living spirochætae were discovered after the administration of salvarsan. He believed that chancres should be primarily excised and then neosalvarsan given. Ehrlich found no spirochætae after the excision of the chancre, twenty-four hours after the injection. They could not but appreciate the work that was being done by Doctor Uhle. His results were obtained from various specimens and from various laboratories. They should bear in mind the fact that if they obtained a positive Wassermann, it did not necessarily mean that their patient had syphilis; if they got a negative result, it did not mean that the patient did not have the disease.

Dr. A. A. UHLE, in reply, said he knew nothing about the technic and what he had just presented was from the clinical standpoint only. Serologists wished to obviate the causes which gave rise

to a positive reaction in patients who did not suffer from syphilis. Those who worked in the laboratories must confess that they had no specific antigen upon which they could rely. In obscure cases, such as gumma of the liver, they could rely only upon the history of the case and the family history; but here the use of an antigen was of great value in making a diagnosis. What did it mean, sending samples taken from the same individual under the same conditions and precautions to different laboratories and getting returns that, for instance, out of ten, six were positive and four negative? He believed the best thing to do, was carefully to watch the different workers in the laboratories, determine who did the best work, and then rely upon his interpretations. He believed there were other things beside antigens which would account for certain discrepancies; it was largely a matter of technic. In the near future he hoped to present some uniform technic, a uniform antigen, and he still hoped that the laboratory would greatly aid in the clinical diagnosis of syphilis.

**Vaccine Treatment of Ringworm of the Scalp.**—Dr. ALBERT STRICKLER, of Philadelphia, during the past year at the Philadelphia General Hospital treated twenty patients with ringworm of the scalp of various degrees of severity. Fourteen were cured, two were markedly improved, two were improved, but left before treatment could be carried out, three died from measles, and one from pneumonia. They injected the patient with stock vaccine, giving an injection every five days, starting with 0.5 c. c. of the vaccine; for the second and third doses one c. c. was given, and two for the fourth and fifth injections. In addition to the vaccine treatment oil of cade and olive oil in equal parts were used, and later an ointment such as sulphur precipitated twenty grains to petrolatum one ounce. If, after giving seven or eight injections of the vaccine, no improvement was noticed, the stock vaccine should be discontinued and an autogenous one employed. From their experience they concluded that tinea tonsurans was curable with vaccine beyond the peradventure of a doubt. In addition to the vaccine a sufficient blood supply containing antitoxic material must reach the area of infection before they could have what were considered ideal conditions for the success of this method of treatment. It was therefore felt that in recommending some form of local treatment after sufficient vaccine had been administered to arouse the antitoxic elements of the blood, they established as nearly as possible an ideal condition. They had in the vaccine treatment of tinea tonsurans a safe and efficient method that could be carried out at home and that would accomplish a cure in a short time. The x ray possessed no advantages over it.

**Election of Officers.**—The following officers were elected: President, Dr. J. W. Jobling, College of Physicians and Surgeons, Columbia University, New York; vice-president, Dr. George P. Sanborn, of Boston; councilman, Dr. John A. Kolmer, of Philadelphia; treasurer, Dr. Willard J. Stone, of Toledo; secretary, Dr. Martin J. Synnott, of Montclair, N. J.

(To be continued.)



## Letters to the Editors.

### AN APPEAL TO THE MEN AND WOMEN ENGAGED IN MEDICAL PRACTICE AND THE ADVANCEMENT OF THE MEDICAL SCIENCES.

NEW YORK, July 22, 1915.

The present horrible war among civilized nations has brought out impressively certain sad facts; that although there are civilized individual nations, we are still very far from having a civilized humanity—there is an abyss between *infrational* and *international* morality; that, no matter how cultured and enlightened nations may be, they still settle their international differences by brute force, by maiming and killing their adversaries; and, finally, that the present high development of science and invention in individual nations only serves to make the result of this war more destructive than any other in history.

The war has demonstrated, however, one encouraging fact, namely, that among all the sciences and professions, the medical sciences and medical practice occupy an almost unique relationship to warfare, and that, among all the citizens of a country at war, medical men and women occupy a peculiar and distinctive position.

No discovery in medical science has been utilized for the purpose of destroying or harming the enemy. Medical men in each of the warring countries are as courageous, as patriotic, as any other citizens, and are as ready to die or to be crippled for life in the service of their country as any other class of their fellow countrymen. But their services, however, consist in ministering to the sick and to the injured and in attending to their sanitary needs. Furthermore, they often risk their lives by venturing into the firing line to bring the injured to places of safety and to attend their immediate needs. *In these heroic and humanitarian acts friend and foe are treated alike.* Finally, the majority of the members of the medical profession and of the medical journals of the neutral as well as of the warring countries, abstain from public utterances that might be grossly offensive to any of the belligerent nations.

These facts—this advanced moral position in international relations which medicine and its followers are permitted to occupy in all civilized nations, ought to be brought to the full consciousness of the men and women engaged in the medical sciences or in medical practice. Such a realization could not fail to have an elevating influence upon the medical profession itself, and would probably exert a favorable influence upon the development of international morality in general.

At the dawn of history, medical men were frequently also the exponents of philosophy and morals. In the middle ages, when knowledge became specialized, medical men more and more devoted their activity exclusively to medical practice. Because of its inefficiency at that time, medicine lost its prestige. In recent times, however, medicine is becoming an effective science; one marvelous discovery has followed another, and the efficiency of medical practice has been rapidly increasing. Medicine makes habitable to man hitherto uninhabitable parts of the world. It prevents disease, and, with increasing theoretical and practical efficiency, medicine is learning to alleviate and cure disease and injuries. Medical sciences and medical men have steadily risen in the esteem of civilized mankind. *May not the medical sciences and medical men become again the standard bearers of morality, especially of international morals?*

To accomplish these objects, it is proposed to organize as large and effective an association as may be possible, of men and women engaged in the medical sciences or in medical practice under the name of

#### THE MEDICAL BROTHERHOOD FOR THE FURTHERANCE OF INTERNATIONAL MORALITY.

It is obvious that such a brotherhood could not exercise an important influence at once. But our modest expectation for prompt results should not prevent us from attempting now to take the first step in the right direction. Many important results have often had small beginnings.

A committee of physicians and medical investigators request you herewith to enroll as a member, and to declare your willingness to endorse and support the moral standard which the medical profession generally upholds

when called upon to perform its patriotic duties in times of international strife.

It should be expressly understood that it is not the object of the proposed brotherhood to influence the feelings and views of any one regarding the problems involved in the present war. It is desired merely to bring to the full consciousness of the members of the medical profession the exceptional moral position which all civilized nations, even while at war, permit and expect medical men to occupy, at least as long as they remain in the medical profession and act in this capacity. This consciousness cannot fail to elevate the moral standards of physicians. Furthermore, after the close of the present war, the brotherhood could without doubt facilitate the reunion of the members of the medical profession of all the nations which are now at war and increase good feelings among them. A humanitarian body such as this proposed brotherhood, if already in existence and ready for service, might and could be of the greatest usefulness in many ways.

The names of 150 physicians accompany this appeal, as officers and members of a council and an advisory committee. Medical readers of the appeal are requested, if they are so inclined, to enroll as members. There is no membership fee, but voluntary contributions for the purpose of upholding the organization, distribution of literature, etc., will be gratefully accepted. Enrollment and contributions are to be sent to the medical brotherhood in care of the undersigned.

S. J. MELTZER, M.D.,  
President.

13 West 121st Street.

### KIND WORDS.

SHERIDAN, NEVADA, July 24, 1915.

To the Editors:

May a woman, who has practised general medicine for over thirty years and is neither disappointed nor dissatisfied, thank Dr. S. Adolphus Knopf for his very kind and truthful defense of women physicians? Thank you, Doctor Knopf; I wish the majority of men were as fair minded and just as you are.

I wish also to give expression to the pleasure experienced on reading *The Psychology of Neurosis*, by Dr. Boris Sidis, and *Hysteria as a Constitutional Disorder*, by Dr. Harriet C. B. Alexander, published in the *JOURNAL* recently.

ELIZA COOK, M.D.

### LATE CONGENITAL SYPHILIS.

NEW YORK, July 24, 1915.

To the Editors:

Your esteemed *JOURNAL* of the 17th inst. contains an interesting article entitled *Late Congenital Syphilis*, by Dr. S. Berkowitz, wherein some statements are made which are at variance with the teaching of recognized pathologists. In describing the nodules of the lungs of the case in question, it is stated in the article that those nodules contained "firm fibrous tissue" and "a few giant cells."

I have before me a standard booklet on microscopic anatomy by Alquier and Lefas, revised and prefaced by Professor Cornil, of Paris, where we read this statement concerning gummata, which I give verbatim in the original: *Elles se distinguent des tubercules par l'absence des cellules géantes dans leurs centres.* (They are distinguished from tubercles by the absence of giant cells.) The article in question fails to mention the histological structure of the nodules of the liver. This organ is, as a rule, teeming with spirochetes in congenital syphilis, more so though in early syphilis, and in the fetus especially, and Wassermann uses such a liver for the preparation of the antigen for his reaction. The presence of fibrous tissue in a gumma is something new in pathology. The heart again was normal post mortem, though there was a murmur during life. *The Wassermann and the von Pirquet reactions were positive.* The patient then had both syphilis and tuberculosis?

I write this, not as a criticism of the author of the article in question, but to say that the most scientific part of medicine, namely laboratory work, is done in the hospitals of this country by young men, who are at the same time pathologists, bacteriologists, chemists, hematologists, and

men like Cornill, Ranvier, Vichow, Orth, are limiting themselves exclusively to pathology, and excluding even bacteriology and physiology, and thus we know all about the anatomy. But as long as our hospitals and their institutions are controlled by cliques to advance their personal interests, no improvement can be expected, and patriotic twaddle of greatness, like that expressed by a gentleman in a letter in the current issue of the JOURNAL, where he wishes to rank routine workers with a Koch or a Lister, will not enhance American medicine abroad. Of course, it pays to flatter the powers that be, but some people unfortunately have no fail to wag. E. PALIER, M. D.

#### THE GOLD-HEADED CANE AND THE WASSERMANN REACTION.

NEW YORK, JULY 27, 1915.

The writer was much interested in your editorial article of July 3d, entitled *To Standardize the Wassermann Reaction*, in which you correctly pointed out the uncertainties and discrepancies involved in this important reaction, the result of each serologist doing the test in his own way.

For several years, the writer has been studying this particular phase of the Wassermann reaction from the clinical standpoint, and has made public the results of these studies in two papers, which appeared respectively in the February 22, 1913, issue of the *NEW YORK MEDICAL JOURNAL*, and the February, 1915, issue of the *Interstate Medical Journal*. The latter paper enjoyed the honor of receiving extensive editorial comment in the *Medical Record* (May 1, 1915).

In that paper, it was proposed by the writer that "all workers should adopt a uniform, recognized method, which has been found trustworthy and reliable." It is therefore somewhat surprising to note that your JOURNAL, five months later, almost timidly "ventures to make the suggestion, that some competent body of serologists should now undertake the task of establishing a standard method or methods of doing the Wassermann reaction."

In view of this identical suggestion having been made five months ago, the writer begs to submit that it would seem but fair for you to have mentioned that fact in your otherwise excellent summing up of the Wassermann situation. ABR. L. WOLBARST, M. D.

#### Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so our readers are likely to be interested.]

*The Operative Treatment of Fractures.* By Sir W. ARTHUR LANE, Bart., M. S., F. R. C. S., Senior Surgeon to Guy's Hospital, and Emeritus Surgeon to the Hospital for Sick Children, Great Ormond Street. Second Edition. London: The Medical Publishing Company, Limited, 1914. Chicago Medical Book Company, Chicago, American Agents. Pp. 184. (Price, \$4.)

The second edition of Lane's well known book on the operative treatment of fractures will have a special interest for American surgeons, since he has so recently demonstrated his methods in this country. The volume gives his present views on the subject after twenty-two years of investigation and operative experience. His results justify to him the principle that simple fractures of the long bones should be subjected to operation when accurate apposition of the fragments cannot otherwise be obtained in individuals in whom restoration of the normal form of the bones is of mechanical importance. This view is at present not shared by most surgeons of this country, who still feel the necessity of a very pressing indication before converting a simple fracture into a compound. Fractures about joints have to be considered separately, as the indications for operation are here more often imperative. The new edition is enlarged chiefly by the addition of a number of radiographs demonstrating the various methods of uniting the fragments with plates and the final

results. The book is well worth careful reading, both on account of the useful points of technic it contains, and because it represents the many years' work of the pioneer in this most important field.

*Allgemeine Bakteriologie und Sterilisationslehre.* Für Aerzte und Pharmazeuten. Von Dr. med. K. LAUBENHEIMER, Privatdozent für Hygiene und Bakteriologie an der Universität Heidelberg. Mit 61 Abbildungen im Text und 5 farbigen Tafeln. Jena: Gustav Fischer, 1915. Pp. viii-220.

The author has much information to convey as to methods of sterilization, some from his own experience, and some from the teaching of other men. It is a useful subject, and one which doctors very often misapprehend. Here experience is better than mere precept, and a study of this book, of the merits of one antiseptic and the demerits of another, will leave the student more conversant with the functions of agents that destroy bacteria than he was before. Particularly good are the chapters on the sterilization of pharmaceutical preparations—powders, tablets, solutions in ampoules. That the author has omitted some things is pardonable, for what he gives us is much needed and generally unknown. In a subsequent edition full justice should be done this subject. Other parts of the work that we read with much interest were the chapters devoted to steam sterilization, to comparisons between antiseptics, germicides, etc., which are free from the popular theorizing that has obscured this subject in the writings of sham bacteriologists. The author also describes sterilization by filtration and Tyndallization, which he spells *Tyndallization*. Our main criticism of the work is that the part dealing with bacteriology is rather familiar and that the more valuable parts, which we have cited, have not been sufficiently elaborated. It is the great merit of this book that it is a real record by a real teacher. But it would be better if the author had condensed the first part; the style has the diffuseness of a lecturer's.

*The Gold-Headed Cane.* By WILLIAM MACMICHAEL, M. D., with an Introduction by Sir WILLIAM OSLER, B. A., M. D., F. R. S., and a Preface by FRANCIS R. PACKARD, M. D. New York: Paul B. Hoeber, 1915. Pp. xxiv-261. (Price, \$3.)

Among other things for which the present war is responsible, says Sir William Osler in his introduction to the new edition of this book, is the stoppage of plans to celebrate at Oxford the two hundredth anniversary of the death of the first owner of the gold headed cane, Dr. John Radcliffe. Sir William also pays a tribute to American scholarship in complimenting the American publisher who has undertaken the risks of this edition. We sincerely hope it will pay, for the adventures of the cane in question form a most interesting chapter in the history of English medicine at an important period. This edition is a reprint of the second, that of William Macmichael published in 1828, and beside Sir William Osler's introduction, bears a preface by Dr. Francis R. Packard, of Philadelphia. The effect of the several prefaces and title pages is at first somewhat confusing. As scholars know, the cane tells its story in the first person, disclosing in succession portions of the lives of its owners, Radcliffe, Mead, Askew, Pitcairn, and Baillie. The arms of each owner were engraved upon the head of the cane and are reproduced here as section heads. Finally the cane was presented to the College of Physicians by the widow of Dr. Matthew Baillie, a gift which brought its autobiography to a close. For further information we must refer our friends to the most informing and entertaining volume, which is admirably printed and bound and decorated with a few delightful old pictures.

#### Interclinical Notes.

In the very interesting autobiography of Tahan, a half breed Indian, which is concluded in the September issue of *Pearson's Magazine*, we have an opportunity to observe the workings of the Indian code of ethics. Obviously this code was a far finer thing than any standard which guided the conduct of Tahan's companions, mostly cowboys and private soldiers, and was quite on a level with the code

which white gentlemen have imposed upon their dealings with their fellows, where indeed it did not rise higher. While Tahan must have observed this fact more than once it is noteworthy that he expresses no criticism, but confines his pen to a straight account of his unusual experiences.

\* \* \*

In the August number of the well known organ of lay specialists in medicine, *McClure's Magazine*, Kathleen Norris tells of Miss Smith, supposedly a nurse in Bellevue. Miss Smith, among other experiences, had the good fortune to see that perennial mistake of the ophthalmologist, which has happened in every large hospital since hospitals existed, of removing the wrong eye. How the trained nurse came to leave the wrong eye exposed for operation, Miss Smith does not divulge. The ophthalmologist cut the wrong "optic cord," whatever that is, and, as he has always done, at once gave up practice and disappeared out West somewhere with his family. This time he was a fine fellow, fifty years of age; the hero and *mise en scene* vary in this historical anecdote; only the wrong eye persists.

\* \* \*

Our readers are by this time aware of our opinion of the much lauded "efficiency," with its wretched substitution of straight lines and direct methods for the graceful, non-fatiguing, and time consuming curves of Nature. In the *Sun* for July 23d appeared a letter from Mr. W. W. White-lock, which throws so many new and beautiful lights on the subject that we reproduce it in full: "All the things that we learned from our parents are of course fundamentally wrong. Were proof of this needed, our children would readily furnish it. The lesson of the past generation has been, primarily, that of efficiency, and look where it has got us; one half of the world is industriously trying to cut the other half's throat. Efficiency is the bane of life, both individually and nationally; not only that, it is essentially antisocial, and hence destructive. Efficient people are always gluttonous and generally cannibalistic; having absorbed all the work in sight, they proceed to devour their inefficient neighbors who are content to live in the God given inefficient state natural to man. There are only two ways to check them; either destroy them at the beginning, before they get really under way, or become efficient oneself and devour the neighbor on the other side; and this is only less bad than it would be to be devoured oneself. Philosophers, poets, and musicians are inefficient; grocers, chauffeurs, and chiropractors are efficient. Compare the two classes and then decide in which way you will bring up your children. The fallacy about efficiency is that it enriches the world. Only apparently so; for in the end at least half of the available supply of efficiency is applied to the destruction of that which the other half produces. Inefficiency, on the other hand, is kindly, charitable and easy going, content with little and willing that others also should enjoy the fruits of their idleness. The proof that God loves the inefficient lies in the fact that they always find some efficient person to take care of them and their families; whereas, who ever heard of an efficient man encountering like treatment?"

\* \* \*

In an issue unusually interesting from the customary viewpoints the *Outlook* for July 7, 1915, contains an editorial article of remarkable sense and pungency on *The Criminal Insane*, in which is discussed the spectacle which makes alienists rub their eyes, of the ninth year of the *post factum* performances of a notorious homicide. A jurymen who decides on the sanity of a given individual has nothing on his conscience, we suppose; for him the defendant is either "crazy" or "as sane as you or I." For the layman, the insane man is consistently so all the time, mumbling and mousing, and sticking straws in his hair. What we should like is to give this pleasing delusion of judge, advocates, and jury, a profound jolt; where alienists step lightly is no ground for the heavy foot of the layman.

\* \* \*

It is said that some women have objected to the superb statues of nude female figures which adorn the grounds of the Panama-Pacific Exposition. Is not the objection based on a fear of comparison to their own figures, undeveloped or overdeveloped by improper feeding and dressing, lack of suitable exercise, etc.? We believe that we have noticed on the part of women with good figures

either an indifference to the nude, or, more frequently, a real admiration for it and a desire to see it prominently displayed. No comic opera *chanteuse* or figurante, generous of her charms, has greater admirers than the well shaped women in the audience. It is the rhomboidal ladies who dislike the nude.

\* \* \*

F. E. Bailey, in his story, *Emancipation*, in *Pearson's* for July, emits the aphorism that no one has excuse for tedium in this life as long as there are fighting and women. Julian Leavitt's study of organized charity deserves thoughtful perusal, especially by those who believe that Christ's statement about the omnipresence of the poor was spoken in bitter irony. Alexander Scott's *Little Tale of Two Cities* is good reading for taxpayers; and it is pleasant to come across Eugene Wood again and his genial philosophy in his *Adventure of the Southeast Chamber*.

\* \* \*

A young doctor is evidently going to play a prominent part in Sir Gilbert Parker's new serial, *Wild Youth*, which begins in the July *Red Book*; an "absorbing and daring story," as the editor justly remarks. Philo Gubb, Ellis Parker Butler's astonishing correspondence school detective, devotes his talents in this issue to solving the mystery of Henry; he demands the same confidence from his clients as a doctor from his patients, he remarks. The *Mystery of Chance* is Melville Davison Post's contribution—a detective story with the strange pietistic cast that characterizes many of the tales of this unique and clever writer. Mrs. Humphry Ward's *A Great Success* continues to tell of the woes of the wife of a genius. Many other capital stories appear in this number of a truly remarkable magazine.

## Official News.

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending July 21, 1915:*

**Barnes**, Wyatt, Acting Assistant Surgeon. Granted three days' leave of absence from July 4, 1915. **Carrington**, P. M., Surgeon. Granted ten days' leave of absence from July 20, 1915. **Crohurst**, H. R., Sanitary Engineer. On request of the State Board of Health of North Carolina directed to High Point, N. C., for the purpose of advising the city authorities in regard to improvements in the method of sewage disposal. **Ebert**, H. B., Passed Assistant Surgeon. Granted one month's leave of absence from July 23, 1915. **Frost**, W. H., Passed Assistant Surgeon. Directed to proceed to Trenton, N. J., and other points in the Eastern States, where sanitary investigations of water sheds of navigable rivers are now being conducted. **Gardner**, C. H., Surgeon. Granted one month and ten days' leave of absence from July 25, 1915. **Guiteras**, G. M., Surgeon. Granted three days' leave of absence about July 15, 1915. **Hume**, Lea, Acting Assistant Surgeon. Granted four days' leave of absence from July 7, 1915. **Hurley**, J. R., Passed Assistant Surgeon. Granted fourteen days' leave of absence from August 2, 1915. **Jackson**, J. M., Acting Assistant Surgeon. Granted five days' leave of absence from July 21, 1915. **King**, W. W., Surgeon. Granted one month's leave of absence from September 3, 1915. **McCoy**, George W., Surgeon. Leave of absence for two months from June 26, 1915, amended to read two months' leave of absence from July 1, 1915. **Roberts**, N., Passed Assistant Surgeon. Granted two days' leave of absence, July 16-17, 1915. **Schereschewsky**, J. W., Surgeon. Relieved from duty at the Hygienic Laboratory, and ordered to proceed to Pittsburgh, Pa., to assume charge of the Marine Hospital, and establish headquarters for field investigations of industrial hygiene. **Sprague**, E. K., Surgeon. Granted one month's leave of absence from August 1, 1915. **Teufel**, Walter C., Assistant Surgeon. Leave of absence for ten days from July 1, 1915, amended to read one day's leave of July 3, 1915. **Williams**, L. L., Surgeon. Granted three days' leave of absence from July 6, 1915, on account of sickness; also granted fifteen days' leave of absence from July 15, 1915.



**Dr. M. W. Glover**, died at St. Mary's Hospital, New York, July 10, 1915. He was a native of New York City. He studied medicine at the University of the City of New York, and graduated in 1887, and came to the United States Marine Hospital Service the same year. He had been in command of hospitals at Boston, Baltimore, Chicago, and San Francisco, and was well known to many of the sailors of the Atlantic and Pacific sea-boards. During the threatened cholera epidemic of 1902, he was sent to Ketchikan, Alaska, and later for a period of three years, was Assistant Surgeon General in charge of Foreign and Insular Quarantine, Washington, D. C. He was a fellow of the American Medical Association, and a member of the Association of Military Surgeons. His last detail was in charge of the marine hospital at San Francisco, Cal., and in addition to his service duty, he was in charge of the Panama-Pacific Exposition Emergency Hospital.

#### Boards Convened.

Boards of commissioned medical officers convened to meet Monday, July 26, 1915, for the examination of certain pharmacists to determine their fitness for promotion to Pharmacists of the Second Class, as follows:

Marine Hospital, St. Louis, Mo., detail for the board: Surgeon M. J. White, chairman; Assistant Surgeon H. C. Cody, recorder.

Hygienic Laboratory, Washington, D. C., detail for the board: Surgeon M. W. Glover, chairman; Passed Assistant Surgeon H. E. Hasseltine, recorder.

Old Post Office Building, Galveston, Texas, detail for the board: Surgeon R. L. Wilson, chairman; Assistant Surgeon H. C. Cody, recorder.

#### United States Army Intelligence:

*Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army, July 24, 1915.*

**Anderson**, J. B., First Lieutenant, Medical Corps. Granted one month and twenty-five days' leave of absence, effective July 5, 1915. **Austin**, T. C., Captain, Medical Corps. Ordered to State Rifle Camp, New Castle, Del., July 24-31, 1915. **Baker**, David, Major, Medical Corps. Granted leave of absence for one month and five days, about June 28, 1915. **Canning**, A. J., First Lieutenant, Medical Corps. Granted one month's leave of absence. **Davidson**, William T., Major, Medical Corps. Detailed as a medical examiner and witness before the army retiring board, appointed to meet at Governor's Island, New York, in Special Orders, No. 89, 1915, War Department, during the absence of Major Albert E. Truby, Medical Corps. **Griffin**, Frank C., First Lieutenant, Medical Reserve Corps. Ordered to proceed to Fort Du Pont, Delaware, and report in person to the commanding officer thereof for temporary duty, relieving Captain Thomas C. Austin, Medical Corps, from temporary duty at that post. **Grissinger**, Jay W., Captain, Medical Corps. Granted leave of absence for ten days, to take effect on or about July 24, 1915. **Hart**, James W., First Lieutenant, Medical Reserve Corps. Ordered to active duty in the service of the United States on account of an existing emergency, to take effect August 8, 1915, and will report in person on that date to the commanding officer, Washington Barracks, D. C., for duty until August 19, 1915, when he will stand relieved from active duty in the medical Reserve Corps. **Huber**, E. G., Captain, Medical Corps. Ordered to Fort Sam Houston, Texas, for duty in Bade Hospital. **Lile**, Samuel, First Lieutenant, Medical Reserve Corps. Resignation of his commission has been accepted by the President, to take effect July 15, 1915. **Miltenberger**, V. E., First Lieutenant, Medical Reserve Corps. Granted leave of absence for two months, effective about July 8, 1915. **Morse**, A. W., Major, Medical Corps. Granted sick leave for one month and fifteen days, effective about July 25, 1915. **Schlanser**, Adam E., Captain, Medical Corps. After arrival in the United States, and upon expiration of such leave of absence as has been or may be granted him, will proceed to Fort Thomas, Kentucky, and re-

port in person to the commanding officer of that post for duty, and by letter to the commanding general, Eastern Department. **Shaw**, H. G., Major, Medical Corps. Ordered to Peters Pond, Sandwich, Mass., with State troops, July 18-25, 1915. **Snyder**, Howard McC., Captain, Medical Corps. Now on leave of absence at Fort D. A. Russell, Wyoming, is relieved from further temporary duty in the Southern Department, to take effect upon the expiration of said leave, and will resume his duties at Fort D. A. Russell. **Weed**, F. W., Captain, Medical Corps. Will in addition to his duties at Presidio, San Francisco, Cal., perform duties at Fort W. Scott, California, during the absence of Captain E. G. Bingham, on sick leave.

Each of the following named officers of the Medical Corps, after arrival in the United States and upon the expiration of such leave of absence as has been or may be granted him, will proceed to the post specified after his name and report in person to the commanding officer thereof for duty and by letter to the commanding general, Southern Department: Captain Thomas L. Ferenbaugh, Fort Huachuca, Arizona; Captain John S. Lambie, Jr., Fort Bliss, Texas. Leave of absence for three months, effective upon relief from present duties, is granted Captain Robert C. Loving, Medical Corps.

#### Births, Marriages, and Deaths.

##### Born.

**Rist**.—In Burlington, Vt., on Sunday, July 11th, to Dr. and Mrs. Gilbert Rist, a son.

##### Married.

**Boyle**—**Shean**.—In Arlington, Mass., on Wednesday, July 21st, Dr. Jeremiah J. Boyle, of Cambridge, Mass., and Miss Julia Theresa Shean. **Gray**—**Frazier**.—In Columbus, Ohio, on Thursday, July 15th, Dr. Dan F. Gray, of Ironton, Ohio, and Miss Florence Frazier. **Haymore**—**Mason**.—In Chattanooga, Tenn., on Wednesday, July 14th, Dr. German P. Haymore and Miss Beth Mason. **Keith**—**Nicholson**.—In Wareham, Mass., on Wednesday, July 14th, Dr. Laurence F. Keith and Miss Madge Nicholson. **Kistner**—**Linton**.—In St. Louis, Mo., on Saturday, July 17th, Dr. Paul F. Kistner and Miss Lillian Marie Linton.

##### Died.

**Adler**.—In Philadelphia, on Thursday, July 15th, Dr. Lewis H. Adler, aged seventy-four years. **Bickmore**.—In San Jose, Cal., on Tuesday, July 13th, Dr. L. M. Bickmore, aged seventy-seven years. **Burbank**.—In Wilmington, N. C., on Monday, July 12th, Dr. Thomas Sparrow Burbank, aged sixty-one years. **Cargill**.—In Baltimore, Md., on Tuesday, July 13th, Dr. J. Marcus Cargill, aged sixty-eight years. **Dirkes**.—In Brooklyn, N. Y., on Sunday, July 18th, Dr. George J. Dirkes, aged forty-eight years. **Gresham**.—In Jackson, Tenn., on Friday, July 16th, Dr. John W. Gresham, aged forty years. **Hamilton**.—In New Orleans, La., on Wednesday, July 14th, Dr. William Thomas Hamilton, aged sixty-six years. **Hanlon**.—In Philadelphia, on Sunday, July 11th, Dr. William J. Hanlon, aged thirty-eight years. **Hill**.—In Kendallville, Ind., on Friday, July 16th, Dr. F. C. Hill, aged fifty-four years. **Hooker**.—In Fortune Rocks, Me., on Wednesday, July 21st, Dr. Charles P. Hooker, of Springfield, Mass., aged sixty years. **Kremer**.—In White Plains, N. Y., on Saturday, July 17th, Dr. Carl F. Kremer, aged seventy-four years. **Murray**.—In Ripley, Miss., on Monday, July 12th, Dr. John C. Murray, aged eighty years. **Shepherd**.—In Philadelphia, on Tuesday, July 13th, Dr. Winfield Beck Shepherd, aged thirty years. **Speer**.—In Pittsburgh, Pa., on Monday, July 19th, Dr. Alexander Morrow Speer, aged seventy-four years. **Turner**.—In Colfax, Iowa, on Saturday, July 10th, Dr. Alice B. S. Turner, aged fifty-six years. **White**.—In Connellsville, Pa., on Tuesday, July 13th, Dr. Thomas H. White, aged sixty-nine years. **Woodward**.—In San Francisco, Cal., on Friday, July 16th, Dr. Rell M. Woodward, aged fifty-three years. **Zippert**.—In New York, on Wednesday, July 14th, Dr. Isidore Zippert, aged thirty-nine years.

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### Original Communications.

#### MOUTH HYGIENE.

##### *How Mouth Infection and Other Local Infections Affect the General Health.*

By EUGENE LYMAN FISK, M. D.,  
New York,

Director of Hygiene, Late Extension Institute, Inc.

It is not so far back in man's history that he lived in continual fear of supernatural agencies in his environment seeking to destroy him. Devastating plagues, bodily miseries, and sudden death were often ascribed to malignant demons, to witchcraft and sorcery. Succubi peopled the atmosphere in the dark ages when men slept in bunks in the wall, ate with their fingers from a common dish, and allowed the refuse from the table to accumulate for months in the straw at their feet.

As a matter of fact, there are in these days malignant agencies in our environment continually at work operating to destroy us, not in a supernatural way, or even with a purposeful hostile intent, but simply in accordance with the natural laws of their being. The typhoid bacilli, the bacilli of tuberculosis, and even the hookworm have no enmity toward the human race; they simply seek a habitat where they can best thrive, and that happens to be the human body.

Nevertheless, no demons could be more terrible in their effects than the bacilli of typhoid, of tuberculosis, and—latest probably to be cornered and identified—of typhus. The light of reason and science has driven away the succubi, but has revealed natural beings with similar names and no less malignant tendencies—streptococci, staphylococci, pneumococci, spirochetes, endamebas. It is literally true that human life is one long struggle with germ life, a struggle of which we are conscious only when the germs gain the ascendancy in the strife.

It is only within recent years that the extent of the struggle has become known. Even to physicians, the word "infection" has meant chiefly typhoid, tuberculosis, smallpox, measles, or any one of the ordinary epidemic diseases, and, of course, the blood poisoning following infected wounds. But recently it has been found that many bodily ailments formerly ascribed to mere disturbances of bodily function, to errors in diet, to that bugaboo, uric acid, or to unknown causes—chronic, obscure, often apparently incurable maladies—are actually the result of the persistent, insidious attacks of microorganisms. Even organic diseases of the heart,

kidneys, and other vital structures, diseases usually regarded as the result of mere wear and tear, or of poisons generated in the body during the processes of digestion and assimilation, are now known frequently to be caused by infection.

#### FOCAL INFECTION.

This insidious form we term focal infection because in some particular spot or focus in the body certain forms of bacteria settle, thrive, and multiply, and then migrate or move into the blood stream, seeking other tissues where they can live to the best advantage. These primary foci, where the bacteria first settle and multiply, might be compared to a submarine base, from which the enemy strikes out in various directions, carrying destruction to distant points.

The most important foci of infection are in the head. The mouth, tooth sockets, the tonsils, the middle ear, the cavities in the bones of the face and head that communicate with the nasal cavities, are all favorable dwelling places for germs, especially of the type that migrate and cause serious trouble in other localities.

A flood of light has recently been thrown on this subject by Rosenow, Billings, and others who have been busily at work on these problems. Rosenow has demonstrated that the infective organisms found in the mouth are chiefly the pneumococci, the germs of pneumonia, and the streptococci or pus forming germs present in many forms of blood poisoning. He avers that these organisms are first cousins, as it were, and that the conditions under which they exist may change one strain into the other or into intermediate forms, and that these varying forms have special affinities for special tissues where they can best thrive.

In other words, the tooth sockets, the accessory nasal sinuses or cavities, and other foci in the head, constitute ideal culture tubes for the multiplication of these organisms, and the varying physical conditions of these foci, especially the amount and tension of the oxygen present, determine the type, also its final destination in the body.

In a recent lecture before the New York Academy of Medicine, Doctor Rosenow gave an interesting and convincing account of his experiments. He showed that bacteria taken from ulcers of the stomach, appendixes, infected gallbladders, and rheumatic joints, when injected into animals, in the majority of instances, caused infection and inflammation in the localities corresponding to those from which they have been taken. For example: Out of fifty-nine animals injected with the germs taken

from cases of appendicitis, forty-one developed appendicitis. Out of seventy-nine animals injected with the germs from ulcer of the stomach, fifty developed ulcer of the stomach, forty-seven showed hemorrhage. Out of twenty-seven animals injected with germs from inflamed gallbladders, twenty-two developed gallbladder affection. Out of seventy-one animals injected with germs derived from cases of rheumatism, forty-seven developed joint affections, thirty-three developed inflammation of the lining of the heart (endocarditis), a frequent complication of rheumatism, thirty-one developed myocarditis, inflammation of the heart muscle, and nineteen developed pericarditis, inflammation of the membrane surrounding the heart, twenty-eight kidney affections, nineteen peritonitis.

As this focal infection goes on insidiously, the focus itself often giving no evidence of its presence by ache or pain, we can readily understand how important it is to survey the body and to uncover the training stations of these myriads of enemies that menace our health.

I have stated that the primary foci of infection are in the head. This is because there are so many cavities and nooks and crannies in the head where these germs can thrive, and where they can so readily gain entrance.

Among these foci in the head, the mouth is the most important, because of the physical conditions that exist there, the readiness with which germs gain entrance, the practical impossibility of keeping the mouth sterile, and the frequent presence in the mouth of decomposing material which offers ideal culture conditions for germs.

#### THE MODERN MOUTH.

The modern mouth is out of adjustment with modern conditions and customs. It is not up to its task—that is, as an entrance port for receiving and preparing for digestion the nutriment of man. It may be long on talk, but it is short on mill work. It too often does the work in a slovenly and uncleanly way, which is a heavy indictment of a mill, especially a food mill. We are making great progress in securing pure food, but how many mouths are really fit to receive it.

There is a man who has written a book on microorganisms of the human mouth. His name, by the way, is Miller. He has found as many as 3,000,000,000 bacteria in a neglected mouth, and I believe they did not fall far short of fifty-seven varieties.

But do not misunderstand me. It is not so much the teeth which are at fault as it is our dietetic customs and the mouth as a whole—the gums, the tooth sockets, the root of the tongue, and tonsils. It is the environment of the teeth and the mouth secretions that are chiefly at fault.

Where such vast numbers of bacteria and infective organisms gain entrance, there should be a sturdy resistance, a proper war machine, to keep them out or to hold them safe.

The teeth themselves are not unduly soft, they are not lacking in lime salts, and there is no evidence that variation in hardness has anything to do with dental decay. An elephant's tusk, which is pretty hard, thank you! has twenty per cent. less lime than the human teeth. This applies, of course, to teeth

that are already matured. Serious faults in the diet during infancy may result in deformed and pitted teeth that readily decay, but this condition is not usually a factor in dental decay. The general condition of the mouth and the dietetic habits must be held responsible for tooth cavities. Wild animals are not subject to caries; neither is man in a state of Nature. Civilization seems to have evolved inefficient jaws as well as dietetic habits that menace our teeth and through them our health. Savage man has more powerful jaws, more regular teeth, and better formed teeth than civilized man, and—strange paradox—lacking wisdom, he has, nevertheless, large efficient wisdom teeth, while in his civilized brother these structures are degenerate and of little use.

#### FORMS OF ORAL SEPSIS.

There are two forms of mouth infection that we have to combat: Dental caries, leading to infection of the root and to root abscess; and pyorrhea, or infection of the gums and tooth sockets.

#### DENTAL CARIES.

In caries, or dental decay, plaques or films of mucin, a viscid substance derived from the saliva, form on the tooth surface and enclose bacteria and particles of sugary and starchy food, which decompose, with the formation of lactic acid. This acid dissolves the lime salts of the enamel, leaving the organic matter, which is then attacked by putrefactive bacteria. These bacteria penetrate the canals of the dentine, and cavities soon result. If the process is not checked, the root canal may be involved, and an abscess form at the root tip. A blind alveolar abscess of this type, one that does not drain out through an opening, is one of the most serious forms of focal infection, as the pus bacteria find their way into the blood stream and lymph channels, and seek some favorable location to live at man's expense.

#### PYORRHOEA ALVEOLARIS.

Pyorrhea, or Riggs's disease, has been regarded by many as due to a general systemic condition affecting the nutrition of the gums and rendering them easily infected or injured. Gouty conditions have especially been held responsible for the affection. There is, of course, no question about the presence of microorganisms at the gum margins and in the tooth sockets, and the present belief is that the disease is chiefly an infection. It is frequently found in subjects who have no so called gouty tendencies.

The tooth is held in its socket by a membrane (peridental membrane), which is interlaced with the periosteum or skin of the bone forming the tooth socket. When the gums are injured, and especially if the gums are ill nourished and lacking in resistance, infection takes place at the margins, and they begin to recede. This is termed pyorrhoea dentalis. Later, as the membranes attaching the tooth to the bone are destroyed, a pocket forms around the tooth in the socket, and then we have an ideal culture tube for the bacteria and microorganisms. This process is accelerated by depositions of tartar, especially around the roots. The end result is, of course, loosening and loss of the teeth.



which is really the best thing that can happen if proper artificial aid is not forthcoming.

The weight borne in twenty-four hours by the grinding surface of the teeth has been estimated at 5,000 pounds. The rise and fall of the teeth in their sockets thus operates to press any infective material that may be present into the blood stream and lymph channels. Like human warriors, these microscopic enemies become more dangerous as they succeed. Their virulence and power to injure increase as they multiply and penetrate the tissues, and—as I have already pointed out—the point of attack and its severity depend upon the physical conditions under which the organisms develop.

The pus bacteria, streptococci and staphylococci, and the pneumococci were formerly supposed to be the chief infective agents in pyorrhea, but competent investigators have lately reported that certain minute animal parasites, termed endamebas, formerly thought to be natural friendly denizens of the human mouth, are, in reality, the cause of pyorrhea. Noguchi, of the Rockefeller Institute, has recently reported the presence of a spirochete which he thinks is the cause of the offensive odor which is so often found in the disease.

There is a considerable body of evidence to show that pyorrhea is actually caused by endameba, and as there is a remedy that can be safely used to destroy these organisms, such evidence should be thoroughly tested, and is being tested. This remedy, emetine, has been used with some success in amebic dysentery, which is caused by a similar organism. Emetine seems to destroy endamebas just as quinine destroys the parasite of malaria. It has been stated that these endamebas are almost universally present, which has given rise to the idea that they are normal to the human mouth and harmless parasites. There is reason to believe that some degree of gum impairment or infection is also very widespread, and that it is the part of wisdom to take measures to destroy these endamebas wherever found. At the same time, it is of course necessary to use all possible surgical means to overcome pus infection of the gums and of the tooth sockets and keep the roots free from tartar.

It was formerly supposed that the ill effects from such conditions as dental abscess and pyorrhea were due to absorption of toxic matters formed by the bacteria, but—as pointed out in the discussion of focal infection—we now know that there is an actual migration of these organisms and that they often cause trouble by mechanically obstructing the circulation and impairing the nutrition in such structures as the joints. Chronic rheumatism is a disease of this type.

Not only do these microorganisms travel through the bloodvessels and lymph channels, but they work out into the tissues, and may be found in the substance of organs such as the liver, kidney, and even the thyroid gland. The following is a list of diseases which have apparently been caused by focal infection from the tooth sockets, and in which clearing up of the mouth conditions has resulted in the improvement or cure of the disease: Chronic rheumatism, arthritis deformans, certain forms of anemia, goitre, chronic heart and kidney trouble,

diabetes, ulcer of the stomach and duodenum, and other forms of chronic disease, especially those that have proved resistant to known methods of treatment.

As regards the endamebas, they actually feed upon bacteria, and were therefore supposed to be beneficial parasites; but it is now thought that in addition to their action on the gum tissues, they also release poisons resulting from the digestion of the bacteria.

Now, in this condition of mouth infection, there is often a vicious circle. That is, a patient suffering from diabetes or Bright's disease will often have tissues of low resistance, and mouth infection readily arises and urges on the condition of systemic disease. On the other hand, mouth infection may be the primary cause of these systemic conditions, which, when once established, serve to aggravate the condition of mouth infection.

We have thus far been considering chiefly the teeth and gums and tooth sockets. There are, however, other important sources of infection in the head. Tartar often forms on the horny projections on the root of the tongue, and a condition of sepsis develops in this region which is often responsible for foul breath. Foul breath is seldom due to stomach conditions, as so many people imagine. It usually arises from some putrefactive condition in the mouth and throat or nasal cavities, especially the accessory sinuses in the head which communicate with the nasal cavities.

The tonsil, supposed to be a defender of the body from infection, is, as a matter of fact, in most cases a menace because it is seldom in a sound physiological condition. The endamebas, supposed to be a factor in pyorrhea, have been found in the recesses of the tonsils, and streptococci frequently settle there and give rise to acute rheumatism and other troubles at distant points.

Communicating with the nasal cavities we have in the cheek bones certain recesses termed ethmoidal cells, also the antra and sphenoidal sinuses and the frontal sinuses in the forehead just behind the eyebrows. All these cavities are lined with mucous membrane, which in the course of an ordinary acute cold throws out an excess of secretion, which drains into the nasal cavities. If there is obstruction to this drainage, and if bacteria gain entrance to these cavities, there is a formation of pus. These abscesses are often chronic, and when they are ill drained, they constitute foci of infection from which the infective organisms migrate to work harm according to their special predilection and affinities.

When the nasal tissues, especially the turbinated bones—little shelflike bodies attached to the wall of each nasal cavity—are inflamed and swollen, and when the nasal septum or the partition separating the nasal cavities is deformed and deflected, causing nasal obstruction, a condition exists favorable to the damming back of secretions in the accessory sinuses.

This matter of focal infection does not rest upon fine spun theory, but has been experimentally proved in the laboratory, as well as at the bedside. The description of a few typical cases will prove of interest and of suggestive value to those who wish

to guard against these dangers. Doctor Billings, of Chicago, who has so thoroughly studied focal infection, reports a case as follows:

CASE I. Mr. C. F., aged forty-nine years, seen April 1, 1914. History of illness for ten years and frequent sore throat, shortness of breath, rapid heart; nervousness, loss of weight, loss of strength, and general debility. Examination showed enlarged tonsils with alveolar infection shown by radiograph. Enlarged and infected tonsils. Tonsils removed, teeth extracted, rest and nourishing food. Result, May 12, 1914: Discharged much improved, goitre diminished more than one half, practically no symptoms as above described.

CASE II. Mr. D., aged forty-nine years, seen April 1, 1914. History of illness for ten years and frequent sore throat, shortness of breath, rapid heart; nervousness, loss of weight, loss of strength, and general debility. Examination showed enlarged tonsils with alveolar infection shown by radiograph. Enlarged and infected tonsils. Tonsils removed, teeth extracted, rest and nourishing food. Result, May 12, 1914: Discharged much improved, goitre diminished more than one half, practically no symptoms as above described.

CASE III. Miss M. K., aged twenty-four years, admitted April 18, 1914. Chronic inflammation of finger joints, frequent tonsillitis, goitre, fainting spells, headache, and nervousness. Well nourished, good color, tonsils enlarged and infected. X ray revealed alveolar infection four lower teeth. Treatment: Infected teeth extracted, tonsils removed, vaccine prepared from the organisms found in teeth and tonsils. Discharged, November 10th, much improved. January 18th, returned to work, general condition good, joints much improved, goitre one half size.

CASE IV (reported by Doctor Hartzell, of Minneapolis). Man, aged twenty-four years. In January, 1913, had an attack of sore throat, followed by pain and swelling, affecting one joint after another. Was confined to hospital nine months. No response to ordinary treatment. September 30th, radiograph showed abscess at roots of first and second molars. These teeth were extracted, vaccines made from the organisms found. January 13th, patient discharged from hospital, able to walk and free from pain, except on severe exertion.

The lesson from these facts is obvious and the lines of prevention are well defined. I will sketch them as follows:

1. Beginning in infancy, a thorough physical examination and survey at regular intervals, in order to detect any possible focus of infection or any physical impairment that may lead to the formation of such a focus.

2. The practice of personal hygiene all along the line, in order that the general resistance to infection may be raised to the highest power.

3. Proper diet in infancy, which means, wherever possible, mother's milk, in order that there may be a regular and healthy development of teeth and jaws. As the child grows older, the cultivation of normal eating habits, especially vigorous use of the jaws by thorough mastication and the eating of hard, resistant, crusty foods every day.

4. The use of fruit in the diet between meals, especially apples, which mechanically cleans the teeth, and which by the action of fruit acids removes the mucin plaques that favor decay.

5. A thorough mechanical cleansing of the teeth with clean water and stiff brush, used with a rotary motion, not forgetting the tongue.

6. Thorough dental cleansing of the teeth at least every six months.

7. If unfortunately dental decay has taken place, care on the part of the dentist thoroughly to treat infected roots, so that a septic focus may not be

sealed in by a filling; in all cases of doubt, the use of the x ray, in order to determine the condition of the roots. It is said that few people arrive at maturity without a chronic alveolar abscess. An x ray of the jaws as a starter in mouth hygiene would be a wise precaution for every one.

8. The development of the teeth should be closely watched, and irregularities, interfering with proper contact between upper and lower teeth, corrected or prevented. The earlier this is done, the better for the patient.

9. Bearing in mind that the endamebas are possible factors in pyorrhea, a simple harmless preventive is available in a mouth wash made by adding two drops of fluid extract of ipecac to a half a glass of water, used before retiring. This will not be of any service in well established cases of pyorrhea, but in the earliest stages it may check the condition.

10. When pyorrhea has become fully established, no pains or expense should be spared in curing the condition, as it is a constant menace to life and health. Experience has shown that this disease can be cured by thorough and persistent treatment, if there had not been too much destruction of the tooth sockets. Where the teeth are hopelessly loosened and the sockets destroyed, it is often far better to remove them, just as it is far better to extract an abscessed tooth rather than endanger the patient's condition by endeavoring to save it. It is better to lose a tooth than to lose a heart or a kidney. On the other hand, the tooth should not be ruthlessly extracted on the first suspicion of trouble. Common sense and a due sense of proportion are necessary in these matters.

It would be difficult indeed to exaggerate the importance of oral hygiene. It has been said that practically every one has infection by endameba. The Life Extension Institute, in the examination of employees in New York and Boston, found twenty-three per cent. of well groomed and otherwise well kept clerks, in preferred occupations, with infected teeth and gums, and all these men were referred to their dentists for attention. The result of the inspection of school children, tabulated and analyzed by the Committee on Health of the National Council of Education and the American Medical Association (Dr. T. D. Woods, chairman), showed defective conditions among 48.8 per cent. in the rural districts, and 33.58 per cent. in the cities. These, of course, relate to gross defects evident on ordinary inspection.

Among the cases of oral sepsis or mouth infection examined by the Life Extension Institute, the proportion with early indication of serious chronic disease, disturbances of the bloodvessels, kidneys, etc., was seventy-two per cent.

In one group recently examined, forty per cent. showed mouth infection, about double the proportion shown in other groups; and the proportion of systemic disturbance—high blood pressure, anemia, heart and kidney disturbances—was likewise double that found in other groups. In some cases the lowered systemic condition may have contributed to the mouth condition, but the uniformity with which such constitutional conditions are benefited by cleaning up the mouth focus, and the great improvement in the general condition and scholarship

of groups of school children whose mouths have received thorough treatment, is sufficient evidence of the enormous importance of the mouth as a primary source of danger to the body.

With diseases of this class rapidly increasing and encroaching upon early life, a definite cause, such as mouth infection has been demonstrated to be, should be attacked vigorously, systematically, and untiringly.

25 WEST FORTY-FIFTH STREET.

## THE TEETH AND THEIR RELATION TO HEALTH.\*

By S. SELIKOVITCH, M. D.,

Philadelphia,

Pediatricist, Mount Sinai Hospital.

As the space allotted to me for this paper is limited, it will not permit me to go into details on this subject; indeed, if all that could be said about the teeth and their relation to health were mentioned, it would make a big volume in print, therefore I shall be as brief as possible, leaving out many recorded cases by which I could illustrate and prove that body and mind may suffer when the teeth are unsound; and conversely, when the teeth and the oral cavity are in a pathological state, body and mind cannot be physiologically well.

The mouth, as such, offers a very fertile soil for the lodgment and propagation of various kinds of bacteria, as it supplies moisture and warmth, agents necessary for sustaining life and the development of germs; and as there is no barrier to the passage of bacteria, the germs have no difficulty in entering either by drink, food, inhalation, or through other mediums as licking stamps, envelopes, introduction of fingers, pencils, cigars, cigarettes, by kissing, and so on; in fact, it is impossible to find a mouth free from different kinds of bacteria, even when such a mouth is kept hygienically clean; it is impossible to render the mouth surgically sterile.

It is natural for particles of food to find lodgment between and around the teeth; they undergo fermentation, decomposition; countless new colonies of germs are formed and become destructive to the parts they infect. The teeth become defective; pus forms now and then; the damage to the body is increased by interfering with mastication and constant poisoning from the numerous foci they harbor; bad nutrition and infection and bad development result.

Nature did not intend to provide a human being with two rows of teeth for cosmetic purposes alone; surely she placed them not as a simple ornament, even in the mouth of a fair maiden, or as a simple guard for the unmanageable tongue, but for a more important mission, namely to aid digestion by grinding or masticating the food; and when the teeth are defective, loose, missing, decayed, this important function, which includes the admixture of the salivary secretion—a necessary agent for digestion—cannot be performed properly or at all, hence the food is bolted, the pleasant taste of the food is lost,

the stomach is overtaxed, the intestinal digestion suffers, the result is malassimilation and malnutrition with all their consequences.

Examining the feces of such patients, we find the bulk to be undigested food. Many cases of diarrhea, abdominal cramps, and pain, anemia, retarded growth, underweight, especially in children, I trace directly to inability to grind and masticate the food properly on account of defective teeth. No opiates will cure the abdominal spasm, no astringents will stop the diarrhea, no iron will enrich the blood of these patients; throw physic to the dogs! The best and most successful therapeutic agent is—the dentist. He will remove the primary cause, and for us physicians remains to treat the sequelæ, the damage produced by the cause.

It should be the rule with every practitioner to examine the oral cavity of his patients, as he will be surprised and at the same time delighted to trace very often the cause of his patient's ailment in the mouth, which is in a pathological state.

Leaving out the question of systemic inheritance predisposing to unhealthy teeth, to acquired systemic conditions which primarily reflect upon the health of the teeth, we find that neglect of oral prophylaxis and dental hygiene, on one side, and, especially among the civilized nations, the hurried life with its quick lunches, sweet and sour stuffs, neglect of Nature's calls, adulterated food stuffs, fermentative dyspepsia, iced water and ice cream, etc., on the other side, is greatly responsible for defective teeth.

The negro on the plantations, the peasant in the country, the farmer in the field needs less the services of the physician or dentist; his teeth are healthier, his health is better, because he is farther from civilization, which means nearer to Nature; he leads a natural life, a life according to Nature.

The gums suffer when the teeth suffer; healthy gums—healthy teeth. The calcic carbonate derived from the saliva, mixed with organic matter and bacteria, deposits itself around the teeth, nearing their roots in the form of tartar; it acts as a foreign body, pushes away the gums, produces irritation, forms a nidus for particles of food, for pus producing germs, resulting in alveolar abscesses, in pyorrhœa alveolaris, in loosened teeth. Personally I believe that pyorrhœa alveolaris is of purely local origin, primarily the result of tartaric irritation, initial inflammation, and finally infection, a condition which ultimately may lead to systemic infection with its consequences.

Under favorable conditions, different pathogenic and pyogenic bacteria cultivated in various portions of the mouth, teeth, and gums will gain entrance into the system and cause pathological disturbances of the organs or tissues of the body. Having a condition of alveolar abscess, or pyorrhœa alveolaris, the germs can easily be lodged upon the tonsils, pharynx, postnasal space, Eustachian tube, etc. We introduce them into our stomach simply by constantly swallowing them with our food. Though part of the bacteria or a certain kind of them may be destroyed in the stomach by the digestive secretions or other secretions of the system having bactericidal properties, yet we never can tell when the body is below par and the defensive properties of the secretions are weakened, and the germs will find

\*Read before the Southeast Branch of the Philadelphia County Medical Society at a joint meeting with the Eastern Dental Association and the Southern Druggists' Association, March 23, 1915.



their way into the circulation or pass into the lymph channels and cause trouble; or through an abrasion in the oral cavity their travel will be much shorter from the gums or teeth into the circulation or lymphatics; in fact they are not for distance, their only danger is to be intercepted on the road by an enemy.

Enlarged inflamed glands in the neighborhood of the neck or face on many occasions I traced directly to infected gums and carious teeth in children coming to my clinic at the Mount Sinai Hospital. No doubt that headaches, mental and nervous troubles are caused indirectly by diseased conditions of the teeth.

Why not admit that bacteria and their toxins, having originally prospered in the cavities of the carious teeth or taken a lively swim in the pus of an alveolar abscess, may affect the kidney and cause nephritis? Or affect other vital organs? Is it rare to trace a facial neuralgia to a root left from a carious tooth? Will you not admit that broken teeth with sharp points or roughened edges, by constant irritation and abrasion, may cause in the adult cancer of the tongue? It will not be an exaggerated statement that hundreds of cases of tuberculosis, gastrointestinal disease, kidney trouble, ear and tonsillar infections, and others are due primarily to the diseased teeth, and attack school children, put them back in their studies, prevent them from growing to manhood and womanhood mentally and physically well developed. The moralist makes a step further; in his opinion defective teeth are often the cause of immorality. In my limited observation I found the majority of unmanageable children and children criminally inclined, to have carious teeth. Some two years ago, an examination of school children in Boston as to their number and the causes of their defectiveness, revealed the following: Mental deficiency, 223; defective nasal breathing, 3,562; hypertrophied tonsils, 9,738; defective palate, 86; enlarged cervical glands, 4,425; pulmonary disease, 456; cardiac disease, 1,129; nervous disease, 213; orthopedic defects, 521; skin diseases, 3,509; rickets, 575; malnutrition, 1,611; defective teeth, 19,518. This needs no comment, it speaks for itself.

Now, from the esthetic and cosmetic standpoints, how pleasant it is when a broad smile of a fair maiden exposes two rows of beautiful white pearls guarded by two rosy lips! How repulsive it is when one in conversation shows parts or remnants of teeth, colored with all the shades of a meerscham pipe!

Did you ever have to turn away your nose when conversing with one nearby, from whose mouth emanated an odor similar to that of a primitive cess-pool? I do not blame you! I believe such a condition would be accepted as a legal ground in any court of justice not only for a separation from bed and board, but for an absolute decree of a divorce. Even Platonic love would cool off as soon as your Schneiderian membrane detected that smell, unless you were suffering from atrophic rhinitis or your conversation was carried on through a long distance 'phone.

Neglect of the teeth may change the appearance; we meet persons with protruding teeth, with falling in cheeks due to the absence of side teeth, with re-

ceding jaws, the correction of which was neglected in childhood. Prevention! Prophylaxis! The earlier we start, the more successful will be the outcome!

It behooves the physician to examine the oral cavity of the patient, as its condition may be responsible for the complaint for which the patient is asking advice; it behooves the family physician to instruct the mother to visit the dentist regularly for the care of the mouths of her children; thus innumerable diseases could be prevented, much suffering might be eliminated, and help given the child to become well developed physically and mentally.

In concluding this paper, I believe it will not be amiss to direct some remarks to that dentist who serves his patient with the same zeal with which the bear served his keeper. A trainer with his bear walking in the field, lay down for a rest and fell asleep; the bear watching him, noticed a fly on his face, and to see that his keeper was not disturbed he decided to kill the fly; he picked up a huge, heavy stone, and aiming at the fly, threw it, and of course killed the fly; but the keeper never awoke.

The dentist cannot be too careful regarding the transmission of infection from one patient to another with his finger, towel, or instrument. A few ounces of some pink antiseptic wash in an uncovered tea glass stands for months upon the table until three fourths of it is evaporated; a few centimetres of thickness of dust from the air and organic matter from the instruments deposited there, cover the bottom. The whole mixture now has a color unknown to art. The dentist immerses his instruments in this mixture, stirs it up, and believing his instruments to be disinfected thereby, starts to dig with it in our mouth without even uttering a short prayer for our safety.

As much as the dentists know about bacteria they, or some of them, do not know sufficiently what havoc the germs play when opportunity is given them. The late Professor John V. Shoemaker related to our class a case where a young and beautiful woman was infected with syphilis directly through the metal instrument used previously in a syphilitic mouth.

Another remark I believe will be in place. The dental profession cannot use its time, nor has it the facilities to subject various antiseptics, disinfectants, tooth powders, and pastes to exhaustive clinical and laboratory tests. The dentist learns of their value mostly from the sweet mouthed agent who acquired his knowledge from the little pamphlet accompanying the sample left with the dentist. This kind of literature is written up solely for the benefit of the bank book of the manufacturer, not for the reputation of the dentist, nor for the health of his patients. The dentist becomes the agent for the firm in recommending his patients this stuff which is either inert or harmful, or while it may do good in certain conditions for certain patients, may be deleterious to other patients, or to the same patient at another time. As an example we may mention a tooth paste which contains fifty per cent. of potassium chlorate! Care should be exercised in their selection and application.

*If mens sana in corpore sano*, which means a

healthy mind can exist only in a healthy body, is true, it is just as true to state *Corpus sanum quando dentes sani sunt*, the body will be healthy when the teeth are healthy.

935 SOUTH THIRD STREET.

## MOUTH INFECTIONS; THEIR CAUSE, TREATMENT, AND SYSTEMIC EFFECT.\*

BY ARTHUR H. MERRITT, D. D. S.,  
New York.

Infection may be defined as "the succession of changes induced in the organism generally by the growth within it of microbes" (1). All infecting organisms are living proteins capable of growth and multiplication (3). Though simple morphologically, they are chemically quite as complex as are many of the cells of the higher plants and animals. Like all living things, they must feed, assimilate, and excrete. This they do through the activity of their ferments, which are of two kinds—extracellular and intracellular. These ferments are specific in two senses: First, each cell elaborates its own ferment; secondly, this ferment is able to split up only certain proteins. They are further influenced by the relation between ferment and substrate, and by the accumulation of fermentative products. The pathogenicity of an organism depends upon its ability to grow and multiply within the animal body (3). Its inability to do this may be due to the fact that it cannot appropriate to its own use the proteins of its host, or it may be destroyed by the ferments which it provokes within the body. Infection depends largely upon the number and virulence of the organisms involved, and upon the resistance which the body cells offer to their growth and development. The effectiveness of these defensive ferments is influenced by age, heredity, environment, health, etc. Infections may be acute or chronic, systemic or local. When the infecting organisms multiply rapidly, leading to a general sensitization of the body cells, the disease is acute. When, on the contrary, conditions are less favorable to their growth, and sensitization is not general, the disease assumes a chronic form. When widely distributed throughout the body with general sensitization, the disease is systemic, while on the other hand, with restriction of organisms and sensitization, the disease may be regarded as local (8). In one sense, there is no such thing as a local infection. An infective process cannot be segregated or its boundaries defined. Even Nature cannot do this, though the attempt is made, and under favorable conditions a measure of success is achieved. An infection so slight as to pass unnoticed may be the exciting cause of an arthritis deformans which will cripple for life, or it may produce an irreparable heart lesion. Again, such conditions may exist for years and leave no effect which we, in our clumsy way, can appraise. They must, however, register themselves somewhere in the body; their effect may, or may not be permanent,

but it is probable that in every instance a tax is imposed.

Infections which take place in the oral cavity are not exempt from these laws. Their effects cannot be limited to the mouth, nor can their influence upon the general health be measured. It is impossible, with our present knowledge, to estimate the possible consequences of any infection, no matter how insignificant it may appear. There is only one safe rule to follow in every case, and that is, wherever possible, to eliminate them altogether, and this whether there is or is not evidence of systemic poisoning. To do less is reprehensible.

Because of the intimate relation which the mouth sustains to the organs of digestion, its hygiene is of prime importance. Infections causing the greatest number of diseases find their way into the system, via the alimentary and respiratory tracts (2). An unclean mouth, in which there are no lesions of the soft tissues and no localized infection, must be regarded as potentially, if not actually dangerous, since it is undoubtedly the root of most dental diseases and their sequelæ. "Less than twenty per cent. of the people have healthy mouths. The infected mouth shows a tendency to the acid reaction and it is through this acid change that we have an additional danger in cell degeneration, of malignant type, from chronic irritation" (2). How common such conditions are, only the dentist knows. Very few people keep their mouths as clean as they should do, or as clean as they think they do. The result is that they harbor vast numbers of germs which may find their way into the crypts of the tonsils, the gastrointestinal tract, the accessory sinuses, and finally breaking down the soft tissues of the mouth, establish there chronic foci of infection. The danger lies in the constancy of the bacterial supply, and the strain which it imposes upon the defensive forces of the body. A clean and healthy mouth should be the end of every dental operation. No patient should ever be dismissed until his mouth is clean and he has been most carefully instructed in how to care for it himself. This is said, realizing that it is not always possible to do this, through inability to control all patients, and realizing also that it is the most neglected feature of general dental practice. The "dental hygienist," who thoroughly cleanses the mouths of his patrons, is rendering a far more valuable service, than is the dentist, who, neglecting this, makes the most perfect restorations of gold and porcelain. This is the first lesson in the dentistry of the twentieth century. In an address before the National Dental Association last year, J. C. Bloodgood, M. D. (16), said: "The great majority of dentists prefer to do the more expert mechanical work—bridge work and other things that require great skill. They do not like to clean teeth. The day is coming when more lives will be saved by keeping the peoples' mouths clean than by doing bridge work. The preventive measures of dentistry are tremendous. None of us realizes what they are. We do not know whether leucemia, pernicious anemia, Banti's disease, Hodgkin's disease, and many others (all incurable), do not get in through the teeth. Perhaps many abdominal lesions, such as gastric ulcer and appendi-

\*Prepared by invitation, and read before the Massachusetts State Dental Society at its annual meeting, May 5-7, 1915.

ectis, are traceable to infections which get in through the teeth as well as through the tonsil. So this thing you dislike to do, cleansing the teeth, may be the most important and expert thing you can do. I believe it is an expert thing."

#### PARTIALLY ERUPTED THIRD MOLARS.

A not uncommon chronic infection to be found in the mouth, is that caused by partially erupted third molars, especially those of the lower jaw. It is surprising how often these are overlooked, and how often they may be the obscure cause of grave systemic symptoms. The crowns of these teeth are often malposed with only one or two cusps visible above the gum line, inviting infection which at times may be acute, but more often is chronic and wholly unsuspected. Pressure of the finger along the buccal and lingual surfaces of these teeth not infrequently reveals an astonishing amount of pus, which drains into the mouth and nasopharynx, with probably more or less direct absorption. No examination of the mouth is complete which does not include a careful scrutiny of all such teeth. When malposed, or when insufficient room makes improbable their taking their proper place in the arch, they should be promptly extracted.

#### CROWN AND BRIDGE WORK.

Another prolific source of mouth infection and one for which the dental profession must be held responsible, is the vast amount of ill fitting and unsanitary crown and bridge work (usually nonremovable), that is being made use of, complicating and often making impossible the proper cleansing of the mouth. Most of this class of dental operations is wholly unnecessary, since there is usually a solution of the problem in some other way. They have their origin in a desire on the part of the patient to fill in the space made by the loss of teeth, with an appliance that is stationary, and with no appreciation of its possible danger. Every crown that causes a chronic inflammation of the gum margins, every mechanical restoration that cannot be kept clean, is just as surely a source of infection as is the chronic abscess or pyorrhea. The time has forever gone by—in fact, there never was a time—when mechanics, as applied to dentistry, had any right to the centre of the stage; had any right to be considered as it has been, the Alpha and Omega of dental practice.

#### DENTOALVEOLAR ABSCESES.

One of the most common infections occurring in the mouth, because found at all ages, is the chronic alveolar dental abscess. These abscesses are caused primarily by nonvital teeth, and may be divided into two classes—the fistulous and the blind abscess. They may also be divided according to the source of their infection—whether it be via the mouth or blood stream. The complete bacteriology of these infections is still uncertain (5).

The prevailing organism appears to belong to the streptococcus group (15). It is important that more study be given to these infections, especially with a view of ascertaining the relationship which they may sustain as causative factors in hematogenous infections. In cases which present without previous treatment, the removal of the gangrenous tooth pulp, disinfection of the pulp canals, and their

proper filling will usually effect a cure. In those which do not yield, and in the large class of cases resulting from faulty root treatment, radiographs are essential to correct diagnosis and treatment. When there is an appreciable area of necrosis, involving the body of the bone and root end, a root resection is, in most instances, necessary. This is especially true of blind abscesses, since it is the most prompt and effective way of eliminating them altogether. Where the radiograph shows only slight decalcification, and the root can be filled to the end, Nature may usually be relied upon. But in all cases where roots cannot be filled to the end, and where infection has already taken place in the periapical tissues, however slight it may be, the unfilled portion of the root should be amputated. This is a simple operation, and yet one in which a careful technic should be observed. The first requisite is a good local anesthetic, novocaine being most satisfactory. Since it is important to have a bloodless field in which to operate, adrenaline chloride or some of its synthetic substitutes, is desirable. Having the field of operation thoroughly anesthetized, a V shaped cut is made in the gum with the apex toward the tooth. This should be dissected back, exposing that portion of the bone directly over the necrotic area. If the abscess has a sinus, this will be visible. With a small round burr this should be enlarged, or if there is none, as in blind abscess, a hole should be drilled through into the cavity within the bone. This cavity will usually be found filled with fibrous granulation tissue, all of which should be removed, and the cavity extended until healthy bone is reached. The root, which should be previously filled, when possible, should then be amputated flush with the floor of the cavity. When the root does not extend far into the cavity, the most satisfactory way of doing this, is with round bone burs of various sizes. With the use of a proper amount of adrenaline, the operation will be practically bloodless, permitting a clear vision of each step taken. When all is done, the cavity in the bone should be irrigated and packed with sterile gauze, after which the gum flap should be brought back into place. There is no need of suturing this, as the parts will be kept in apposition by the lips and cheek. Since it is necessary to change these dressings every two or three days until the cavity has filled in, a small opening at the apex of the flap must not be allowed to heal. This will close promptly with the removal of the last dressing. When properly done there is practically no after pain, though there is apt to be some swelling of the face for a few days.

The tooth so treated becomes as firm in its socket and as useful as before treatment. Clinically, the results are all that could be desired. In many of these cases, especially those in the upper jaw, radiographs show that these cavities ultimately fill in with an osseous deposit which, radiographically, is not unlike normal bone. In some cases it is probable that this does not occur, the cavity filling in with a granulationlike tissue. Clinically, it seems to make little difference. There are, of course, certain cases which are inoperable, where the root has been so far involved in the necrosis as to be permanently weakened. Such teeth should be extracted.



## PYORRHOEA ALVEOLARIS.

Pyorrhoea alveolaris has long been a subject of inconclusive debate. Even at present, the most speculative and unsubstantiated views are entertained. There is no agreement as to its etiology, pathology, or treatment. It is a disease which assumes a multiplicity of types, with an endless variety of gradations, and no generally accepted classification. So chronic is it, that it may exist in the mouth throughout the whole of adult life. As a potential trouble maker, it is the king of mouth infections. The best authorities on the subject are of the opinion that while it may be, and doubtless is in certain cases a purely local disease in its inception, it may, and not infrequently does have a systemic predisposition which may be inherited or acquired. What this predisposition is, is uncertain, but there can be little doubt of its existence. In many instances it is doubtless of metabolic origin (22). Whether this predisposition is sufficiently potent to cause the disease if careful attention is given to local preventive measures, is uncertain. The disease begins at the margin of the gums, the exciting cause being some irritation which causes a solution of continuity, followed by infection and inflammation of the gums, necrosis of the alveolar bone and pericemental membrane, which if not arrested, continues until the supporting tissues of the teeth are destroyed. With their loss, the disease heals spontaneously.<sup>1</sup> If the irritation which produced the initial inflammation and subsequent infection was prevented, would the disease develop and run its chronic course? In a word, if the mouth was kept clean, and the gum margins were free from irritants, how many cases of pyorrhoea would there be, even in cases in which there may exist a predisposition? It is probable that there would be very few, though the care necessary to achieve this result would naturally be greater in some cases than in others.

*Endameba in pyorrhoea.* In view of the widespread interest aroused by the announcement that *Endameba buccalis* is the direct cause of pyorrhoea (18, 19), and that as a result of its destruction by emetine, there is marked improvement in the disease (in not a few instances practically curing it), makes it necessary to inquire into the statements made by the advocates of this treatment. In the *Proceedings* of the New York Pathological Society, 1907, Dr. L. T. Le Wald presented a preliminary report of investigations which he had been carrying on as to the occurrence of ameba in the mouths of healthy individuals. In this report he says he was able to convince himself that these amebas could be demonstrated in the mouth almost constantly, no matter how much care was taken of the teeth. In the first examination of one hundred cases, he obtained positive results in seventy-one. In going over some of the negative cases, he found ameba in four more, and he felt that with repeated examinations, they could be demonstrated in most if not all the others, and concluded his report with the statement that there was left in his mind no doubt as to their presence in the human mouth in health, equaling in this respect, the presence for instance of *Bacillus coli communis* in the intestines.

In a paper entitled, *Ameba in the Mouths of*

School Children, read before the New York Pathological Society in March, 1915, Doctor Williams, assistant director of the research laboratories of the New York health department, reported the result of an examination made by that laboratory. A preliminary examination was made of 475 school children, between the ages of nine and sixteen years; 150 were chosen as representative cases, and subdivided as follows:

|                                |    |
|--------------------------------|----|
| 1. Healthy gums, no caries     | 20 |
| 2. Healthy gums, carious teeth | 22 |
| 3. Tartar and receding gums    | 47 |
| 4. Spongy and bleeding gums    | 95 |

From most cases, two smears were made, the teeth and gums having been previously cleansed with a cotton swab dipped in fifty per cent. alcohol. These smears were then examined for ameba, with the following results:

|   |    |
|---|----|
| Class 1. Healthy gums, no caries—positive     | 30 |
| Class 2. Healthy gums, carious teeth—positive | 50 |
| Class 3. Tartar and receding gums—positive    | 84 |
| Class 4. Spongy and bleeding gums—positive    | 94 |

It will be observed that amebas were found in every class, and that in inverse ratio to the health and cleanliness of the mouth. Commenting on this, the author says: "We can say nothing definite yet as to the significance of the amebas in these mouths. Finding them so often in apparently healthy mouths, and in such young children, does not agree with the statements of Bass and Johns and Barrett, that they are not found in healthy mouths."

From among my own patients, I have to date (March 27th) selected fifty-seven cases for examination, as follows:

|  |    |
|--|----|
| Pyorrhoea (representing many types, and all stages from the earliest manifestations to hopeless cases) | 47 |
| Unclean mouths, but free from pyorrhoea  | 4  |
| From around ill fitting crowns   | 4  |
| Clean mouths (meaning those of which one sees only a few in a year, in perfect health)                 | 2  |

From one to five smears were taken in each case. These were fixed with methyl alcohol, and sent to the research laboratory for examination, with the following results:

|                      |              |                         |
|----------------------|--------------|-------------------------|
| Pyorrhoea 47         | positive 46, | negative 1 <sup>2</sup> |
| Unclean mouths 4     | positive 3,  | negative 1              |
| Clean mouths 2       | positive 2,  | negative 0              |
| From around crowns 4 | positive 4,  | negative 0              |

From among the pyorrhoea cases there were selected only five for emetine treatment. These showed an abundant discharge of pus, representing different types of the disease. In one case, twenty-eight teeth were involved; in another only four, but all were cases in which the prognosis was favorable. In a word, there were no hopeless cases among them. None had less than six half grain doses of emetine, subcutaneously injected (one half grain daily), and two had more. At the conclusion of these injections, smears were again taken, never less than three, and from all parts of the mouth. Nos. 1 to 19 and 46 were still positive, Nos. 5 and 60 were negative. Case No. 1, twenty-eight teeth involved, was then treated with a 0.5 per cent. solution of emetine flowed into the pockets daily for seven days, one Sunday intervening. Several smears were then taken; all were positive. In none was there any improvement which could be observed after the most painstaking examination, ex-

<sup>1</sup>The author is not unaware that this is denied by Goadby.

<sup>2</sup>Reexamination showed this to be positive.

cept that in case 19, there was less inflammation of the gum around one especially bad tooth, possibly due to the hemostatic action of the drug. This case had had six half grain doses of emetine, and several times the pockets were flooded as directed, yet two of the three smears were still positive. In none had the pus decreased. Four of the patients reported that their gums felt better, and No. 1 complained of an unpleasant feeling—"as though the gums were rubbed with alum," as she expressed it. How much of this was psychological I do not know. One patient was nauseated and vomited after the first injection of one half grain. It is realized that these cases are too few to have of themselves any evidential value. They form a part of an investigation begun long before the invitation to prepare this paper was received, and are reported here merely as corroborative of the findings of Le Wald and Williams.

It is too early to form any final conclusions regarding the role the endameba may play in the etiology of pyorrhea, or of the therapeutic value of emetine in its treatment. However, in view of the evidence already at hand, it may not be out of place to inquire into the present status of this so called "wonderful discovery."

In the light of this evidence there can be little doubt that the endamebas are present in practically all mouths, contradicting the statement that they are found only in mouths in which there is pyorrhea (19). It is also probable that emetine is an amebicide, but an uncertain one in the dose advocated. Another characteristic of emetine and one of which no mention is made by those advocating its use in pyorrhea, is its hemostatic action (21). An interesting question which naturally suggests itself, is whether the improvement in the gums ascribed to its amebicidal quality, may not be due to the fact that it is a hemostatic. The fact that cases with inflamed gums show improvement in this respect, and the statement of patients that their gums feel better, points to this as the explanation, as does the fact that those who were conscious of this improvement while under treatment, after it was discontinued, stated that the feeling of improvement gradually disappeared, and that they lapsed back to the condition which prevailed prior to treatment. If this is true (and there is at present no proof that it is not), its effect can only be transitory. On the other hand, if this improvement be due to the amebicidal action of the drug, it must also be more or less evanescent, since it is practically impossible permanently to eliminate the ameba from the mouth. Whatever its action may be, there is at present no trustworthy evidence that it will cure pyorrhea. Until this can be done in a sufficient number of cases, and by a number of investigators working independently, there can be no justification whatever for the theory that the endameba is the specific cause of pyorrhea (18).

#### THE BACTERIOLOGY OF PYORRHEA.

The most striking thing in connection with a study of the bacteriology of pyorrhea, is its complexity. Not less impressive is the lack of agreement in the findings in different cases. That this may be more clearly understood, I have selected from among

others, three cases of pyorrhea of which a bacteriological study was made by the research laboratories of the New York health department, and tabulated the results; also for comparative purpose, those obtained from a study of the tonsillar flora in one case, and of the salivary and tonsillar flora of a healthy mouth. All are based on reactions determined under identical conditions. Only cocci or organisms like cocci, which represent a minor fraction only of the total bacteria present, are included. An analysis of these cases shows that all were represented in the four main groups: Cocci (coccobacilli), cocci (lanceolate chains); diplococci (chains); cocci (not classified); that they subdivided into forty-two subgroups in which they were in agreement in only eight instances, and disagreed in thirty-four, and that they were represented in these subgroups by seventy-eight different cultures. In the case of the tonsillar flora taken from one of the pyorrheal mouths, it was represented in three of the main groups, and in eleven of the subgroups by twenty-one different cultures. In only one subgroup did it agree with the pyorrheal flora.

The flora of the healthy mouth fell into two of the main groups only, and into six subgroups, showing twenty different cultures. In no instance did it agree in the subgroups with the flora in the pyorrheal cases, but did so in three of the six subgroups with the tonsillar flora of the pyorrheal case. Despite this disagreement, however, it is probable that the organisms present in pyorrheal pockets are also present in healthy mouths, but in such relatively small numbers that a single examination does not reveal them all. Finding a more favorable focus in the pyorrheal pocket, they multiply more rapidly, thereby assuming a preponderance. The difference, therefore, is a quantitative rather than a qualitative one. Such quantitative variations are observed in the number of spirochetes and fusiform bacilli in normal and abnormal mouths, the latter not necessarily pyorrheal.

While these results cannot be taken as absolute, they afford some idea of the complexity of the mouth flora, rendered more complex by the presence of pyorrhea. This is the more impressive when it is realized that the cocci groups represent only a small fraction of the organisms present, and that a careful study of the various other aerobic types and their differentiation, together with that of the anaerobic flora, would probably result in similar varied and complex findings.<sup>3</sup>

#### TREATMENT OF PYORRHEA.

*Vaccines.* The first requisite to success in the vaccine treatment of any disease, is to establish the causal relationship of the organism to the disease under consideration. Since each organism provokes in the body its own specific ferment, which has no influence whatever upon organisms of unlike nature, the importance of clearly establishing this relationship will be obvious. So sensitive is this balance between organism and ferment, that the slightest variation in type may render the vaccine worthless.

<sup>3</sup>Central assistance for assistance in the preparation of this part of the paper is made to Dr. William H. Park, director of the research laboratories, New York health department; Dr. Anna W. Williams, assistant director; Dr. Charles Krumwiede, Jr., chief bacteriologist; and to Dr. William R. Williams, visiting physician to the New York Hospital.

In nothing is absolute accuracy of more importance than in vaccine therapy. When it is realized that at present there is not the slightest proof that any of the organisms associated with pyorrhea sustain any causal relationship to it, the irrationality of selecting one or two types out of the vast host of organisms present, and making these the basis for vaccine treatment, must be self evident. In the light of our present knowledge, vaccines of this character have no place whatever in the treatment of this disease.

**Other treatment.** Pyorrhea is a preventable disease, probably the most easily preventable of all those occurring in the mouth. It is also a curable disease, though every case will, if long enough neglected, reach an incurable stage. The prognosis therefore depends largely upon the stage to which the disease has progressed. Treatment consists in a careful curettage of each pyorrhoeal pocket, the removal of calcareous deposits and necrotic tissue, the correction of occlusion on weakened teeth, the stimulation and massage of the gums, and the maintenance of a high standard of mouth hygiene.

Inquiry should always be made regarding the patient's general health and habits of life. In all cases where a constitutional relationship is suspected, a careful physical examination should be made, and the cooperation of the family physician sought. With our present limited knowledge of these relationships, dependence, however, must be placed upon local treatment. When this is skillfully done, the results are most gratifying. The discharge of pus ceases, the gums resume their normal color, the teeth tighten in their sockets, and the patient is able to use them more or less freely. When not too far advanced, the disease can be permanently cured by such treatment.

There are, of course, incurable cases, and what is more frequent, teeth that are incurable in mouths where many of the teeth are only slightly involved. It is not always easy to determine when a given tooth is incurable, and the attempt is often made to save such teeth, with discouraging results to both dentist and patient. When in doubt, the tooth should be radiographed.

When the dental profession realizes that pyorrhea is a preventable disease; that in its early stages, it is easily and permanently cured; that only those cases are hopeless that are long neglected; that no drug or vaccine ever will of itself cure the disease; and that dependence must be placed upon local treatment, they will have taken the first step toward the elimination from the mouths of their patients, the chief of mouth infections.

#### POSSIBLE SYSTEMIC EFFECTS OF MOUTH INFECTIONS.

That infections of the mouth may be the cause of systemic disturbances more or less grave, there can be little doubt. What percentage of these have been definitely shown to be the direct cause of such disturbances, what is their relative potentiality for evil, and just how they are brought about, are details about which we know little, and which must be studied before we can hope intelligently to co-operate with the physician in the care of these cases. With our present limited knowledge concerning these secondary infections, a word of caution against the hysteria which ascribes to oral diseases the

causation of unnumbered ills, may not be out of place. There can be no doubt that there is, in not a few instances, a disposition on the part of both dental and medical men to overestimate the role which these infections play as causative factors in more serious diseases, and in certain cases to ascribe to them etiological relationships, the correctness of which it would be difficult, if not impossible to establish. For example, the physician consults the dentist in a case of chronic arthritis of several years' standing. A dental examination reveals the presence of several nonvital teeth. These are radiographed, and give evidence of disturbance, ranging all the way from a slight rarefaction to clearly defined blind abscesses. These teeth have been filled for years, and there is no history of trouble since. Knowing as we do that the infection which takes place in the joints is always hematogenous—that is, takes place via the blood stream, and that a certain percentage of periapical infections are also hematogenous (what percentage no one knows), how is anyone to know whether or not both of these infections may not have resulted from a general bacteremia of mild type, and that they developed coincidentally from the same cause? Also, if the joint infection antedated that in the jaws (as it may have done), may it not have actually caused the latter? This is only one of several questions regarding the etiological relationship of these infections which cannot at present be answered. Until more light is thrown on these interesting problems, no one can afford to be dogmatic.

As a result of this overenthusiasm, teeth are extracted which are innocent of offense, and patients otherwise subjected to treatment wholly unnecessary. Calling attention to the wholesale removal of the tonsils following the discovery of the relationship of tonsillar infections to those occurring in other parts of the body, Gilmer (15) says: "A similar fad is growing up relative to the removal of teeth since the discovery that jaw abscesses and pyorrhoea alveolaris are equally potent as foci for secondary infection as are the tonsils. Some physicians are rather indiscriminately sending their patients to the extracting specialist, requiring removal of several or all of the teeth, supposing them to be a factor in some lesion, when their removal is not always justified."

Let us be sane in the matter, not forgetting that other infections are quite as likely to be responsible for the systemic disturbances as are those resident in the mouth. When consulted by the patient or his medical adviser, one should therefore be cautious about overconfidence in prognosis as regards the secondary infections. They by no means always clear up after the infection in the mouth has been removed. Apropos of this Billings (9) says: "I think we should not use the word 'cause' too much in relation to the focus of infection of a systemic disease. We should not, even with the focus before us, say that that focus is the absolute cause." There can be only one safe and dignified course for the dentist to follow in these cases, and that is to advise the conservative eradication of all such foci from the mouth.

In the treatment of these cases, there must be closer cooperation between dentist and physician.



The latter, suspecting a dental complication, can no longer dismiss his patient with "go and see your dentist." That the more progressive physicians are realizing this is evident from the following quotation from Camac (12): "In using the term cooperation, I do not mean to infer that the patients were told to consult the dentist merely, but I accompanied them to the dentist's office, and studied with him the radiographs and local condition. I believe such consultations to be as necessary as those common between surgeon and internist. When a pyogenic dental infection requiring liberation of pus existed, arrangements were made for bacteriological specimens to be procured at the dentist's office, and later, if conditions indicated, a specimen of blood for culture and a complement fixation test were taken. A certain number of dentists are in accord with this practice; indeed, a small number have gone beyond the medical practitioner, and without his cooperation, are studying cases with just such thoroughness as outlined above."

It is equally important that the dentist seek the cooperation of the physician in the treatment of these cases, since he may, with no knowledge of the secondary infections which may exist, eradicate a focus of infection, thereby making it impossible to obtain a culture of the very organisms responsible for the lesion, and from which an autogenous vaccine could have been made. Since the physician's responsibility is greater than is that of the dentist, it is his privilege, with the patient's consent, to call in consultation whatever dentist he feels can best cooperate with him in the treatment of these cases. If this happens not to be the family dentist, the family dentist can have no cause for complaint. As Doctor Camac has said, there are a certain number of dentists, who by their study of these cases, have fitted themselves for such cooperation. He also says, "there is, however, among the dentists, a large class of dental tinkers, who practise upon the easy persuasibility of the public" (12). This, unfortunately, is also true, and places upon the physician no little responsibility in the selection of a dental consultant.

Microorganisms from mouth infections find their way into the circulatory system via the gastrointestinal tract, and by direct absorption. Pus that is discharged into the mouth and swallowed is less likely to cause trouble than that which finds its way into the blood stream direct, which explains in part, why it is that fistulous abscesses and pyorrhea alveolaris with free drainage, are often less pernicious in their influence than those infections in which the organisms are confined.

Under normal conditions, bacterial proteins are broken up by the digestive ferments of the gastrointestinal tract into nonprotein split products, mostly aminoacids. As a result, the poisonous group, not readily diffusible, is rendered inert (3). Adami (1) says: "When, however, there is gastritis with arrest of secretion or diminution of the hydrochloric acid, the same is no longer true. Then not only are the bacteria not destroyed, but escaping into the small intestines, they find the alkaline contents of the same a favorable medium of growth, and proliferating, may by their products induce extensive irritation"—further explanation of why pyorrhea in one

case compromises the health of the patient, while in another there is no such evidence. Regarding the bactericidal action of the gastric secretions, Mayo (2) says: "We have long looked on the acids of the stomach as destructive to mouth bacteria, but Smithes, in a microscopical examination of gastric extracts from 2,406 different individuals with stomach complaint (dyspepsia, indigestion, and the like), showed that irrespective of the degree of the acidity, bacteria were present in eighty-seven per cent."

When such impairment exists, the bacteria are not destroyed by the gastric ferments, but find their way into the blood and tissues as unbroken proteins, where they must be digested by the body cells. This is done by the elaboration of a specific proteolytic ferment, the cleavage action of which liberates within the tissues themselves, the poisonous atomic group common to all proteins, and giving rise to those phenomena, which with certain modifications, characterize all infectious diseases (3).

The bacteriology of mouth infections is not unlike that of the normal mouth flora. These organisms, especially the cocci group, when grown under changed cultural conditions, such as prevail in alveolar abscesses, deep pyorrheal pockets, tonsillar crypts, and the like, undergo transmutation (20) as a result of which their virulence may be greatly increased. The principal factors in this change seem to be animal passage, and lowered oxygen tension (17). As a rule, bacteria grow best in free oxygen. They may, however, exist in the complete absence of free oxygen, and a small number can only grow when free oxygen is altogether absent (1). As a result of these changed cultural conditions, bacteria also acquire a selective affinity for other tissues, such as the gastric mucosa, the endocardium, cartilages, etc. Some subtle change takes place, which may best be explained in Rosenow's (4) own words:

One striking thing in connection with some of the more chronic infections, is that the character of the microorganisms found in the lesion may be quite different from the character of the microorganisms found in the focus of infection at the same time. . . . My study on the effect of varying degrees of oxygen tension on the members of the streptococcus group, together with other facts, makes it likely that it is in the focus of infection that changes in virulence occur, and the different affinities for various structures are acquired. In other words, the focus of infection is to be looked on, not only as the place of entrance of the bacteria, but also the place where the organisms acquire the peculiar property necessary to infect. In the light of our present knowledge, the argument that infections in the mouth are so common in individuals in apparent health, does not minimize their importance. These or other foci are so common in patients suffering from arthritis, neuritis, appendicitis, ulcer of the stomach, cholecystitis, goitre, etc., and so rare in individuals who have had superb health for years, that their direct etiologic role can scarcely be questioned.

Among the more common diseases which may result from mouth infections are digestive disorders, including gastric ulcer, arthritis, anemia, endocarditis, functional disturbances of the kidney, and malaise. This last can hardly be called a disease, but is rather a symptom of disease. It is surprisingly common in all classes of mouth infection. In view of the interest which all must feel in the etiological relationship of mouth infections to systemic diseases, a brief consideration of a few of the more common may be helpful.

*Arthritis* is essentially an inflammatory process caused by infection, the effect of which depends upon the virulence of the infecting organisms, the constancy of their supply, and the defensive forces of the body cells. It frequently occurs as a result of general infections. In thirty-eight cases of arthritis deformans, Rosenow (13) excised the lymph nodes, draining the involved joints, making cultures from them, reserving portions for microscopic study. Organisms were found in all but three cases where the disease had existed from two to seventeen years. Streptococci were found in fourteen cases, and a streptococcuslike organism, completely or partially anaerobic, in nine cases. A significant feature was that microscopic sections of the adjacent muscle tendon and articular capsule in several of these cases showed a complete plugging of the bloodvessels as a result of endothelial proliferation. It was in these areas that bacteria were found. He concludes: "For these reasons, the changes observed in the bloodvessels about the infected joints may be regarded as primary rather than secondary, and it would seem as if in arthritis deformans, the microorganisms are taken up from the circulation by the endothelial cells which proliferate freely so that eventually the blood supply is reduced or cut off in consequence of which there result areas of lowered oxygen tension, diminished nutrition, and atrophy. Such conditions would favor the growth of organisms which on isolation are sensitive to oxygen."

Here we see the possible relationship which chronic mouth infections may sustain to arthritic conditions. The organisms associated with mouth infections belong to the cocci group; they are constantly finding their way into the circulation; they undergo certain changes by which they may become partial or complete anaerobes, and they exercise an irritant effect upon the endothelial lining of the bloodvessels, causing a proliferation of these cells, and a more or less complete plugging of the capillaries of the joints, with consequent impairment of nutrition. Experiments have shown that diminished blood supply will of itself cause the changes peculiar to arthritis deformans in the joints of animals (9, 13). Among the chronic infections which may be responsible for these conditions are pharyngitis, tonsillitis, pyorrhoea alveolaris, cholecystitis, gonorrhoea, endometritis, sinusitis, alveolar abscess, and phthisis. It should not be forgotten that arthritis is a secondary infection, and that intelligent treatment consists in the localization and removal of the primary focus. This should be done early, for after the joints become deformed, the patient may become a hopeless cripple in which case treatment may avail little. Milne (11) says:

Some inflammatory focus may be found which may be the etiologic factor, and by the cure of this condition, the joint disease may become limited or cured. One must not, of course, because some infective focus such as pyorrhoea for example, exists, immediately conclude that it is the cause of the arthritis. All possible sources of infection must be searched for and treated accordingly. It is remarkable, however, how many cases of progressive arthritis which may for long be only a recurrent synovitis, but which tends eventually to develop into profound arthritis deformans, are due to pyorrhoea. In this case certain streptococci of comparatively low grade pathogenicity are the usual cause of the joint changes.

*Disturbances of digestion* as a result of mouth in-

fections are not uncommon. Unfortunately there is little knowledge of an exact nature to indicate what this relation is, or how it operates. In most instances the disturbance is functional, which may for long be little more than a chronic dyspepsia. If neglected, it is impossible to foresee the consequences. We have seen that organisms which are swallowed are less liable to give trouble than are those which find direct entrance into the blood stream. We have seen also that when the gastric secretions are subnormal, the organisms are not destroyed, and that the bacterial poison may find its way into the circulation. Since in many cases it is probably only a question of time when the gastric secretions are broken down under the constancy of the bacterial supply, it is of the utmost importance that the mouth be kept clean and healthy. It is not improbable that many abdominal lesions are directly or indirectly traceable to infection in the mouth (16). It is also true that mouth organisms may cause gastric ulcer via the circulation. Rosenow (10) says: "The supposed relation between infected tonsils or gums and gastric ulcer may be due not to the swallowing of the bacteria as usually supposed, but to the entrance into the blood of streptococci of the proper kind of virulence to produce a local infection in the walls of the stomach"—owing to their selective affinity for this tissue (17).

*Anemia* is not infrequently associated with mouth infections owing to the hemolyzing action of the organisms which find their way into the blood from these foci, where they act upon the red blood cells, leading to their dissolution with liberation of the contained hemoglobin. Certain of these cases are associated with depression which may develop into chronic melancholia. Craig (7) says: "The continual swallowing and absorption of pus is undoubtedly the cause of disorders of digestion, headache, and finally an anemic condition almost cachectic. This depleted, exhausted state may often be associated with a melancholic state. It seems a far cry from mouth infection to mental disease, but when one witnesses profound depression clear up following the drainage of several alveolar pus pockets, one is persuaded that the chronic intoxication, the result of absorption from the pent up infectious process, was an etiologic factor."

*Malignant endocarditis* (9), caused by *Streptococcus viridans*; *headaches* of a rheumatic type (6); *pachymeningitis* (7); *myositis* (9); are all examples of diseases in which mouth infections may play an etiologic role.

No one with any appreciation of the meaning of all this, can fail to be impressed with the responsibility which rests upon the dentist in the prevention and treatment of oral infections. Nowhere in the body is the opportunity for prevention so great as in the mouth. With proper care (which would involve a cooperation on the part of the patient at present unattainable), alveolar abscesses could be prevented with the possible exception of that small percentage which might result from trauma. If tooth extraction were as limited as it might be, bridge work could be eliminated, as would be the filth so often associated with it. Pyorrhoea alveolaris always begins in an insignificant irritation at the gum margins, the removal of which would prevent its development

with all its disastrous consequences, in ninety to 100 per cent of cases. It is true, that it is not possible at present to obtain the cooperation of even those who patronize the dentist with more or less regularity, to achieve all these results. The public must therefore share with the dental profession the responsibility for these conditions. But—and I say this in no spirit of criticism—a tremendous responsibility rests upon the dental profession, a responsibility far greater than that which rests upon their patients, and one which they have not met. It is a fact, that in many instances, the mouths of their patients are not kept clean; that they are not instructing patients in the proper care of their mouths; that they are introducing into mouths, crowns and bridges which cannot be kept clean; that they are more or less indifferent to chronic alveolar abscesses, and are still telling their patients that pyorrhea is an incurable disease.

Right here lies the foundation for the charge that the dentist is only a mercenary tinker who, in looking into the mouth, sees only the holes in the teeth, with no thought of the service he may render. The dental profession should be the guardians of the health of the mouth, and indirectly minister to the health and well being of every patient whom they serve. No dentist worthy of his high calling can be indifferent to the hygiene of the mouth; can neglect those preventive measures, the observation of which would probably do more to elevate the standard of health, than any other single thing that could be done.

## REFERENCES:

1. J. GEORGE ADAMI: Principles of Pathology.
2. C. H. MAYO: Mouth Infections as a Source of Systemic Disease. *Journal A. M. A.*, Dec. 5, 1914.
3. VICTOR C. VAUGHAN: Protein Split Products in Their Relation to Immunity and Disease.
4. E. C. ROSENOW: Mouth Infections as a Source of Systemic Disease. *Journal A. M. A.*, Dec. 5, 1914.
5. THOMAS B. HARTZELL: Secondary Infections Having Their Primary Origin in Oral Cavity. *Journal of Allied Dental Societies*, June, 1914.
6. HUGH T. PATRICK: Some Ordinary Headaches. *Journal Iowa State Medical Society*, Nov., 1914.
7. E. C. ROSENOW: Periodontal Infections as a Causative Factor in Nervous Diseases. *Dental Summary*, Jan., 1915.
8. VICTOR C. VAUGHAN: The Phenomena of Infection. *Journal A. M. A.*, Feb. 21, 1914.
9. FRANK BILLINGS: Mouth Infections as a Cause of Systemic Disease. *Dental Summary*, Jan., 1915.
10. E. C. ROSENOW: The Production of Ulcer of the Stomach by Infection. *Journal A. M. A.*, Nov. 29, 1913.
11. LINDSAY S. MILNE: Chronic Arthritis. *Journal A. M. A.*, Feb. 21, 1914.
12. C. N. B. CAMAG: Dental Sepsis; Its Relation to the System. *Am. Journal Med. Sci.*, Feb., 1914.
13. E. C. ROSENOW: Etiology of Arthritis Deformans. *Journal A. M. A.*, April 11, 1914.
14. JOSEPH C. BECK: Chronic Focal Infection of the Nose, Throat, Mouth, and, *ibidem*, Nov. 7, 1914.
15. THOMAS B. GILMER: The Bacteriology of Alveolar Abscesses and Infected Root Canals. *Dental Summary*, Jan., 1915.
16. I. C. BLOODGOOD: The Journal N. D. A., ii, 1.
17. FRANK BILLINGS: Focal Infection; Its Broader Application in the Etiology of General Disease. *Journal A. M. A.*, Sept. 12, 1914.
18. BASS and JOHNS: Pyorrhea dentalis and alveolaris; Cause and Treatment. *Journal A. M. A.*, Feb. 23, 1915.
19. M. F. BARRETT: Preliminary Report, *etc.*, *Dental Cosmos*, 56, p. 948.
20. E. C. ROSENOW: Translocation within the Streptococcus, *etc.*, *Journal Infect. Disease*, xiv, 1, 1914.
21. Hemostatic Action of Emetin. *Am. Journal Clinical Medicine*, Jan. and Feb., 1915.
22. PERCY E. HOWE: The Pathology and Etiology of Pyorrhea. *Dental Cosmos*, March 1, 1914.

50 WEST FORTY-SIXTH STREET.

**Limitations of the Afterpain of Quinine Injections.**—A. G. Peter, in the *Lancet* for October 24, 1914, recommends the use of a moderate quantity of quinine and urea hydrochloride in combination with other quinine salts where an injection of quinine is to be given with the least afterpain. The smallest amount of quinine and urea required to insure subsequent comfort was found to be one half grain (0.03 gram). One tablet containing this amount was added to the quinine given.

## PYORRHEA ALVEOLARIS AS A CAUSE OF SYSTEMIC DISTURBANCES.

*With a Report of Cases.*

By A. E. FOSSIER, A. M., M. D.,  
New Orleans,

Assistant Professor Physical Diagnosis, Tulane University.  
(From the Clinic of Dr. Otto Lerch, Professor of Medical Diagnosis.)

There are many cases of septic fevers of unknown origin, many conditions diagnosed as malignant endocarditis, and many deaths of acute septicemia which would have been correctly diagnosed had the mouth and teeth been examined. A careful examination of the buccal orifice should be made in all patients, for if this is neglected gross errors may ensue and possibly prove fatal. The relationship of a clean mouth and sound teeth to health, and the many serious conditions that find their etiology in the lack of oral hygiene, receive little attention from the physician, are ignored by our textbooks, and are little taught in our colleges.

A review of the literature will show that many cases can trace their cause to a septic condition of the mouth. There are many reported cases of death following tooth extraction, alveolar abscess, and of sepsis in which the mouth and teeth were reported in bad condition. The first reported fatal case due to decayed teeth was by Vigla, in 1839.

Chassaingnac in his *Traité de la suppuration*, in 1859, was the first to call attention to the possibility of general septicemic infection produced by putrid products in the gums. Lejars, in his *Leçons de chirurgie*, in 1895, spoke of a dental cachexia. He said there are cases of general septicemia in patients whose teeth and alveoli are in bad condition, but the progress of the disease, instead of being rapid as in acute postoperative septicemia, is slow and torpid.

W. D. Miller, in his classical work, *Microorganisms of the Human Mouth*, published in 1890, scientifically disproved the deeply rooted opinion of the physician and dentist that bacteria and putrid matter are destroyed in the stomach. He decidedly proved that while these microorganisms may be killed by the digestive juices, the stomach at rest is free of its secretion, and innocuous to pathogenic germs.

Later, Hunter, in 1904, in his famous thesis to the British Medical Association, associated oral sepsis with many and various gastric, intestinal, and hematogenous affections. He said, "this matter of oral sepsis is of urgent importance, not on any esthetic grounds, but in relation to the whole multifarious and widespread group of affections caused by the pyogenic organisms (staphylococci and streptococci). Among others are intestinal and gastric affections, caused and complicated by pyogenic organisms, such as certain forms of gastritis (termed by me "septic gastritis"), enteritis (septic enteritis), colitis and proctitis, appendicitis, cholecystitis, septic inflammation complicating typhoid ulceration (the commonest cause in my experience of fifty autopsies of perforation and hemorrhages in this disease). Also hematogenous infections, such as streptococcal and staphylococcal pleuritis, empyemata, nephritis, pyelitis, and perinephritic abscess, and ulcerative endocarditis." C. H. Mayo



unhesitatingly stamps pyorrhea as the cause, not the result of systemic disturbances. Very recently Camac associated pyorrhea alveolaris and purulent infection in and about the teeth with arthritis manifesting itself with pains on motion and slight tenderness on deep palpation, but no redness and local fever. Upon the eradication of the purulent reservoir the symptoms would disappear and the patient recover. Osler said, "if I were asked whether more physical deterioration was produced by alcohol or by defective teeth, I would unhesitatingly say defective teeth."

This brief review of literature forcibly depicts the harm that can be done by not taking proper care of the mouth and teeth; yet frequently the most careful and skillful observers will neglect to inspect this most important organ. How pathetic it is to see cases of sepsis most minutely examined, both physically and with the microscope, or these patients treated for typhoid, malaria, in fact for anything that may explain the symptoms; physicians and surgeons working assiduously to find the source of the infection, absolutely ignoring the mouth when a glance at it sometimes would be sufficient to make the diagnosis.

In every case proper oral hygiene must be insisted upon, and the patient referred to the dentist. There are few diseased conditions having a fetid mouth which cannot be benefited by proper oral hygiene. Auckland correctly says, "septic mouth, coated tongue, local suppuration of the gums, pyorrhea alveolaris, all destroy the desire for food by their effect on the mucous membrane of the tongue and fauces and chiefly by impairing taste. Besides, the continuous swallowing of pus and septic matter is the cause of persistent irritation of the gastrointestinal mucosa. These thin intestinal walls with their single layer of epithelium and numerous lymphatics are without doubt a virgin soil for streptococci and staphylococci absorption. The cause of appendicitis from such a source has been confirmed by the bacteriological examinations of Professor Lanz and Professor Tavel. There is especially great danger of septic poisoning by direct absorption of the poison from the teeth and gums after extraction, as shown in the compilation of these cases."

While in the majority of cases a superficial examination of the mouth and gums is sufficient to recognize the most frequent and common oral affections, yet in some obscure cases great skill on the part of the internist, dentist, and radiologist is demanded to discover a hidden pocket of pus, a blind abscess at the root or in the root canal. The physician, when in doubt as to the focus of the infection in all cases of anemia, malnutrition, headache, sepsis, pyemia, septicemia, malignant endocarditis, and arthritis which resist the usual treatment, should not only examine the teeth and mouth, but refer the case to a dentist and if not satisfied with the result insist that an x ray examination be made.

All decayed teeth, old stumps, swollen, bleeding, and retracted gums, and loose teeth demand the immediate attention of the dentist, irrespective of the nature of the disease, for a clean mouth is of the greatest therapeutic value. Improperly capped and filled teeth are usually a menace to life on account

of the bacteria they harbor. In all infectious diseases strict attention must be paid to the mouth. How frequently do we see cases of typhoid and other infections with putrid condition of the mouth and a fuzzy tongue, immediately improve by thorough cleanliness and sterilization of that important organ. Pyorrhea alveolaris is usually found in persons with impaired circulation, pale, emaciated, poorly nourished, generally enteroptotics with symptoms of lassitude, occasional fever, indigestion, dyspepsia, heartburn, nausea and vomiting, headache, pain in the chest, abdomen, joints (never steady, but continually changing); subjects of impaired vitality and diminished resistance to infection. It is also met with in robust, gouty, obese, and plethoric individuals, commonly sufferers from arteriosclerosis, nephritis, liver derangement, and damaged heart; who usually are heavy eaters and drinkers and assiduous smokers and chewers of tobacco. These people generally neglected the care of the mouth, and have made the major portion of the journey of life without tooth brush or mouth wash.

The tabulation of the cases reported is of interest; it shows that even the simple and common operation of tooth extraction is not free of danger, and has a comparatively high death rate; also that in all cases having pus, either as an abscess at the root or root canal, pyorrhea, etc., the dental surgeon should promote free drainage, and not allow the wound to close until he is certain that there is no more danger of infection. It is often preferable to extract an infected tooth than to run the risk of serious constitutional disturbances by treating, capping, and filling it. These cases that I am reporting may provide an explanation for many conditions that are frequently the cause of great worry and vexation to the physician; the mouth has been sadly neglected, both in diagnosis and treatment.

CASE I. Miss A., aged twenty-six years, born in New Orleans; about five feet three inches tall and weighed 105 pounds. Was always active and regular in her habits. Assisted her mother in the management of a boarding house. Only child of healthy parents. Mother living, and in perfect health. Father died of accident. Although she was a delicate child, she was always well and enjoyed fairly good health but for occasional attacks of headaches and spells of terrible languor. In the past two years she was anemic and had two attacks of arthritis. We were called to see the case after many physicians in attendance had exhausted their resources and pronounced it hopeless. We first saw the patient on May 17th, which was the seventy-eighth day of continuous fever.

Two weeks previous to the beginning of the fever she had a misplaced tooth extracted. The location of this was such that many dentists refused to perform the operation because of the danger of also pulling her front teeth. To circumvent this a twisted wire was used, and by gradual traction the tooth was loosened; extraction was successfully accomplished at the end of one week. It was a very painful, tedious, and disagreeable operation which greatly taxed and worried the patient. On March 1st fever made its appearance, lightly at first, but gradually rising in the evening to 101° F. A few days afterward, quinine was given without influencing the fever. On the fourteenth day she suffered with terrific pains affecting every muscle of the body. Sodium cacodylate was injected for the following fifteen days. At the end of the month the patient had a dumb chill. During this time the temperature remained the same, rising to 101° F. in the evening, and dropping to normal or slightly above in the morning. With the advent of April the temperature rose to 103° F. and remained the same with slight variation up to the time we were called. Various doses of phylacogen were injected without benefit. Purin bacteria was used without influence.

|  |  | Symptoms and duration  |  | Treatment   |  | Results   |  |
|--|--|--|--|---|--|---|--|
|  |  | General pyemia   |  | Decayed teeth   |  | Died  |  |
|  |  | Pyemia   |  | Decayed teeth   |  | Died  |  |
|  |  | Septicemia   |  | Abscess, inf. molar   |  | Died  |  |
|  |  | Chills, fever, pyemia, metastatic abscess                          |  | Caries, inf. molar  |  | Died  |  |
|  |  | Pyemia   |  | Extraction  |  | Died  |  |
|  |  | Phlegmon of sinus of dura mater                                    |  | Gangrenous phlegmon, high fever, myelitis, pulmonary edema  |  | Unsuccessful trial to extract ad inf. molar                 |  |
|  |  | Pyemia   |  | Attempted extraction  |  | Died  |  |
|  |  | Septicemia   |  | Dental abscess  |  | Died  |  |
|  |  | Metastatic abscess, pyemia   |  | Alveolar abscess of sup. maxillary                          |  | Died  |  |
|  |  | Pyemia   |  | Extraction 1st and ad inf. molar                            |  | Died 10th day   |  |
|  |  | Pyemia   |  | Extraction  |  | Died  |  |
|  |  | Septic pyemia  |  | Diseased wisdom tooth                                       |  | Cured after extraction                                      |  |
|  |  | In the same article he reports ten similar cases all cured         |  | Two carious teeth   |  | Died  |  |
|  |  | Chills, irregular fevers   |  | Extraction of many teeth                                    |  | Died 1st day  |  |
|  |  | Septicemia   |  | Dental extraction of wisdom tooth                           |  | Died  |  |
|  |  | Nervous diseases of lungs  |  | Molar extraction  |  | Died at end of 12 days                                      |  |
|  |  | Abscess of sphenoidal lobe of brain, infarct of right lung         |  | Abscess of gum  |  | Died 9 days   |  |
|  |  | Septicemia   |  | Abscess of lower wisdom tooth                               |  | Died in 12 days   |  |
|  |  | Pyemia   |  | Abscess of 2d molar   |  | Died end 2d week  |  |
|  |  | Septicemia   |  | Extraction  |  | Died  |  |
|  |  | Septicemia   |  | Extraction of left inf. molar                               |  | Died  |  |
|  |  | Health   |  | Opening of abscess  |  | Died  |  |
|  |  | Septicemia, metastatic abscess                                     |  | Abscess of 1st right inf. molar                             |  | Died on 5th day   |  |
|  |  | Abscess of various points of body                                  |  | Tooth caries  |  | Recovered after extraction                                  |  |
|  |  | Fever  |  | Caries  |  | Died  |  |
|  |  | Septicemia   |  | Molar extraction  |  | Cured   |  |
|  |  | Metastasis with purulent thrombosis                                |  | Molar extraction  |  | Died  |  |
|  |  | Pyemia, mistaken for malaria                                       |  | Collection of pus under diseased tooth                      |  | Cured by extraction   |  |
|  |  | General symptoms, metastatic abscess                               |  | Dental abscess  |  | Rapid cure by extraction                                    |  |
|  |  | Pulmonary metastatic abscess                                       |  | Caries, inf. maxil.   |  | Died 4th day  |  |
|  |  | Pulmonary gangrene   |  | Caries, inf. maxil.   |  | Died 19 days  |  |
|  |  | Septicemia   |  | Alveolar abscess  |  | Died 2 days   |  |
|  |  | Brain abscess  |  | Caries, inf. molar  |  | Died  |  |
|  |  | Pyemia   |  | Extraction, multiple abscesses                              |  | Died  |  |
|  |  | Pyemia   |  | Extraction right molar                                      |  | Died 8 days   |  |
|  |  | Pyemia   |  | Extraction inf. molar                                       |  | Died  |  |
|  |  | General septic condition   |  | Alveolar abscess  |  | Died  |  |
|  |  | Pyemia   |  | Cementing of a central superior incisor                     |  | Died 4th day  |  |
|  |  | Pyemia, diagnosed as amygdalitis                                   |  | Pyemia  |  | Died  |  |
|  |  | Grave pyemic condition   |  | Inflammation of 3d inf. molar                               |  | Cured in 6 mos., extraction                                 |  |
|  |  | Pyemia   |  | Extraction  |  | Died 2 days   |  |
|  |  | Subacute septicaemia   |  | Attempted extraction of left inf. wisdom tooth              |  | Died  |  |
|  |  | Septicemia   |  | Caries inf. right molar                                     |  | Died  |  |
|  |  | Nervous diseases of lungs, liver, prostate.                        |  | Decayed tooth   |  | Died in 12 days   |  |
|  |  | Pyemia   |  | Extraction of 1st inf. molar                                |  | Died  |  |
|  |  | Septicemia   |  | Cured by extraction of decayed teeth                        |  | Cured by extraction   |  |
|  |  | Septicemia   |  | Abscess of 1st sup. left molar                              |  | Cured by extraction   |  |
|  |  | Chills, fever  |  | Caries of left molar  |  | Recovered   |  |
|  |  | Chronic septicaemia  |  | Decayed roots, gingivitis                                   |  | Cured   |  |
|  |  | Chronic septicaemia  |  | Decayed teeth, gingivitis                                   |  | Cured   |  |
|  |  | Acute septicaemia  |  | Abscess of right incisor                                    |  | Died  |  |
|  |  | Chronic septicaemia  |  | Gingivitis with pyorrhea                                    |  | Died  |  |
|  |  | Chronic septicaemia  |  | Decayed 2d inf. left molar, attempted extraction            |  | Cured   |  |
|  |  | Periculous anemia following traumatic stricture of small intestine |  | Decayed roots   |  | Died in 5 months  |  |
|  |  | Malignant endocarditis   |  | Fetid mouth, decayed teeth                                  |  | Died  |  |
|  |  | Malignant endocarditis   |  | Fetid mouth, excised gumboil                                |  | Died 4th day  |  |
|  |  | Septicemia   |  | Dental abscess  |  | Died 30 days  |  |
|  |  | Chronic pyemia   |  | Decayed teeth   |  | Died  |  |
|  |  | Chills, fever  |  | Concrete filling of maxil. tooth                            |  | Died 24 days  |  |
|  |  | Typhoid meningitis   |  | Decayed teeth   |  | Died 20 days  |  |
|  |  | Sapremia simulating typhoid  |  | Caries, and bleeding gums, two weeks previous               |  | Cured in 30 days by treating mouth                          |  |
|  |  | Malignant endocarditis, anemia, petechie                           |  | Oral sepsis   |  | Died  |  |
|  |  | Intense gastritis, enteritis, pericarditis, uremia                 |  | Oral sepsis   |  | Died  |  |
|  |  | Septicemia, petechie, treated for                                  |  | Two days before, dried small gum abscess with pin           |  | Well in 12 days   |  |
|  |  | Septicemia, petechie, treated for                                  |  | Dried tooth and spongy gums                                 |  | Recovered after extraction of last tooth; duration 3 months |  |
|  |  | Septicemia, petechie, treated for                                  |  | Severe pyorrhea   |  | Recovered   |  |
|  |  | Multiple neuritis  |  | Purulent gingivitis   |  | Died  |  |
|  |  | Pains in joints  |  | Pus sacs discovered by x rays                               |  | Recovered after extraction                                  |  |
|  |  | Pains and tenderness in vertebral column opposite 7th cervical     |  | Pyorrhea  |  | Cured after 5 mos.  |  |
|  |  | Pain, left knee joints   |  | Abscessed molar tooth                                       |  | Recovered after extraction                                  |  |
|  |  | Malaise, indigestion, broken sleep                                 |  | Pyorrhea at molar tooth                                     |  | Recovered after extraction                                  |  |
|  |  | Ulcerous endocarditis, swelling of liver and spleen                |  | Carious teeth; purulent pulpitis; and treated; teeth filled |  | Died at the end of 4 months                                 |  |

ing the temperature curve, and as a last resort autogenous vaccine was used without avail.

The patient was pale and emaciated, yet very cheerful and apparently strong, spoke readily, and answered all questions herself; her appearance belied the fact that she had been in bed so long a time. Lungs were found to be normal. Pulse was rapid, 120, and regular. Arteries soft, small, and empty. Heart on percussion, small with systolic murmur at apex, which was faintly transmitted to the left this was noticed five years previous to this examination. There was no accentuation of the pulmonary sounds. Heart movable, but murmur remained on change of position. Liver and spleen normal. Some splashing over the stomach which was displaced downward. Nephropotosis; on percussion both kidneys were entirely displaced. She had all the hysterical stigmata, demographia, all reflexes exaggerated, absence of corneal and uvula reflexes. Complained of petechial eruptions, especially of the extremities, which would first announce their appearance with severe pains, followed in a few days by red spots about the size of a pea. She strongly objected to the light, which was painful to her eyes, and consequently kept her room darkened. The blood examination revealed a great diminution of the red cells which amounted only to 2,360,000, and the white slightly increased to 9,200. A diagnosis of septicæmia due to the mouth condition was made.

Doctor Sarrazin was called to treat the oral condition, and the following is taken from his report: "Miss A. constantly swallows septic matter, coming not from the spot whence the tooth is extracted, but from Riggs's pockets adjacent thereto, and spread throughout the mouth, both above and below!" Unfortunately the critical condition of the patient prohibited the treatment necessary in such a severe state of pyorrhœa alveolaris; all that could be done was to maintain the mouth as nearly aseptic as possible. The patient was occasionally worried with a dry hacking cough; she had frequent chills alternating with profuse sweats, which would leave her in an exhausted condition.

One of the most distressing and painful symptoms and one which tenaciously persisted in spite of all that could be done to combat it, was a pronounced intestinal distention. Shortly after our first visit she stated her vision was obscured by a red field or by crimson spots dangling before her eyes. The ophthalmoscope revealed a multiple hemorrhagic retinitis. Shortly after the installation of the inadequate mouth hygiene, improvement began, the period of high temperature lessened, and the fever dropped to normal or a little above for quite a long while during the day. During the month of July, the temperature ran a normal course, yet the patient weakened considerably, the pulse and respiration became rapid. From her usual cheerful disposition, she became very irritable, intractable, and capricious, and at times hysterical. The blood at first improved, but gradually became more impoverished, the red cells diminished nearly to two million.

On July 21st I was hurriedly called, and found the patient moribund, in a collapse, pulse imperceptible; respiration very rapid and shallow. After strong cardiac stimulants, she rallied and was soon in better condition. Large purpuric spots manifested themselves over the arms, chest, and abdomen. The next day she was similarly affected. Her body was literally covered with large purpuric spots. In spite of all that could be done, she expired. Death came 146 days after the onset of the fever which persisted uninterruptedly, except during the last two weeks of her illness.

CASE II. T. M., aged fifty years, lived a life of exposure and hard work in his earlier years. For the last fifteen years or more his urine contained albumin and hyaline casts. His blood pressure ranged between 150 and 170 mm. Hg. All organs were normal. Eight months previous to his present illness, the usual kidney condition was found. The lungs were clear. On the first day of November, intense burning pains in the eyes, severe headaches, nausea, and vomiting made him take to his bed.

He was found with eyes deeply jaundiced, skin of a muddy color, hot and dry. Temperature 102° F., with corresponding pulse and respiration. On the right side of the chest posteriorly there was dullness from the shoulder blade down, especially marked at the base. The line of dullness was irregular, without changing of position. Breathing sounds and fremitus diminished. The whole right side of the chest was retracted, the left bulging, with

hyperresonance. There was no dyspnea, cyanosis, displacement of heart and liver, egophony, pain, or any other abnormal sign anteriorly or posteriorly to indicate liquid. No leucocytosis. The diagnosis of thickened pleura was made. Liver border on palpation full, hard, and painful. Stools offensive, pasty, and of a greenish gray color. Urine, acid, specific gravity 1.020. Deep red color with about fifty per cent. of moist albumin and hyaline and granular casts. Under treatment the condition improved and the temperature dropped to normal on the third day. On the tenth of the month the temperature rose to 102° F., and the patient complained of pains in the posterior base of the right lung. A fresh pleurisy had developed, with flatness about the size of the hand and friction sounds. The blood examination showed a count of 20,000 white cells. Again in a few days the condition cleared, the temperature dropped to 99° or 99.25° F. The leucocytes disappeared. Diligent search for the cause of the trouble was made. The patient had never had pneumonia or any other lung disease. He was thoroughly examined for tuberculosis, of which he was found free. The larynx was also free. He gave a history of bleeding gums and on pressure a large amount of pus was pressed from them. He was referred for dental treatment to Dr. J. Sarrazin, who reported that he found a chronic Riggs's disease of old standing with extensive pus pockets in the alveoli, all over the mouth both above and below, and worse in the region of the right upper second and third molars. The condition of the mouth improved under treatment, notwithstanding the persistent rise to 99° F. An exploration of the pleuritic condition was made and about a third of a syringe of pus was drawn. The next day, under local anesthesia, a rib was resected, the pleura was found greatly thickened and the ribs drawn together. Thick pus in small quantity was found. Patient made an uneventful recovery.

This case is of special interest as, in the absence of all other causes for the chronic pleurisy, pyorrhœa alveolaris must be considered the causative factor of the pus in the pleural cavity. It further illustrates that in this and similar cases it is difficult and at times impossible to diagnose liquid in the pleural cavity without an exploratory puncture. Lerch mentioned to me two unpublished cases treated by Curt Liebknecht, of Berlin. One of a nun who died three months after tooth extraction, and the other of a nurse who expired six weeks after the same slight operation. Both suffered from pyorrhœa alveolaris. Small abscesses were found at autopsy in every organ.

1231 MAISON BLANCHE BUILDING.

## PYORRHOEA ALVEOLARIS.\*

*Its Treatment with Bacterins and Emetine Hydrochloride.*

BY F. E. STEWART, PH. G., M. D., PHAR. D.,  
Philadelphia,

Professor of Materia Medica, Department of Pharmacy, University of Medicine and Dentistry, Philadelphia.

Pyorrhœa alveolaris or Riggs's disease is a name given to a group of symptoms caused mainly by infection of the gums, teeth, and alveolar processes by pathogenic microorganisms. These disease producing microbes are doubtless constantly present in healthy mouths, living as saprophytes on particles of food, cast off epithelial cells, and other waste matter, and doing no harm. If for any reason the vitality of the tissues is lowered, they become parasites and live at the expense of the tissues.

The lowering of tissue vitality predisposing to

\*Read at the section on general medicine of the American Dental Association, Philadelphia, September 1, 1914.



mouth infection may be due to one or several causes. It may be caused by enervating habits, intestinal stasis and autointoxication, improper food, indigestion, functional derangement or disease of some body organ. Pyorrhea alveolaris is therefore a link in a chain of pathogenic conditions constituting a vicious circle, each link of which may be considered a cause or an effect depending upon the point of view.

The treatment of pyorrhea alveolaris should therefore be directed against the pathological conditions as a whole and not limited to the mouth infection, and should consist of measures for destruction of the infecting microorganisms, restoration of injured tissues, and the removal of concurrent systemic affections.

Let us first consider the local conditions commonly called Riggs's disease: The infecting microorganisms are of two kinds, viz., protozoal and bacterial, the former known as *Entameba buccalis* or *Entameba gingivalis* Gros, probably constituting the primary infection in the majority of cases, and the latter consisting mainly of bacteria almost constantly found in the mouth and usually including staphylococci, streptococci, pneumococci, and the *Micrococcus catarrhalis* group.

The primary infection is believed to begin in early adult life or earlier, and usually is not at first recognized as the pyorrheic discharge is probably due to the secondary bacterial infection which occurs later. The infecting microorganisms first attack the peridental membrane or periosteum which covers and nourishes the root of the tooth and tooth socket. As the disease progresses, the tooth socket is gradually destroyed, the tooth becomes loose, and finally drops out. Ulceration of the gum attached to the tooth also occurs. This damaged tissue becomes an excellent culture medium for the growth of mouth bacteria as well as entamebas.

*Emetine hydrochloride.* Emetine is an alkaloid derived from ipecacuanha. Ipecac has been extensively used and highly recommended for the treatment of dysentery since its introduction by Piso in 1658. Recent investigations by Rogers (1) demonstrated that a one to 10,000 saline solution of its principal alkaloid—emetine—was rapidly fatal to amebas in freshly passed stools. In the treatment of amebic dysentery he employed emetine hydrochloride hypodermically, injecting as an initial dose one sixth grain, rapidly increasing this to one third grain twice daily. Allen (2) confirmed these observations. Lyons (3) called special attention to the value of emetine in amebic dysentery of the Gulf States, because of the frequency with which the disease is met there. The average length of treatment by emetine until stools become normal was nine days for the five cases reported. The shortest interval was two days and the longest twenty days. The largest dose was three quarters of a grain. There were no ill effects noted from this dose. Maxwell (4) extolled ipecac and emetine as a result of his experience in China.

We are indebted to Barrett (5), Smith (6), Bass and Johns (7), Evans (8), Middleton (9), and others for the researches which have enlightened us in regard to *Entameba buccalis* as an infecting agent in pyorrhea alveolaris, and the treatment by

emetine. According to Bass, the demonstrable entamebas can be destroyed by giving one half grain of emetine hydrochloride hypodermically for three to six successive days. Bass recommends its use hypodermically or intramuscularly in doses of one fourth to one grain, but states that it has been given by the rectum, also in keratin coated pills by the mouth. Both authors recommend the employment of the drug locally in the form of one half to one per cent. solution, injected by means of a hypodermic syringe deeply into the pyorrhea pockets. Each pocket is left filled with the solution as the needle is withdrawn. Bass recommends rinsing the mouth thoroughly with a solution of fluid extract of ipecac, two or three drops to a half a tumbler of water, which, he believes, protects against reinfection and actually cures the disease in its early stages. He believes that patients can carry out this treatment in many instances.

*Bacterin treatment.* The use of bacterins or bacterial vaccines in the treatment of pyorrhea has been in vogue for some years and is highly recommended by a number of distinguished observers. One of the first important contributions to the bacteriology of the mouth was that of Miller (10) more than twenty years ago. In 1885, he had isolated twenty-two kinds of bacteria from the human mouth, and of "thirty species cultivated later eighteen were cocci, eleven rods, and one grew into threads." Leeuwenhoek, however, as early as 1682, drew attention to living microorganisms which he called animalcules, in material removed from the teeth, and therefore was really the pioneer in the discovery that microbes are to be found in the mouth.

Hunter (11) emphasized the importance of infection caused by staphylococcal and streptococcal organisms. Hunter also quotes Arkovy, who found that *Bacillus gangrenæ pulpæ* was present in ninety-five per cent. of cases with diseased pulp and dental caries. In 1869, Dr. J. M. Riggs read a paper describing what is now known as pyorrhea alveolaris, in which he stated that he had recognized and treated the disease for twenty-five years previously. This contribution resulted in the adoption of the name, Riggs's disease, to describe the condition now under consideration.

The attention of bacteriologists was thus quite generally attracted to the study of the condition we now know as pyorrhea. Vincentini (12) made a microscopical study of the mouth flora and called attention to certain fungus forms found in the oral cavity. Goadby (13) began his bacteriological study of pyorrhea in 1904, and in 1906 reported his experience in treating eighteen cases. In the Erasmus Wilson lecture delivered in 1908, further experience was reported. In the seventy cases studied by him, including the eighteen previously recorded, he found streptococcus nineteen times, *Bacillus necrosis dentalis* fourteen times, *Micrococcus catarrhalis* twenty-three times, *Bacillus septus* fifteen times, *Staphylococcus aureus* twelve times, *Saccharomyces* five times, pneumococcus five times, *Micrococcus citreus granulosis* six times. In a subsequent report published in 1908, he announced the finding of *Streptococcus brevis* and *Staphylococcus albus* and *Saccharomyces* in two additional cases, and later discovered an anaerobe, *Bacillus necrosis*

dentalis, which he called a diplobacillus. This investigator, in 1909, reported the finding of a leptothrix, *Bacillus fusiformis*, in three varieties of spirochetes. His work attracted much attention.

The next papers of importance were those of Eyre and Payne (14), who in 1909 published their findings in the *Proceedings of the Royal Society of Medicine*. Contributions by Mayou (15), Beebe (16), Whittle (17), Best (18), Sims (19), Williams (20), Logan (21), and other investigators added to the interest in the subject. Medalia (22), Leary (23), Cummins (24), Collins (25), Head (26), Hichens (27), Brown (28), and other investigators added important contributions to our knowledge of the bacteriology of Riggs's disease and its bacterin treatment. The limits of this paper will not permit a review of their work. A list of their papers appears in the appended bibliography.

These authorities are all in accord in regard to the necessity of eradicating the focus of infection as completely as possible by proper operative procedures. Various methods for accomplishing this purpose are recommended. Joseph Head, of Philadelphia, recommends a solution of ammonium bifluoride containing ten per cent. free acid, as an aid in destroying the infection and obliterating the pus pockets. He says the solution may be injected once or twice a week into the pockets around loose teeth, but care must be taken not to inject it into fresh cuts, as such procedure will sometimes cause great pain. After one or two injections, soreness and inflammation disappear and even the general symptoms of toxemia caused by the infection sometimes abate. The tartar scale that could not be easily and painlessly removed during the first two treatments, becomes so loosened as to make its removal by scalers easy for both patient and dentist. After four or five applications, one week apart, black scales that have escaped the instrument will sometimes be found floating loose in the pockets, so that they can readily be picked out, and finally the root becomes smooth to the touch of the instrument—and the pockets disappear.

The *Journal A. M. A.*, for February 13, 1915, in an editorial article entitled *Entamebas and Pus Pockets About the Teeth*, comments favorably upon the work of Barrett, Smith, Bass, and others, but cautions the profession against the dangers of reinfection, after a cure seems to have been accomplished. The editor says that the word "cure" should be used with caution, and that it is evident that some who have been studying these cases have considered them "cured" when no more entamebas were demonstrable, apparently without considering the tissue changes and conditions which prevent the closure of the pocket. A case should not be considered cured when there remains the constant irritant—the denuded cementum—which maintains the harbor for reinfection. This fact—that such treatment does not result in permanent cure—seems already partially recognized in the report of Bass and Johns as they state that reinfection has occurred in about twelve per cent. of cases within four weeks. The editor also cautions that the pus pocket is always preceded by gingivitis, which may be so insidious in its onset as scarcely to attract the patient's attention.

It is therefore evident that the recommendation of Bass, who suggests the use of fluid extract of ipecac or emetine as a local application to the gums and teeth in tooth washes, should be adopted. This does not make it any less necessary for the patient to go to the dentist at stated intervals for a thorough examination of the gums and teeth to prevent recurrence. It is absolutely essential that dead and infected pulps should be removed and the root canals filled, and all tartar should be removed from the roots of the teeth and prevented from accumulating by proper attention on the part of both patient and dentist.

*Practical application of emetine and bacterin treatment.* Preceding the use of bacterins, emetine should be employed to destroy the amebas in the gums, dental tissues, and alveolar processes. The solution of emetine hydrochloride, 0.5 per cent. in strength, should be forced down into the pockets with a hypodermic syringe and each pocket left filled with the solution. This treatment should be repeated daily for three or four days. After the second or third injection, the gums should take on a more and more healthy appearance, the teeth should feel firmer, and the gums about them become tighter and harder. A microscopical examination should preferably be made in each case before treatment, and after the fourth day the examination should be repeated to assure the absence of all demonstrable entamebas.

It may be unnecessary to employ bacterin treatment, in which case the operative procedures for obliterating the pus pockets may be all that is required in addition to the emetine treatment. But in chronic cases of pyorrhoea alveolaris, not only are the tissues infected with bacteria, but in all probability the infected mouth has become a focus of infection to the entire system, in which event bacterin therapy may prove of great value not only in curing the local condition, but also in the restoration of the general health and in raising the resistance of the tissue to a higher plane, thus insuring against reinfection.

The bacterin is usually injected under the skin of the arm at the insertion of the deltoid; any other site where the skin is loose may be selected. A stock vaccine may be used, either sensitized or unsensitized, or an autogenous vaccine prepared from the pus pockets may be employed. It is considered good treatment to begin with a stock bacterin either sensitized or unsensitized, the former being preferable on account of the comparative ease with which it is digested and assimilated by the tissues, the freedom from local or general reaction, and its promptitude in stimulating immunity. If an autogenous vaccine is preferred, care should be taken to select an experienced bacteriologist for its preparation.

If an unsensitized bacterin is employed, the initial dose advised is 150 million of the mixed bacteria; 250 to 750 million may be given as the initial dose if the sensitized cultures are employed. Subsequent doses are injected at intervals of seven to ten days, gradually increasing or decreasing according to indications. If the reactions are too severe, the doses should be reduced or temporarily discontinued. Every dose should be carefully gauged by the effect obtained from the preceding dose. The doses should



be guided by the history of the case as it develops. The duration of the infection, the extent and severity, the age and condition of the patient, are all important factors. When the general health of the patient is good, response is more effective than when the patient is run down. If no improvement follows the initial dose, subsequent injections should be increased until amounts large enough to produce a mild clinical reaction (demonstrated by symptoms of malaise and possibly aggravation of the local symptoms) are reached. If a marked clinical reaction occurs after a dose, characterized by rising temperature and considerable systemic depression, the next dose should be smaller. The usual intervals between doses as used by dental surgeons, is one week.

The patient should use a tooth wash containing ipecac or its alkaloid, emetine, and continue to use it after a cure has been accomplished.

Finally, in relation to the constitutional infection, the symptoms are often incorrectly diagnosed as anaemia, malnutrition, uric acid diathesis, etc. Want of recognition of the fact that oral sepsis may be the source of many constitutional diseases has resulted in disaster to the patient and to the reputation of the physician. As stated by Hunter, these attacks include every degree and variety of tonsillitis and pharyngitis; of gastric trouble from functional dyspepsia up to gastritis and gastric ulcer; and every degree and variety of enteritis and colitis, and troubles in adjacent parts, e. g., appendicitis. The effects fall in the second place upon the glands (adenitis); on the blood (septic anaemia, purpura, fever, septicemia); on the joints (arthritis); on the kidneys (nephritis); and on the nervous system. In the case of the mouth, the mere presence of staphylococci and streptococci on the surface of the mucosa, or on the tongue, or in the mouth secretions, or in the saprophytic flora, which appears in the mouth, does not of itself cause disease, any more than their presence on the uninjured skin. But the matter is totally different when they become seated in open wounds in the edges of the gums adjacent to carious teeth, or extend from this, their first site, downward along the pericostium (peridental membrane) of the tooth socket. The infection is then no longer a superficial one—it is in connection with the soft tissues, periosteum, and bone.

The importance of Hunter's observations were not at first fully realized. Mouth infection as a cause of systemic disease did not impress the profession in proportion to its gravity until the subject was taken up for systematic study by some of the leaders in the medical profession, whose contribution to the symposium on mouth infections, in the *Journal A. M. A.*, December 5, 1914, began to bear fruit. These contributions to the section in stomatology at the sixty-fifth annual session of the A. M. A. at Atlantic City, and the discussion present an important chapter in the history of pyorrhoea alveolaris. Papers by Frank Billings (29), C. H. Mayo (30), E. C. Rosenow (31), C. Burns Craig (32), T. L. Gilmer (33), and A. M. Moody, and the discussions by Dr. A. D. Black, Dr. M. I. Schamberg, Dr. W. A. Price, Dr. F. B. Moarehead, Dr. John S. Marshall, Dr. G. V. I. Brown, Dr. W. O. Bridges, Dr. H. W. Frauenthal, Dr. T. W. Corwin, Dr. W. H. Mercur,

and Dr. J. A. Pettit, emphasized in the strongest language the serious nature of pyorrhoea alveolaris as a focal condition producing constitutional disease. It therefore becomes important to call the special attention of the profession to the necessity of recognizing it as such. I am constantly appealed to by the profession for information concerning the latest methods for treating Riggs's disease. I have answered during the past year no less than fifty letters on the subject. My experience in this regard leads me to bring this subject before my readers.

## BIBLIOGRAPHY.

1. ROBERTS: *British Med. Jour.*, June 22, 1912; Aug. 22, 1912.
2. ALLEN: *J. Amer. M. A.*, March 10, 1913. 3. ALLEN: *Idem*, April 19, 1913. 4. MAXWELL: *China Medical Journal*, March, 1913. 5. M. T. BARRETT: The Protozoa of the Mouth in Relation to Pyorrhoea alveolaris, *Dental Cosmos*, August, 1914; *Clinical Report upon Anæmic Pyorrhoea*, December, 1914.
6. ALLEN J. SMITH, WILLIAM S. MIDDLETON, and M. T. BARRETT: The Tonsils as a Habitat of Oral Endamebas, *Journal A. M. A.*, Nov. 14, 1914, p. 746. 7. C. C. BASS and F. M. JOHNS: The Specific Cause and the Prompt Surgical Cure of Pyorrhoea alveolaris or Riggs's disease, *New Orleans Med. and Surg. Jour.*, Nov., 1914. 8. C. C. BASS and F. M. JOHNS: Pyorrhoea dentalis and Alveolarism—Specific Cause and Treatment, *Journal A. M. A.*, Feb. 13, 1915, p. 195. 9. EVANS, C. C. BASS, WILLIAM S. MIDDLETON: Endamebic Pyorrhoea and Its Complications, *Idem*, Jan. 30, 1915, p. 423. 10. IDEM: *Idem*. 11. W. D. MILLER: Die Mikroorganismen der Mundhöhle. 12. WILLIAM HUNTER: On Sepsis as a Cause of Septic Conditions, *Practitioner*, July-December, 1900, p. 611. IDEM: The Role of Sepsis and Antisepsis in Medicine, *Lancet*, Jan. 14, 1911, p. 79. 13. FILANDRO VINCENTINI: Bacteria of the Sputa. 14. W. A. COLEMAN: Alveolar Osteitis (Riggs's Disease) by Means of Vaccines, *British Med. Jour.*, Sept. 9, 1905, p. 562; *Transactions, Odontological Society*, March, 1906. 15. W. G. WADSWORTH: Erasmus Wilson Lecture on Pyorrhoea alveolaris, *Lancet*, March 9, 1907, p. 533. IDEM: Two Cases of Acute Pyorrhoea, *British Med. Jour.*, Aug. 22, 1908, p. 477. IDEM: *Idem*, p. 667, 1909. IDEM: Bacillus necrosis, *Lancet*, Dec. 25, 1909, p. 1875. IDEM: Vaccine Treatment of Early Cases of Pyorrhoea alveolaris, *Proc. Roy. Soc. Med.*, p. 18, 1910. IDEM: *Idem*, *Lancet*, 1, 1911, p. 609. IDEM: The Relation of Diseases of the Mouth to Rheumatism, *Practitioner*, lxxviii, 1912, p. 107. 14. J. W. EYRE and J. LEWIS PAYNE: Some Observations on the Bacteriology of Pyorrhoea alveolaris and the Treatment of the Disease by Bacterin, *Practitioner*, lxxviii, 1912, p. 107. 15. STEPHEN MAYO: Some Staphylococcal Infections of the Eye and Their Treatment with vaccine, *Ophthalmoscope*, 1908, p. 566. 16. T. C. BEER, JR.: The Oponic Treatment of Pyorrhoea alveolaris, *Boston Med. and Surg. Jour.*, Oct. 27, 1909, p. 613. 17. WHITTLE: Odont. Soc. Report, *Brit. Med. Jour.*, April 28, 1902, 18. VICTOR G. BEST: Pyorrhoea alveolaris, *Dublin Jour. of Med. Science*, cxxxix, p. 1. 19. HAROLD SIMS: Bacteriology of Pyorrhoea alveolaris, *Dental Practitioner*, Oct., 1908. 20. WILLIAM R. WILLIAMS: The Vaccine Treatment of Pyorrhoea alveolaris, *Am. Jour. of the Med. Sciences*, cxlii, 1911, p. 666. 21. W. H. G. LOAN: Diagnosis and Prognosis of Pyorrhoea alveolaris (so called), *Dental Review*, xxv, 1911, p. 649. 22. L. S. MEDALL: Chronic Alveolar Osteomyelitis (Pyorrhoea alveolaris); Its Causes and Treatment with Vaccine, *Dental Cosmos*, Jan. and Feb., 1913. 23. TIMOTHY LEARY: Pyorrhoea alveolaris, *Idem*, 1909, p. 55. 24. ROBERT C. CUMMINS, M.B.: The Results of Autoinoculation Taking Place from the Mouth in Oral Sepsis, and Its Treatment by Bacterial Vaccines, *Jour. of Vaccine Therapy*, March, 1913. 25. JOSEPH COLLINS: The Possible Relationship of Organic Diseases of the Nervous System to Riggs's Disease, *Journal A. M. A.*, June 7, 1913, p. 1779. 26. JOSEPH HEAD: Vaccines in Relation to Mouth Infection. IDEM: Treatment of Loose Teeth Due to Inflammatory Degeneration of the Gums of Carious Teeth, *Journal A. M. A.*, Dec. 20, 1913, lvi, pp. 2232-2236. IDEM: Treatment of Oral Infection in Its Relation to Systemic Disease, *Jour. Allied Dent. Societies*, ix, June, 1914, pp. 211-226. 27. A. P. HITCHENS: Rationale of the Treatment of Bacterial Vaginitis, *Practitioner*, *Dental Cosmos*, Jan., 1915, p. 1. IDEM: Sajous's *Cyclopedia of Med.*, ii, 1912, p. 296. 28. C. P. BROWN: The Bacteriology of Pyorrhoea alveolaris, *New York Medical Journal*, Dec. 20, 1913. 29. FRANK BILLINGS: Mouth Infection as a Source of Systemic Disease, *Journal A. M. A.*, Dec. 5, 1914, p. 2024. 30. C. H. MAYO: Mouth Infection as a Source of Systemic Disease, *Journal A. M. A.*, Dec. 5, 1914, p. 2025. 31. E. C. ROSENOW: Mouth Infection as a Source of Systemic Disease, *Journal A. M. A.*, Dec. 5, 1914, p. 2026. 32. C. BURNS CRAIG: Peridental Infection as a Causative Factor in Nervous Diseases, *Journal A. M. A.*, Dec. 5, 1914, 33. R. L. GILMER and A. M. MOODY: A Study of the Bacteriology of Alveolar Abscess and Infected Root Canals, *Journal A. M. A.*, Dec. 5, 1914, p. 2027. Symposium on Mouth Infection, before Sec. in Stomatology at 66th annual session of A. M. A., June, 1914, *Journal A. M. A.*, Dec. 5, 1914. Editorial article, Entamebas and Pus Pockets about the Teeth, *Idem*, Feb. 13, 1915.

11 WISE PHILELENA STRUT, GERMANTOWN.

**Wire Sutures.**—Wire sutures, according to the *American Journal of Surgery*, are unnecessary and undesirable in operating upon the fractured patella or olecranon. Kangaroo tendon, which is slowly absorbed, is strong enough.



## THE RELATIONSHIP BETWEEN DENTIST AND PHYSICIAN,

BY WILLIAM B. DUNNING, D. D. S.,  
New York.

Dental science is related to general medicine as the branch to the parent tree, as any part to the whole; but the historical fact is indisputable that the dentist has been a member of the "dental profession," the physician a member of the "medical profession"—and that between them has been a "gulf fixed," over which little passed by way of community of interest, amenity, or even cooperation in problems concerning the human frame.

There were two sufficient reasons for this anomaly. The dentist originally was an ingenious artisan, who through native ability devised means of relieving the ignominious suffering caused by toothache, and of restoring lost parts in the oral cavity. He became a useful, but unhonored member of the community. There being no educational requirements to be met, these skillful men were usually of humble origin. When, in 1839, the first dental school was established in Baltimore, the dental graduate was not accepted by the medical man as a worthy associate. Whatever justification then existed for that avowed attitude on the part of the parent profession, the abiding consequence has been the isolation of the dentist—the establishment in time by him of traditions based on special knowledge, and in the founding of what is known today as the dental profession. In the light of scientific advancement during the past seventy-five years, that isolation now is traditional rather than actual.

A second and more intrinsic reason lay in the nature of modern dentistry. The field had become so broad—so filled with problems demanding special knowledge, with procedures requiring high technical ability, that the most capable practitioner was more than occupied in being a good dentist. His days were filled with details only remotely associated with general medicine, and quite naturally his mind was focused upon them. The physician, on the other hand, knew scarcely more than the layman, concerning the teeth.

I speak of the past as a closed chapter in the history of science. The researches of recent years have compelled attention, first, to the fundamental importance of normal mouth conditions, as bearing upon proper food preparation prior to swallowing; and, secondly, the far reaching significance of oral pathology. The adult mouth presents thirty-two distinct possibilities of focal infection, any one of which is competent as the source of secondary infections of the organs directly supporting life. The disease loosely termed pyorrhea—more or less incipient in nearly every adult mouth—is a factor of serious import to bodily health. The dentist's horizon is no longer bounded by the oral cavity; he is seriously engaged in saving and prolonging life, and his field of work is the human body, from the special viewpoint of the mouth.

Since, however, his viewpoint is the mouth, he must be a master of those procedures therein necessary to preserve and restore health. This means he must be a specialist in a department requiring great versatility of talent. He must be at home in prob-

lems of mechanics and esthetics, as well as those of biology and pathology. He must be physician, chemist, engineer, and *artist*; the last qualification being almost peculiar to his specialty, and one of essential importance to success of the highest kind. It required sound abilities to qualify as a dentist in the old sense: dentistry now demands powers second to none in the learned professions.

It is improbable that either the scope or importance of modern dentistry will be disputed. Assuming that it is not, and that, therefore, the oral specialists of the future must be both physician and dentist, the educational question becomes one of great difficulty and magnitude. General medicine today far exceeds the grasp of the single mind; dental science *per se* is divided into important specialties, each one evolving into new intricacies, possibilities, and requirements. It is obvious that we all must specialize somewhere and somehow: that the ideal dental curriculum must embody as much of general with special training as the student in a reasonable term of years may be able to master. While the underlying medical knowledge should be broad and positive, the special equipment *must* be complete and highly efficient. The latter item means years of digital training at the bench and in the mouth—more than is provided by the best dental college today.

The oral specialist should have a degree indicating that he is practising a department of general medicine. Neither the M. D. nor the D. D. S., nor their combination indicates the scholastic training suited to future needs. The M. D., in its accepted sense, would entitle its holder to practise obstetrics, ophthalmology, or general surgery; departments in which the efficient dentist can never be competent: the D. D. S. does not convey the fact that he has had medical training, the combination may indicate merely that the law has been observed in two incoordinated schools, and that the product is a loose jointed object, neither fish, flesh, nor fowl.

Incidentally, the *physician* of the future should have some knowledge of dental anatomy, pathology, and therapeutics. The suggestion has been made that the medical student receive a preliminary degree—such as B. S., or an equivalent—to indicate his qualification in the broad subjects underlying medicine. At this point he enters advanced studies in that department in medicine in which he has elected to practise. A final degree designates that department, and confers the right to practise, subject to the laws pertaining thereto. This plan would show that the dental student had approached his work through the right channel: that his special equipment was supported by general knowledge—but that emphasis was thrown in one special direction.

Such a plan, if feasible, should be widely adopted that the public mind may be impressed with the new standard. So revolutionary a project would be opposed, no doubt, in many quarters; but some plan, if not this one, should be devised to supersede the archaic regulations governing medical practice today. The specialist in any of the great departments of medicine—dentistry or other—is not qualified to practise general medicine. The true general practitioner is found in primitive districts

where he "spreads himself thin," and is most useful in the common troubles of mankind. He deserves the M. D. degree, but his work calls for no more than elementary qualifications. Let me honor him, in passing, for the sound practical wisdom he acquires in his contact with life in general. This, however, is not acquired in the medical school!

Aside from the educational phase of our subject, let us hope that the dental graduate of the future may measure up to his great opportunities and responsibilities. He must be a man of unusual skill, knowledge, and judgment; of varied abilities well coordinated. He must be not only in close association with his medical brother, but be a medical man, first, last, and at all times, in the best sense of that honored phrase.

140 WEST FIFTY-SEVENTH STREET.

## A FORM OF DIABETIC COMA,

*Not Due to the Acetone Bodies.*

By JACOB ROSENBLOOM, M. D., PH. D.,  
Pittsburgh.

*Read before the Association of the Western Pennsylvania Physicians, Philadelphia, 1924.*

During the past five years I have had the opportunity of studying eight cases of diabetic coma. Five of these cases were of the classical type with excretions in the urine of large amounts of acetone, diacetic acid and betaoxybutyric acid and high ammonia-nitrogen. The other three cases, however, were so different that they certainly show that we must recognize a type of diabetic coma not due to intoxication with the acetone bodies and possibly due to intoxication with aminoacids, polypeptides, or unknown substances formed in the intermediary metabolism.

Before discussing these cases, it will be of value briefly to present the growth of our modern conception of the chemical factors that play a part in the causation of diabetic coma.

The occurrence of coma in diabetes seems to have been first recorded by Von Dusch in 1854. Peters (1) in 1857, discovered what he thought was acetone in the urine and blood of a diabetic patient. This finding was confirmed later by Kaulich (2) and by Rupstein (3). Gerhardt (4) in 1865, showed that diabetic urine often gives a port wine color on the addition of ferric chloride, which he attributed to the presence of acetoacetic ether in the urine. Buhl (5) believed, from experiments carried out on rabbits, that this substance was the cause of diabetic coma. These conclusions could not be confirmed by Quincke (6). Von Jaksch (7) showed that Gerhardt's reaction was due to acetoacetic acid, and it was then maintained that diabetic coma was due to this substance, but many workers were able to show that it was only slightly toxic. Stadelmann (8) and other workers on comparing the acids and bases in the urine in certain cases of diabetes, found the bases to be present in large excess and that this increased excretion of bases was due to the presence of some acid, which Stadelmann said was crotonic acid. Minkowski (9) and Kulz (10), however, showed that the crotonic acid isolated by Stadelmann was formed from betaoxybutyric acid and consid-

ered this substance to be the cause of the symptoms of diabetic coma. The experiments of Waldvogel (11) and Desgrez and Soggio (12), and others, showed that this substance was also only slightly toxic. Ehrmann (13), however, states that he has produced typical coma with the sodium salts of butyric and betaoxybutyric acid, but against these experiments we may say that as high as forty grams of betaoxybutyric acid have been found in the day's urine of a nondiabetic, without any signs of intoxication. Sternberg (14) thinking that betaamidobutyric acid was the mother substance of betaoxybutyric acid, thought it to be the cause of coma. Gruhe (15) confirmed these findings. Marx (16) thought coma was due to the specific toxic action of the acetone bodies. Esser and Loewy (17) thought coma was due to a specific poisoning by butyric acid. Porges (18) thinks some of the symptoms of diabetic coma are due to the lowered carbon dioxide tension of the blood.

The observations of Walter (19) also weakened the theory of specific poisoning by the acetone bodies. He was able to produce symptoms like diabetic coma by giving animals phosphoric or hydrochloric acid. On the basis of the experimental work briefly reviewed, the present theory relative to the cause of diabetic coma is that the acetone bodies (acetone, diacetic acid and betaoxybutyric acid) produce diabetic coma, not by any inherent toxic power, but owing to the fact that they withdraw alkalis from the body,<sup>1</sup> and thereby produce an internal suffocation or "acidosis" of Naunyn (20). The reduction of the alkalinity of the blood, the reduction in the carbon dioxide of the venous blood, and the fact that the administration of alkalis will diminish or stop symptoms of diabetic coma, also that coma appears when the amount of organic acids in the urine is highest, and is absent when there is little or none of them in the urine, and that alkalis cause an increased excretion of organic acids, speak in favor of this view.

It has been pointed out by Kraus (21), Rumpf (22), Lepine (23), and others, that cases of diabetic coma have been noted without any increase in the elimination of organic acids in the urine and that the alkaline therapy has not the effect it should have if the coma was always the result of an acid intoxication. Many cases of diabetes (24) have been reported where very large amounts of the acetone bodies have been excreted for years, without evidence of any marked symptoms (25). Indeed Naunyn has suggested that coma in cases without increased acid formation may be due to the presence of some unknown toxin which acts on the cerebral cells, especially the respiratory centre. Klemperer thinks that both the coma and the acid production in diabetes are due to the presence of such a toxin.

Naunyn explains the relative failure of alkaline therapy on the basis that there is too large a quantity of the acid substance to be neutralized. Others hold that the benefit of the alkaline therapy is that it facilitates the excretion of the acetone bodies (26). Hilton-Fagge (27) in 1874, by the intravenous injection of a mixture of sodium phosphate and sodium

<sup>1</sup>As Sellards nicely puts it, in acidosis the acids are destroyed by neutralization, while in health, they are destroyed by oxidation.



chlorate, an acid solution, reported a magic cure in a case of diabetic coma. Cure lasted three days. Young (28) postponed death for eleven days by venesection followed by infusion of plain saline. Williamson (29) produced an improvement in two cases of diabetic coma by intravenous injection of salt solution. Von Noorden (30) reports a similar experience. Dickinson (31) found that the injection of a solution composed of potassium chloride, sodium carbonate, sodium phosphate, and sodium sulphate produced an improvement in cases of diabetic coma. These facts speak against our present conception of the cause of diabetic coma.

The three cases of diabetic coma that I have studied, which differed so completely from our modern idea of acidosis as the cause of coma, may be considered together in this report. They were all of the severe type, with no tolerance for carbohydrate and with a restricted protein intake there was no lessening of the glucose output. They were studied for a period which varied from one week to two months. During this time the urine contained a normal amount of ammonia-nitrogen and showed no trace of acetone, diacetic acid or betaoxybutyric acid. There was no evidence of any kidney disease. The urine contained excessive amounts of colloidal nitrogen, neutral sulphur, and aminoacids. Death occurred in typical diabetic coma. It might be held, however, that the acetone bodies were not excreted, but retained. In the last case studied 200 c. c. of blood were taken shortly before death. Only faint traces of acetone, diacetic acid and betaoxybutyric were found. The nonprotein nitrogen of the blood serum was normal in amount<sup>2</sup>. This case is especially interesting on account of the fact that about fifty hours before death, showers of granular casts were present in the urine. The urine was cloudy, owing to the presence of such an enormous number of casts. As will be recalled, this finding has been described in the typical acidosis coma (32). An intravenous injection of 600 c. c. of six per cent. sodium bicarbonate produced a marked improvement in the symptoms. Coombs (33) has lately described a type of acidosis terminating chronic myocardial disease and characterized by almost complete absence of acetone, diacetic acid and betaoxybutyric acid from the urine, by absence of glucose, or history of previous diabetes. The two cases were on an abundant diet, there was no vomiting nor any other cause of starvation, nor was any drug given that might account for the symptoms. Sellard (34) has shown that cases of diabetes occur in which the excretion of ammonia, acetone and related bodies is normal, but the titratable alkalinity of the blood is decreased and the tolerance to bases is increased, affording proof of a definite impoverishment in bases in these cases. If this argument proves to be correct, we must then think of the pos-

sibility that the type of diabetic coma described in this paper may still be due to a lack of bases<sup>3</sup> in the body, possibly owing to the production of some as yet unidentified acid.

Labbe (35) is also of the opinion that many of the features of diabetic coma point to an intoxication with polypeptides. He thinks that while diabetic coma and acidosis are closely related, they are due to different mechanisms. Loeffler (36) has found a high aminoacid excretion in diabetes and thinks that they play an important part in the production of acidosis. Hall (37) and also Mohr (38) have found an increased output of aminoacids in the urine in diabetes. Labbe and Bith (39) have also found an increased excretion of aminoacids in cases where a pathological destruction of proteins is going on and also in conditions of acidosis, whether diabetic or of another nature. Huguenot, Morel, and Froment (40) studied the urine, blood, and cerebrospinal fluid in a case of diabetic coma. They found a low amount of urea-nitrogen in comparison to the other forms of nitrogen. This was especially marked in the cerebrospinal fluid and they concluded that coma in diabetes may be due to the accumulation of toxic nitrogenous compounds in the system as well as the acetone bodies. Revillet (41) has also described a case of diabetic coma without acetonuria in a case of diabetes. Pribram and Loewy (42) also suggest that the abnormal products of protein cleavage are responsible for diabetic coma.

The observations recorded in this paper show the necessity for changing our views relative to the exciting factors present in all cases of diabetic coma, and the need for study of cases of diabetes along the lines suggested in the paper. The inadequacy of the alkaline therapy can be explained on the basis that the acetone bodies are not the important factors in the causation of the symptoms of all cases of diabetic coma, but that more attention must be paid to the study of the excretion of aminoacids, polypeptides, and certain unknown substances in this disease.

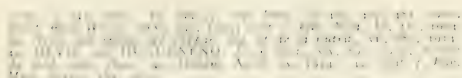
#### REFERENCES.

1. *Prag. Vierteljahr.*, iv, 81, 1857. 2. *Ibidem*, lxvii, 58, 1860. 3. *Centr. f. d. med. Wissen*, xii, 92, 1874. 4. *Wien. med. Presse*, vi, 673, 1865. 5. *Zeit. f. Biol.*, xvi, 413, 1880. 6. *Berl. klin. Woch.*, xvii, 1, 1880. 7. *Ueber Acetonurie u. Diaceturie*, 1885. 8. *Arch. f. exp. Path. u. Pharm.*, xvii, 419, 1881. 9. *Ibidem*, xviii, 35, 1882. 10. *Ibidem*, xix, 209, 1883. 11. *Ibidem*, xxi, 41, 1886. 12. *Berl. klin. Woch.*, xxxix, 90, 1892. 13. *Mitt. d. d. med. Klinik zu Königsberg*, 174, 1888. 14. *Zeit. f. Biol.*, xx, 165, 1887. 15. *Die Acetonkörper*, 1903. 16. *Comp. rend. Soc. Biol.*, lxxi, 288, 1907. 17. *Berl. klin. Woch.*, l, 2, 1913. 18. *Zeit. f. klin. Med.*, xxxviii, 65, 1896. 15. *Arch. f. exp. Path. u. Pharm.*, xlii, 349, 1900. 16. *Zeit. f. klin. Med.*, lxxi, 165, 1910. 17. *Ibidem*, lxxii, 496, 1911. 18. *Wien. klin. Woch.*, xlii, 1011, 1911. 19. *Arch. f. exp. Path. u. Pharm.*, vii, 148, 1877. 20. *Der Diabetes Mellitus*, 1906. 21. *Zeit. f. Heilkunde*, x, 1906, 1889. 22. *Arch. f. exp. Path. u. Pharm.*, xxvii, 188, 1890. 23. *Arch. f. exp. Path. u. Pharm.*, xxvii, 188, 1890. 24. *Arch. f. exp. Path. u. Pharm.*, vii, 148, 1877. 25. *Der Diabetes Mellitus*, 1906. 26. *Zeit. f. Heilkunde*, x, 1906, 1889. 27. *Arch. f. exp. Path. u. Pharm.*, xxvii, 188, 1890. 28. *Arch. f. exp. Path. u. Pharm.*, vii, 148, 1877. 29. *Der Diabetes Mellitus*, 1906. 30. *Zeit. f. Heilkunde*, x, 1906, 1889. 31. *Arch. f. exp. Path. u. Pharm.*, xxvii, 188, 1890. 32. *Arch. f. exp. Path. u. Pharm.*, vii, 148, 1877. 33. *Arch. f. exp. Path. u. Pharm.*, xlii, 349, 1900. 34. *Arch. f. exp. Path. u. Pharm.*, xlii, 349, 1900. 35. *Arch. f. exp. Path. u. Pharm.*, xlii, 349, 1900. 36. *Arch. f. exp. Path. u. Pharm.*, xlii, 349, 1900. 37. *Arch. f. exp. Path. u. Pharm.*, xlii, 349, 1900. 38. *Arch. f. exp. Path. u. Pharm.*, xlii, 349, 1900. 39. *Arch. f. exp. Path. u. Pharm.*, xlii, 349, 1900. 40. *Arch. f. exp. Path. u. Pharm.*, xlii, 349, 1900. 41. *Arch. f. exp. Path. u. Pharm.*, xlii, 349, 1900. 42. *Arch. f. exp. Path. u. Pharm.*, xlii, 349, 1900.

<sup>2</sup>It should be remembered, however, that Peabody (*Arch. Int. Med.*, viii, 245, 1914) has shown that the development of acidosis in renal disease bears little or no relation to the amount of nonprotein nitrogen in the blood. The latter may be extremely high without marked signs of acidosis being present. These results are confirmed by the experiments of Foulton and Ryffel (*Quart. Physiol.*, xlvii, 1913; *Proc. Phys. Soc.*, xlvii). It might be said that the three cases of atypical coma recorded in this paper were cases complicated with renal insufficiency. There were no reasons clinically, however, to consider them of such a nature, and it must be borne in mind that in the cases recorded in this paper we are dealing not only with an abnormal metabolism of carbohydrates and fats, but also with abnormal metabolism of protein, no doubt with the formation of intermediary metabolic products of an unknown nature and unknown toxicity.

<sup>3</sup>Work is in progress on the excretion of bases in cases of diabetic coma without the presence of the acetone bodies in the urine.





57-59 DOUGLASS STREET

SCOPOLAMINE AND MORPHINE IN  
OBSTETRICS AND SURGERYBY JAMES T. GILMORE, M. D.,  
Chicago, Ill.

The observations in this paper include a comparison extending of eight years in the administration of scopolamine prior to surgical operations and one hundred odd cases of obstetrics. In British and Continental nomenclature scopolamine and hyoscyine are synonymous. Hyoscyamus was used by the ancients, forgotten, taken up by some of the earlier modern men, fell again into disuse, and once more introduced into prominence by Baron Störck and used by him and his followers in a wide range of diseases. A more extended experience of its curative effects proved unsatisfactory and finally its administration was limited practically to that of a hypnotic in nervous diseases. Hyoscyine hydrobromide is an alkaloid obtained from hyoscyamus and was first used by Höhn and Reichard, about 1871, but was not introduced into the United States Pharmacopœia until 1890. The year following, 1891, Professor E. Schmidt announced in the *Apotheker Zeitung* that hyoscyine hydrobromide was practically identical with hydrobromide of the alkaloid which he had discovered in scopolia and which was named by him scopolamine. Previous to 1891, it was believed that scopolamine and hyoscyine were two separate alkaloids. Scopolamine was originally found as one of the alkaloids, among many others, in the scopolia plant. Soon afterward it was discovered to be in a much larger quantity in other families of plants, notably in several species of the *Datura*. Naturally, the true scopolamine or scopolamine hydrobromide was at first prepared from the scopolia plant, while the same alkaloid extracted from other families of plants, identical with hyoscyine in reaction, was labeled for commerce as hyoscyine hydrobromide.

In the earlier preparations different physiological actions seemed to be obtained from scopolamine and hyoscyine. Probably this confusion was due to the impurities left in the earlier preparations of the alkaloids. Undoubtedly different stocks of hyoscyine differed quite as markedly in isolated cases as did scopolamine and hyoscyine apparently differ from each other in physiological action.

The alkaloid, scopolamine, is acted upon by dilute alkalis, and if retained in glass containers the alkali is liable to be yielded and the scopolamine thus becomes modified in action. When this chemical phenomenon occurs, the alkaloid, scopolamine, is less stable. Moreover, as scopolamine is not infrequently found in the same plant in different degrees of decomposition, various responses in physiological action are to be expected with different preparations of the same drug. This was especially so when the

earlier, and still later the inexperienced chemist, was unaware of the above mentioned details. Consequently, the physician unconsciously administered an alkaloid that was not properly purified or properly prepared. The far reaching result of which was that the physician's earlier reports of the systemic action of scopolamine and hyoscyine were anything but constant.

**Physiological action.** Scopolamine or hyoscyine belongs distinctively to the atropine group. In the course of from twenty minutes to one half hour after its administration, scopolamine, like atropine, produces a dryness of the throat and generally checks the secretions of the mucous membrane. It is a vasomotor dilator and produces a marked dilatation of the pupils with an accompanying inability to focus the sight on near objects. There is more or less confusion of thought. In the majority of cases the drug acts like a sedative. When the patient is under the full physiological action of scopolamine, there is a decided decrease of respiration. The writer has frequently seen the respiration lowered to six a minute without injurious effects. In his experience scopolamine has little effect upon the pulse rate or the temperature. The drug produces an anesthesia of the sensory spinal nerves, and the patient is unable to empty the bladder while under the full effects of the drug. He has observed no aftereffect upon the peristalsis of the intestines. In obstetrical cases he believes the milk is frequently delayed from six to twelve hours. In his opinion the length of labor may or may not be delayed from four to six hours and depends upon the size of the dose and the susceptibility of the patient. In from six to ten per cent. of the cases the child was born slightly cyanosed. He has never had an atonic hemorrhage follow the use of scopolamine.

Generally speaking, the above mentioned symptoms are all of a transitory nature and entirely disappear in from twelve to fourteen hours after the final administration of the drug.

**Administration.** In surgical cases the author has made a routine practice of ordering, two hours before the operation, a hypodermic injection of 1/150 grain of hyoscyine and one tenth grain of morphine. This same dose is repeated at one half hour intervals until three doses have been taken, making a total of hyoscyine one fiftieth of a grain and one third of a grain of morphine sulphate. After the first dose, the patient should be placed in a quiet and darkened room with all outsiders excluded except the nurse in attendance. In pelvic surgery, before going to the operating room the patient should be catheterized. The operation should be started one half hour after the last dose has been given. In minor surgery, especially curettage or the introduction of the pessary, this anesthetic is all sufficient.

When it is necessary to give the patient a general anesthetic it is undeniably difficult for the anesthetizer, unfamiliar with the drug, to determine the stage of narcosis, as the pupillary action is obscured. The patient may apparently be in a surgical anesthesia, but the abdominal muscles will be rigid and she will be aroused by the incision. Unless the anesthetist has had previous experience with the administration of hyoscyine and morphine, he will be under a mental strain on account of the modified

pupillary action and the lowered respiration, this is especially so if the patient takes the anesthetic badly. In the past eight years I have had but one death on the table, and in this case it was not due to any confusion on the part of the anesthetist or in any measure to the scopolamine. The patient was referred from a laryngologist for carcinoma of the uterine appendages. Upon reporting the death of the patient on the table to the specialist, he volunteered the statement that a few months previously his patient had narrowly escaped death while undergoing a simple throat operation. The anesthetic in my case was administered most cautiously and the death occurred without preliminary indications of either failing heart beat or respiration.

In three of my cases the scopolamine left a most unfavorable impression upon the patient's mind. About six years ago the author administered 1/100 grain of scopolamine and one tenth grain of morphine to a patient suffering with gallstones. Within twenty minutes after the first injection, she became insanely possessed with the idea that she was dying and suffered an indescribable agony of fear. In the course of an hour this nervous symptom passed away and the patient slept for twelve hours. In this case the pulse and respiration were not affected. Within a year after this experience the regulation three doses were given a patient in the hospital, preparatory to an abdominal hysterectomy, with the same accompanying agony of fear. In this case gas was quickly administered and the patient, although retaining an acute remembrance of her distress before the operation, made an uneventful and rapid recovery without the nausea accompanying the usual anesthetic, as well as sleeping peacefully for several hours after leaving the operating room. The third patient was a man with an infected gallbladder who had submitted to the regulation three doses. By the time he reached the operating room he was seized with an uncontrollable fear, and in spite of various attempts to pacify him, he violently resisted the anesthetist and actually left the operating room. A few hours afterward he was unable to account for his unreasonable apprehension and was operated on the following day without the preliminary hyoscine.

**Contraindications.** Crile states that scopolamine should not be given to children about to undergo a throat and nose operation because of the tendency of the drug to superinduce spasm of the larynx. It should be used very carefully in cases of nephritis.

It seems to the author that the overwhelming advantages of hyoscine in adult surgery and obstetrics more than counterbalance the comparatively few undesirable complications that may occur. Crile and his associate, William E. Lower, have recently gone so very fully into the kinetic theory of shock and the desirability of anoci association (1), that it is hardly necessary for us to be reminded of the great advantage in the ultimate recovery of patients if they are able to go to the operating room in a tranquil drowsy slumber rather than suffering acutely from the fear and anxiety incident to the operation, say nothing about the "blocking" process of the actual surgical procedure.

When scopolamine is administered before an operation, there is less danger of a surgical nephritis, as about one third less ether is required for complete

anesthesia, while in minor cases no anesthetic is required. Inspiratory pneumonia is much less frequent, as the hyoscine dries up the secretions and the throat is not full of mucus. After the operation has been completed and the patient returned to her bed, she usually sleeps peacefully for several hours, the length of time depending upon susceptibility to the drug. This period allows the ether to be eliminated and at the same time in the majority of cases excludes the nausea and vomiting which is so distressing to the newly conscious patient.

Cerebral exhaustion, which frequently becomes alarming and not infrequently ultimately results in an incurable neurasthenia, is markedly diminished. Convalescence is much more rapid owing to the conservation of the physical strength, inasmuch as the vomiting is diminished, not infrequently entirely eliminated, and nourishment can be tolerated much more quickly.

**In obstetrics.** For many centuries the obstetrician has been on the outlook for a drug that would lessen the pains of labor and not interfere with the expulsive force of the uterine and abdominal muscles. As civilization has increased and the intellectual capacity of woman has progressed, she is becoming endowed with an ever increasing appreciation of pain, because a nervous force distributed in many directions leaves her less fortified to bear physical suffering. Both of these factors tend to make child bearing a pathological rather than a physiological process.

In 1900, Schneiderlein and, two years later, von Steinbuckel, used scopolamine and morphine to lessen the pains of labor (2). Following these men and contemporary with them, were numerous trustworthy obstetricians who experimented with the administration of scopolamine and morphine. Reports were most conflicting. In some cases the death roll of the mother was heavy, in others the newborn child was asphyxiated in an alarming percentage of cases. According to some authorities the administration of hyoscine and morphine was unjustifiable, according to others it was dangerous, and still others spoke of it with enthusiastic favor.

Probably Professor Krönig, of Germany, has given us the most scientific and accurate information thus far obtained on the action of the drug. His assistant, Doctor Gauss, tabulated with painstaking detail the results in 1,000 cases. Later, Professor Krönig, in an address to the British Medical Society (3), was able to add 700 cases more, 350 of which were in private families. In this report the results are uniformly all that could be desired. He reports no fatality of mother or child which could either directly or indirectly be blamed on the hyoscine.

**Krönig's method of administration.** A three hundredth of one per cent. solution of scopolamine hydrobromicum is placed in a transparent vessel, which is protected from light and heat. If at any time this solution becomes cloudy, it is destroyed. In a similar receptacle a one per cent. solution of morphine is placed. As soon as an obstetrical patient has pains which last thirty seconds and are as frequent as every two or five minutes, he injects 1/150 grain of scopolamine and one sixth of a grain of morphine. One hour after the first administration he gives 1/300 to 1/150 grain of scopolamine

without morphine, according to his patient's tolerance, which is estimated by her capacity to remember articles which had been shown her thirty seconds previously. If she recognizes the same article the second time, she is not sufficiently under the influence of the drug. When she is unable to remember having seen the article which was shown her a few seconds before, she is considered to be under the full physiological action of scopolamine. In other words, the patient is able to appreciate the pain for the moment, but will be unable to remember it as soon as it has ceased. According to his idea, the obliteration of the memory is the sole test of the correct dose; when this point has been reached an ideal anociassociation has been established.

Krönig accounts for some of his unfavorable results by the fact that his patient was disturbed by either pronounced visual or acoustic sensations. Later on in his experiments, he allowed his patient to inhale five c. c. of ethyl chloride with the Herren-Knecht inhaler as the child's head was being born. He says that it not infrequently happens that the scopolamine began to lose its efficiency by this time, and the patient, remembering only the last pain, was firmly under the belief that she was conscious during the entire labor and that the pain was continuous. The writer has more than once had this experience.

Still later, Professor Krönig combated an unusual nervousness, even before the pains were five minutes apart, with a small dose of veronal, 0.2, combined with the first injection of scopolamine and morphine. He lays special stress upon the small dose of veronal, as he believes that doses of 0.5 or one gram have an unfavorable influence on labor.

*The author's experience.* In over one hundred cases of labor in which the writer has attempted to produce a "twilight sleep," he has no death report to make of either mother or child during the actual delivery or any period following labor or birth. He has not one case to report of atonic hemorrhage or any other complication which could be traced to scopolamine. In about ten per cent. of cases the baby was born cyanosed. In eight per cent. the labor was seemingly retarded several hours, while the patient was under the full physiological action of the drug. In five per cent. the patient seemingly failed to respond to the influence of the drug and was acutely sensitive to the memory of each pain. In ten per cent. she was dimly conscious of the entire labor. In forty per cent. the milk did not appear in the breasts until the beginning of the fourth day. In the large majority of cases the patient was seemingly fully conscious of her pains at the time, and slept, as soon as they subsided, until she was again aroused by another uterine contraction. When the labor pains become regular and the patient begins to complain that they are unbearable, he administers a sufficient dose of hyoscine and morphine to establish the semiconscious sleep, according to the susceptibility of the patient, at intervals of one half to two or more hours.

After dilatation of the os has taken place, inertia of the uterus has been less frequent with him than before he used the hyoscine. During the last two years when this complication has occurred he has found pituitrin an invaluable adjunct in his obstetri-

cal practice. In no case was his patient violent, nor did she have any unpleasant memory associated with the drug, except its inefficiency.

Scopolamine saves the mother from the pain incident to labor, which is impossible to control by any other means. In the earlier experiments the size of the dose was too large, even if we take for granted the purity of the drug, and at times the effects were not only deleterious, but were frequently fatal to the mother as well as the child. In obstetrics the writer administers 1/400 grain of scopolamine combined with one thirtieth grain of morphine hypodermically as an initial dose. The physiological action is closely watched. He repeats the hypodermic, decreasing or omitting the amount of morphine, every half hour to two hours until the child is delivered. The dose is governed by the action of the hypodermic injection upon the patient. She should periodically respond to each pain, but should fall asleep the instant it ceases. While the head is being delivered, a small quantity of chloroform is administered.

In conclusion, the author believes that the "twilight sleep" of obstetrics has gained a distinct place for itself when it is produced by scopolamine properly administered, and the patient is under the constant observation of the obstetrician or an obstetrical nurse who is familiar with its action.

#### REFERENCES.

1. CRILE and LOWER: *Anoci Association*. 2. *Progressive Medicine*, December, 1906. 3. KRÖNIG: *Scopolamine-Morphine Narcosis in Labor*, *Brit. Med. Journal*, Sept. 10, 1908.

30 NORTH MICHIGAN BOULEVARD.

## THE IMPORTANCE OF A RECTAL EXAMINATION.\*

BY HERMAN A. BRAV, M. D.,

Philadelphia,

Rectal Surgeon, Lebanon Hospital; Proctologist, American Stomach Hospital.

The object of this paper is to point out cases in which the symptoms are obviously not due to rectal disease, but in which a rectal examination is essential before a correct diagnosis can be made. The purpose of a physical examination of a patient is to discover the cause of his discomfort and suffering. In making the first examination it is essential to consider every important organ of the body. The examination should include a consideration of the lungs, heart, liver, stomach, kidney, abdomen and intestinal tract, and finally the rectum. The general practitioner who fails in his physical examination to include the rectum, will often lose important opportunities to make a correct diagnosis. It is only necessary to recall the close connection of the rectum with the perineum, the vagina, and the cervix, as well as its constant contact with the body of the uterus and the left uterine tube or ovary, the bladder, prostate, urethra, penis, etc., to realize that these statements are well founded upon a solid anatomical and physiological basis.

As a result of this close proximity we frequently find in women reflex pain in the bladder, mouth of the urethra, womb, back, thighs, ovaries, vagina, and perineum. In the male we often find pain in the

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bladder, penis, urethra, scrotum, and prostate. The relation of the rectum with the peritoneum is so close that abdominal pain may at times be but a reflex condition traceable to the rectum as its source of irritation. This fact is often overlooked. Many patients who complain of symptoms referable to the genitourinary organs, the lower abdomen, or the back, may in reality suffer from some disease of the rectum that requires local treatment. Unless a thorough rectal examination is made, the course of treatment instituted in these cases will only tend to the perpetuation of the symptoms rather than to their amelioration. Goodsell and Miles, in their *Diseases of the Anus and Rectum*, remark: "The fact that the pudic nerve supplies the compressor urethrae, that the third and fourth spinal nerves give off branches to the prostate, bladder, vagina, and that these nerves are associated with others arising from the lumbar enlargement of the cord, for instance, the lumbar, great and small sciatic, readily explain, upon anatomical grounds alone, the pain in the loins over the crest of the ilium and sacrum down the back of the thighs and calves. It also accounts for the occasional attacks of retention of urine sometimes observed as a reflex accompaniment of anal fissure and fistulae when situated in the middle line posteriorly. By the same process of reasoning we can understand how symptoms referable to the rectum may be the expression of disease of the neighboring viscera, such as uterus, bladder, vagina, and prostate; consequently the possible coexistence of these diseases should not be overlooked." Reflex disturbances in neighboring organs or distant parts of the body frequently accompany rectal diseases. It is not unusual for patients to complain of pain in the region of the uterus, tubes, ovaries, bladder, prostate, urethra, and testicles; again the pain may be reflected up the back to the hips or down the leg or heel, and is not infrequently mistaken for sciatica. Perhaps the most common reflex disturbance caused by anal fissure, irritable ulcer, or hemorrhoids is irritability of the bladder and urethra, inducing a frequent desire to urinate. This is due to an irritable condition of the sphincter and levator ani muscles. This condition has frequently been mistaken for genitourinary disease and treated accordingly.

Disorders of the rectum are frequently mistaken for uterine disease. This error is a grave one, inasmuch as mutilating operations may be and have been performed on the innocent genital organs when the disease actually lay within the rectum. Hemorrhoids produce a bearing down sensation easily mistaken for the bearing down caused by uterine displacement. A cancer of the rectum high up has not infrequently been mistaken for a pelvic tumor; and proctitis, with its pelvic distress and vague pain, is commonly mistaken for chronic disease of the ovaries and tubes. Constipation is not only a symptom, but also a frequent cause of rectal ailments. A patient suffering from fissure, for example, delays defecation as long as possible to avoid the pain accompanying the act. Fecal impactions should not be ignored or overlooked as a cause of constipation. On the other hand, a person afflicted with stricture exerts himself to the utmost to empty the bowels, but fails to do so because of the obstruction. Con-

stipation is sometimes induced by hypertrophy of the sphincter or levator ani muscles or of Houston's valves.

The first symptom of cancer in the majority of cases is found to be constipation, either alone or alternating with diarrhea, accompanied by digestive disturbances usually of a gaseous nature. This stage may exist for several months, during which time various circulatory symptoms make their appearance, misleading the patient as well as the physician. The patient complains of constipation, digestive disturbances, and being bloated after eating. The flatulent distention of the abdomen (large intestine) as a result of the accumulation of fecal matter and flatus is very distressing to the patient. Anemia, loss of weight, and drowsiness are complained of. Diarrhea is a symptom met with in many diseases of the rectum. It is always present in stricture, advanced cases of cancer, ulcerations, multiple polyps, prolapse, colitis, proctitis, and sometimes in fecal impaction and tuberculosis. Time and again I have treated patients for the relief of some rectal affection, of which diarrhea or frequent stools is the only symptom. They give a history of weeks or months of unsuccessful medication, but are subsequently relieved by local treatment alone. All this emphasizes the importance of making a careful rectal examination in every instance of gastrointestinal disturbances and letting the findings decide the treatment. Symptoms of autointoxication sooner or later manifest themselves in rectal affections, and neurologists contend that a number of functional nervous disorders result from fecal toxemia. There are three potent reasons why rectal examinations are so often omitted.

First, the common belief that rectal ailments must manifest local symptoms characterized by pain and hemorrhage at defecation, discharge of pus and mucus, protrusion from the bowels, pruritus ani, etc.; second, a lack of knowledge of the many and varied reflex disturbances to which rectal ailments give rise; thirdly, because patients, from a false sense of modesty, hesitate to complain of affections occurring in this part of the economy. Pain is not of great diagnostic value in rectal affections, as it may be present or may not. It may vary from a slight discomfort to the most intense suffering. We may have large hemorrhoids or polyps and still not suffer pain, or the pain, if present, is comparatively insignificant.

It is quite common for me to treat some rectal diseases in which no history of hemorrhage can be elicited. We may have extensive hemorrhoids, which do not bleed but simply cause sensations of heat and fullness in the rectum and most marked reflex disturbances. Of course hemorrhage of the rectum is one of the most frequent and dangerous symptoms of rectal disease. It may be slight, only a drop or two streaking the feces, and may entirely escape the notice of the patient. Frequent and profuse discharges of mucus and pus and casts of the bowel are indicative of polyps, abscess, fistulae, proctitis, and malignant disease. The tenesmus attending the continuous irritation of these discharges is quite frequently spoken of by the patient as diarrhea, on account of the frequent stools. Without a rectal examination such cases would be erroneously treated

for diarrhea to the great detriment of the patient and the physician. Study of the topographical anatomy and pathology of the rectum will acquaint us with the reflex disturbances of rectal affections and assist us in making a correct diagnosis. The suffering public can easily be educated to the fact that to speak of rectal ailments is no more shameful than to speak of diseases of the chest or any other part of the body. Fifteen years ago, while a student in Vienna, I asked Professor Kaposi and Professor Neusser, and other celebrities of the University of Vienna, how it happened that their patients allowed themselves to be stripped to the skin and exposed every organ for examination by the physician. "It is because we train them so," was the answer I received. That is, I believe, the secret why the German physicians are such efficient diagnosticians. In the past there was some excuse for a mistaken diagnosis when the disease was in the rectum and sigmoid flexure. Today, by means of a modern instrument and a better knowledge of anatomy and pathology, diseases of the region of the rectum can be located with ease and accurately diagnosed. A careful examination should be made in each case, nothing being taken for granted, even when the diagnosis has already been made by the patient or his physician. We have to educate our patients to combat the feeling of false modesty in referring to manifestations of disease in the rectum or anus. It is true that most patients hesitate to speak of rectal ailments because a rectal examination is repugnant to them, yet this is no excuse for an erroneous diagnosis. In making an examination, it is desirable to expose the parts as little as possible and to be very gentle in the introduction of the finger or instrument into the bowel. My plea is that in making a diagnosis the physician must not forget that the rectum is accountable for a great deal of distress simulating that which, we are told, is produced by the diseases of the ovaries, uterus, liver, stomach, and other organs.

1033 NORTH BROAD STREET

## CYSTITIS IN WOMEN.

BY LEWIS WINE BREMERMAN, A. M., M. D.,  
Chicago.

Cystitis in women is so common an affection with so little in the literature concerning it, that to present the subject, it was thought, would appeal strongly to the general practitioner. A large number of these cases are referred for treatment and not infrequently they present a history of symptoms of years' duration, even though they have had much treatment, some adequate and some inadequate, their symptoms seem to persist. Some of these patients have given up all hope of ever being well, and accept their trouble, diurnal and nocturnal polyuria with dysuria as a natural condition.

In discussing the etiological factors of cystitis one must have in mind the anatomical relations of the female bladder, as the conditions involving the immediate surrounding tissues may act as contributing causes. Another important factor to be considered in the etiology is the general habits of women.

It will be remembered that the female bladder is

a musculomembranous sac, thin walled, surrounded by connective tissue, and partly covered with peritoneum, situated in such a manner as to be closely in relation to the other pelvic organs, so that secondary affections of the bladder are very common. When we recognize the frequency of the various conditions involving the pelvic organs of women, both of a pathological and physiological nature, the frequency of bladder affections in the female may be readily understood. This paper will discuss only cystitis *per se*.

As to the particular habits of women regarding the etiological elements of cystitis, three will be mentioned which I consider of importance; these are the tendency of women to obstinate constipation; the habit which many women have regarding emptying the bladder, allowing that viscus to become markedly distended and that of the practice many women have of drying themselves after micturition with soiled towels which may have been used for drying the hands or have been picked up from the floor. These conditions have a decided influence in producing cystitis.

The main etiological factor in cystitis is the presence of bacteria whose influence produces marked changes upon the mucosa. From the observation of numerous cases the following bacteria are those which are found most frequently: *Bacillus coli communis*, *Staphylococcus*, *Gonococcus*, *Micrococcus catarrhalis*, *Streptococcus*, *tubercle bacillus*, and *Pseudodiphtheria*. These are given in the order of their frequency. Mixed infections are very common, in fact in all long standing and persistent cases many varieties of bacteria may be isolated. The word cystitis implies an inflammation of the bladder mucosa, yet this never occurs without the presence of pathogenic organisms.

It has been said that a cystitis cannot occur without some contributing cause producing a condition favorable for the growth of bacteria, yet we feel that the presence of the bacteria themselves is enough to eventually cause a cystitis, provided they are in evidence for a sufficiently long time. The naturally strong resistance of the normal mucosa will be lowered materially by the presence of the bacteria. It is true that the normal mucous membrane of the bladder will withstand infection for a long while; this has been proved time and again. One sees it frequently in tuberculosis of the kidney, when the urine drains into the bladder for a considerable time without producing tuberculosis of the bladder, which eventually occurs if the renal condition is left unrecognized. The mere presence of bacteria within the bladder long enough and in large numbers will produce changes in the normal histological structures, lowering resistance and producing hyperemia with a resultant cystitis.

In cases of cystitis where the predisposing as well as the active cause is the invasion of bacteria, we have to deal with a peculiar condition.

After considerable laboratory investigation we are convinced that certain metabolic products are produced by the growth of pathogenic bacteria, which vary according to the media upon which they are growing and their environment. It can therefore be readily understood why certain organisms, by changing their natural and normal habitat, will produce

new features which might be considered as chemical in character; they produce, for example, sufficient irritation and mild trauma of the mucosa for their natural growth, proliferation, and development, with accompanying inflammation. The colon bacillus is an excellent illustration of this peculiarity.

The contributing causes of cystitis are exceedingly numerous. The condition may be secondary to any inflammatory process of the adjacent organs, kidney infection, vesical calculi, tumor, parasites, and trauma. Changes in the urine itself may be productive of cystitis, as the continual irritation of the bladder mucosa will be sufficient to produce a fertile field for the growth of bacteria. Parasites in the urine frequently produce cystitis, such as echinococci, actinomyces, *Distoma hæmatobium*, *Filaria sanguinis*. *Ascaris lumbricoides*, *Strongylus gigas*, and *Oxyuris vermicularis* are also found and may be the contributing cause of a persistent cystitis. These features must not be overlooked. *Balantidium coli* has been found in the urine of two persons seen in consultation with Doctor Finley, of Galesburg, producing marked changes in the vesical mucosa. These cases with others will be reported elsewhere in detail later.

The trauma of the bladder which many times occurs during severe labors, particularly instrumental in character, is sufficient to lower the normal resistance of the bladder mucosa, so that bacteria will find a fertile field for their development. The trauma produced by the passage of a catheter into the bladder is an unusually common cause, especially if the instrumentation is carelessly done. The method of passing a catheter into the female bladder without properly cleansing the external genitals and without exposing the patient, passing the instrument under the bed covering, with the fingers as guide and with unsterilized petrolatum as a lubricant, may seem like the surgery of preaseptic days, yet this is the means of causing numerous cases of cystitis after labor. The catheter to our way of thinking is one of the most dangerous instruments when unskillfully used, that is known to surgery. The greatest care should be exerted in catheterizing patients, because the bladder has already been traumatized by overdistention and is in excellent condition for the invasion of bacteria. Another frequent cause of cystitis in women is infection of the vagina and urethra, particularly gonorrhea, where proper treatment has not been instituted through the ignorance of the patient in not knowing the character of the condition.

Let us consider how bacteria gain entrance into a viscus which is normally free from their presence. They may reach the bladder through the blood channels or the lymph channels; they may pass directly through the bladder wall from infections of the contiguous structures, or gain entrance by means of septic instrumentation. Having once entered the bladder, their presence, if only a sufficient space of time elapses, will produce a cystitis; much more rapidly does this follow if there are acute predisposing factors.

Cystitis may be divided clinically into acute cystitis and chronic cystitis, but a more accurate division would incorporate the variety of infection, as an

acute gonorrheal cystitis, an acute bacillus coli cystitis, acute tuberculous cystitis, etc.

I shall not take much space in discussing the acute types of the condition, as the diagnosis is usually not accomplished with difficulty and may be made clinically, and if a proper line of treatment is instituted, the majority of patients will get well. It will be the province of this paper to call attention to the chronic types, those of long standing, which seem to resist all ordinary treatment. The patients will go from bad to worse and finally give up hope. Our records are full of such cases, and we feel that a discussion of this type of infection will prove of interest and value, particularly to the general practitioner who first sees these patients.

It has only been during the last few years that our results have been good in the treatment of these cases, owing entirely, we feel, to our newer method of diagnosis. The cystoscope is one of the most important diagnostic instruments that we have in surgery, and by an intelligent cystoscopic examination and proper interpretation of our findings we are able to tell accurately the condition of the bladder and are able many times to reach definite conclusions as to the etiological factor or factors. The microscope and culture growth are exceedingly important, as without these aids our cystoscopic diagnosis is of little value. This portion of the examination is particularly important, not only from the standpoint of diagnosis, but from the side of treatment.

For completeness we will recite the clinical features of an acute cystitis, the cardinal points of which are frequent and painful urination, together with the passage of turbid urine containing pus, bacteria, and usually blood. There may be at times considerable suprapubic tenderness with marked constitutional symptoms at the onset; these latter last only for a day or two and accompany the stage of invasion of the bacterial elements.

The diagnosis of an acute cystitis is comparatively easy, but it must be remembered that the condition may be secondary to certain contributing causes which may be overlooked, such as a kidney lesion, which may be vastly more important than the mere bladder involvement. All cases of frequent and painful urination should not be considered cystitis, for we see the condition in cases of hyperacidity and also where there is an excess of crystalline elements. These conditions are readily recognized by the absence of pus and bacteria.

In the majority of cases one does not pass instruments into an acutely inflamed bladder, but it is necessary in some instances for diagnostic purposes. Instrumentation in these cases is difficult, as the bladder will not tolerate distention with fluid, which is necessary for cystoscopy.

Fortunately a fair proportion of the cases of acute cystitis end in recovery after ordinary treatment, although a certain number become chronic. We feel that an acute form may develop into the chronic stage, where the predisposing cause is not self limited and is more or less a permanent condition. The bladder involvement of an acute cystitis must be considered, for if there has been marked destruction of the mucosa with more or less ulceration, or an extensive inflammatory process involving the entire mucosa,



resolution can only take place after a long chronic stage coupled with adequate treatment.

Cystitis may assume a chronic type from the beginning if we consider symptoms as the distinctive line of demarcation between the acute and chronic forms of the disease. We feel that the pathological change produced in the histological structures of the mucosa, as shown by a cystoscopic picture, is the proper method of differentiation. These cystoscopic pictures obtained in acute inflammatory conditions of the bladder are exceedingly interesting and varied.

The bladder mucosa may be involved locally or generally; usually, however, the particular involvement is of the trigonal region, in many cases intensified as the internal urethral orifice is reached. One may see localized areas of redness and the rest of the bladder wall practically normal. These areas on the posterior wall speak, tentatively at least, for secondary involvement of the bladder following conditions of the neighboring structures.

Acute conditions of the mucous membrane may be recognized cystoscopically by the distinct redness of the membrane, engorgement of the vessels which seem to shade off and become lost to view as the area of involvement is reached. The mucosa surrounding the inflamed area for quite a little distance has lost its normal lustre owing to marked epithelial desquamation. The mucous membrane frequently seems to be thrown up into folds, owing, we believe, to the fact that the bladder is underdistended. This must not be confounded with trabeculae or with the thickened bands of mucosa that frequently occur in old chronic types. Many times the trigonal region, when involved, appears spongy and bleeds readily upon contact with the instrument. Instrumentation is accompanied with considerable pain, even when the bladder is anesthetized. Frequently one must resort to general anesthesia. In bladder tuberculosis, it is always necessary to employ general anesthesia for an examination, as the involuntary evacuation of the fluid will render an examination practically impossible.

In chronic cystitis the symptoms so commonly seen in the acute type are lacking, as there are usually no constitutional disturbances. The bladder is, as a rule, not tender to suprapubic pressure, nor is it so irritable and rebellious to distention. There is not the marked frequent and painful urination seen in the acute form, although there is some frequency usually attended with slight discomfort. The urine is turbid and contains pus, epithelium from the bladder, and bacteria. The only method of reaching a definite conclusion regarding the diagnosis, is through the findings shown by the cystoscope, microscope, and culture tube. In long standing chronic types the history will show numerous acute exacerbations, which subside rapidly under treatment or lapse into the chronic type.

The bladder conditions may be secondary to a renal process, and unless the kidney lesion is recognized, the treatment of the cystitis is hopeless. Cases that give the history of frequent relapses, particularly where the cystitis has been carefully treated, should cause a suspicion of a primary kidney lesion with a secondary bladder involvement. In these cases the microscope and urethral catheter and culture tube should be the proper diagnostic aids.

It must not be forgotten that a renal lesion, sup-

purative in character, may produce symptoms referable to the bladder rather than to the kidney. There may be frequent and painful micturition with little or no bladder involvement. The distinguishing points cited by some of the earlier diagnosticians may help us in arriving at a diagnosis between chronic cystitis and renal suppuration. An alkaline urine suggests the bladder rather than a kidney involvement. A bladder that withstands distention and shows little irritability upon irrigation, speaks for a kidney condition. One of the old tests was to compare a sample of voided urine with a sample collected by catheter after thorough irrigation. If there is less pus in the first ounce of urine drawn than that voided, the infection was considered to be in the bladder, while if the specimen collected was as turbid as that voided, the kidney was supposed to be the primary seat of the suppuration. All the older methods of diagnosis are accompanied with so many fallacies that they are inaccurate.

The only method of reaching a definite diagnosis is by means of a microscopic analysis, together with a thorough cystoscopic examination of the bladder with urethral catheterization and collections of samples of urine from the pelvis of the kidney, as well as a careful bacteriological examination of the samples.

A cystoscopic examination will usually clear up the predisposing factors of the case. There may be a vesical calculus, a tumor, diverticulum, a renal suppuration, etc., as exciting causes. There may be a stricture of the urethra, a condition which we find rather frequently in the female and to be recognized only by instrumentation. We have seen strictures as small as 12 F. in the female, producing obstruction to urination and distention with an accompanying cystitis; we have also seen growths of the urethra such as polypi and papillomata, which may be responsible primarily for the vesical condition.

By a cystoscopic picture the bladder condition may be seen to be localized at certain portions of the mucosa, the result of the pressure from without, made by a pathological condition of the contiguous structures, such as ante flexed uterus or a fibroid in the anterior wall, or an ovarian cyst, etc. It will be seen that the cystoscope is absolutely an instrument of precision and indispensable in recognizing chronic cystitis, its causes and complications.

Cystoscopic pictures of subacute and chronic types of cystitis must be carefully interpreted, as there are many types to be considered. The changes between acute and subacute vary so slightly that it is difficult to draw a definite line of demarcation. We have a decided loss of the normal lustre of the mucosa, as epithelial desquamation is extensive in subacute types, there is evidence of pus and mucus which is occasionally blood streaked; this may be seen clinging to the bladder wall, and unless care is used may be mistaken for vesical tumors. The cystoscope may show areas of beginning ulceration and a shaggy appearance of the mucosa surrounding it. The blood-vessels have practically disappeared in the inflamed area, and the mucosa seems to be more edematous than in the acute type. Chronic cystitis portrays an entirely different picture; there is greater evidence of mucopurulent material. There is almost no lustre to the membrane, distinct ulcerations may be seen, either localized in the region of the trigone or

at the internal urethral orifice, where they are elongated and run with the folds of the membrane; here they are termed fissures. In long standing chronic cystitis the cystoscopic picture is still different; the entire bladder seemed to be involved, the blood-vessels are not evident or are very indistinctly seen. The mucosa seems to be covered with a film of mucopurulent material which gives the impression of marked thickening of the mucosa. There may be evidence of old ulcerations or of fissures of the internal urethral orifice. The trigonal region may appear distinctly edematous and the folds in the mucosa may resemble trabeculae. These bladders will tolerate considerably more fluid than the acute type. Instrumentation will not be so painful as in the acute type.

The appearance of the ureteric orifices is important, as changes here may lead to a tentative diagnosis of trouble higher up. If there is an abnormal condition of one orifice and the other appears normal, then with a reasonable degree of certainty, one can conclude that the renal condition is on the side of the abnormal ureteric orifice. This must not be considered pathognomonic, as severe kidney lesions may occur where both orifices are absolutely normal, and no kidney lesion may be evident where there are distinct abnormalities of the ureteric orifices.

A correct diagnosis from all the methods employed must be made before treatment can be considered, as good results cannot be expected unless we are certain of our pathology. The treatment of acute cystitis consists of rest in bed, restricted diet with plenty of water per os, hot applications over the suprapubic regions, hot douches, hot rectal injections, together with internal treatment. We find the following prescription very efficacious administered in a half glass of water:

|                               |      |
|-------------------------------|------|
| R Potassii citratis,.....     | 3v;  |
| Sodii benzoatis,.....         | 3v;  |
| Tincturae belladonnae,.....   | 3ii; |
| Aquae menthae piperitae,..... | 5i;  |
| Aque, q. s.,.....             | 5iv. |

M. Sig. Si q. 4 h.

Suppositories administered twice daily may be of service if the pain and frequency are severe, as follows:

|                            |          |
|----------------------------|----------|
| R Extracti opii,.....      | grs. vi; |
| Extracti belladonnae,..... | grs. vi; |
| Olei theobromatis,.....    | q. s.    |

M. Ft. Sup. No. vi.

Local treatment is indicated and consists in gentle lavage, but this must be performed with the greatest care. A small soft rubber catheter should be used with absolute surgical precautions. The bladder may be gently irrigated with warm saline or boric acid solution, remembering that overdistention will produce pain. We usually inject an ounce or two or three and allow this to run out. The operation is repeated, and when the return is clear, we instill through the catheter about ten c. c. of twenty per cent. mixture of the oil of cajuput in olive oil. Irrigation may be done twice daily. The cajuput mixture is cooling and seems to have considerable anesthetic and germicidal properties.

Remember that the cessation of symptoms does not mean that the cystitis is cured. The patient should not be discharged until the urine is free from

pus and bacteria. It may take a long time to bring this about and the condition may develop into a chronic type.

The successful treatment of chronic cystitis depends absolutely upon the diagnosis; one must have an accurate knowledge of the etiological factors, the condition of the bladder and the bacterial elements found in the urine. Without this knowledge internal medication, vaccine therapy, hygienic and local treatments will amount to nothing and your patient will leave you to consult another who will not overlook these features.

In outlining the treatment for chronic cystitis, one must consider the conditions in the pelvis which may be contributing causes. It is useless to apply local treatment to the bladder unless the conditions involving the adjacent organs are eradicated. If pelvic examination shows all the organs normal, or insufficiently diseased to cause cystitis, then the surgeon must look within the urinary tract for the trouble. The examination of the urethra must be made carefully or polypi, ulcers, and strictures may be overlooked. Polyp must be removed, preferably with the high frequency spark, ulcers must be eliminated, the healing may be enhanced by chemical cauterization or with the use of the high frequency spark. Stricture of the female urethra is treated similarly to stricture of the male urethra. Gradual dilatation is the operation of choice.

Within the bladder there may be found numerous exciting etiological factors, tumor, ulceration, foreign bodies, and diverticulae. Intravesical operation is the procedure of choice in all bladder conditions. We find the necessity of open operations rather uncommon, indicated only when intravesical operation cannot for any reason be done.

Benign tumors of the bladder, for the most part, are thoroughly eradicated with the high frequency current, the spark carried directly into the base of the tumor under the guidance of the eye, which is possible with the cystoscope. If the tumor is of large size, an open operation for its removal may be indicated.

Foreign bodies such as calculi, blood clots, or materials that have been inserted into the urethra and lost in the bladder by the patient, may be all removed in the majority of cases, without opening the viscus. Litholapaxy is the operation of choice for the removal of calculi. This can always be accomplished, provided that the stone is not too large to be grasped within the jaws of the lithotrite, or encysted, or contained within the cavity of a diverticulum. This operation may be made an ordinary office procedure.

Ulcerations of the bladder as a consequence of cystitis are frequently found, and unless these are recognized and healed, the cystitis will continue and will not be influenced to any marked extent by local treatment. Ulceration of the posterior wall or trigonal region may be easily discerned with the aid of the cystoscope, but those of the internal urethral orifice, called fissures of the bladder neck, are difficult to recognize. A cystoscope that will give retrograde vision is necessary.

Ulcerations as a rule, no matter where situated, will require special treatment. I find that the high frequency spark is followed by rapid healing. In

lance of the internal urinary meatus, marked dilatation under a general anesthetic will usually suffice; if not, then apply the high frequency spark. In only one case in our experience was it necessary to open the bladder. This case would not respond to the treatment already mentioned so it was concluded to put the bladder to rest by drainage.

If an examination of the bladder cystoscopically displays a diverticulum, and the cystitis prevails notwithstanding local treatment, the diverticulum must be eliminated. This can be done only by an open operation.

One of the most frequent causes of persistent cystitis, if not the most common cause, is pyelitis, either unilateral or bilateral. This condition is not recognized in the majority of cases, because there are usually no symptoms referable to the kidney. In our opinion this condition should be the first factor looked for in all long standing cases of cystitis where local treatments have been followed by failure. The urine collected by the ureteral catheter and examined microscopically will show pus, bacteria, and pelvic epithelial cells in larger or smaller numbers according to the severity of the infection.

Careful treatment must be instituted for the purpose of clearing up the pyelitis. This can best be accomplished by pelvic lavage. The ureteral catheters are passed into the renal pelvis and with a ten c. c. syringe the pelvis are thoroughly irrigated. One must be very cautious not to dilate the pelvis too suddenly, as this may produce a severe colic which will require morphine to control. If one will not inject more than five c. c. at a time, allowing this to drain well before injecting more, the danger of colic will be minimized.

Various solutions may be employed. Silver nitrate from one to 12,000 to one to 500, according to the severity of the infection, argyrol or protargol may be used in the same strength as used in the urethra or bladder. There may be no symptoms referable to the kidney; thus the diagnosis is overlooked. The pyelitis is usually secondary to the primary infection of the bladder. How does the infection reach the kidneys?

We believe that the most common mode of transmission of the infection is by ascension through the lymphatics, or through the blood stream. An ascending infection through the course of the ureters I think uncommon, as there are strong arguments against this mode of transmission. The sphincteric action of the ureteric orifice prevents the bacteria from gaining entrance to the ureter; beside this we should have the bacteria progressing against the current of the stream of urine, and against the natural peristaltic action of the ureters. An ascending infection may be possible in cases of marked retention with dilatation, producing a backing up of the urine along the course of the ureters.

At the same time that lavage of the pelvis is done, which should not be oftener than twice a week, the bladder should be treated. This is best done with lavage, with formaldehyde solution, one in 8,000, followed by an instillation of some one of the milder silver salts. It may be necessary to wash the bladder as often as once daily.

Vaccine therapy is of paramount importance in this type of infections, but we only recommend autogenous vaccines administered in progressively increasing doses once or twice a week according to the reaction.

Tuberculous cystitis is never primary, and the original focus in the urogenital tract must be searched for carefully. Proper treatment must be given the primary focus or there is no hope of clearing up the cystitis.

It has been stated that the removal of a tuberculous kidney will in itself cure a tuberculous bladder. We have never seen this occur. We think that the bladder needs marked attention.

Tuberculin, vaccines for the mixed infection, and local treatments of the bladder must be vigorously administered, as well as a careful hygienic course of treatment.

We have endeavored to show that long standing chronic cystitis depends upon other conditions than the mere infection of the bladder mucosa, and unless we are particularly careful in our diagnosis, considering every contributing cause, our treatment will be worthless. In considering the treatment, we have tried to point out that every method is of importance in bringing about a permanent result and to render the urine pus and bacteria free. This must be done or our patient will go into a relapse at some subsequent time and our treatment will go for naught.

Do not be discouraged, as it frequently requires weeks to bring results, yet we have seen one treatment eradicate symptoms which have been producing great discomfort to the patient for years. Results can only be possible where the diagnostic features have been accurately and scientifically studied.

104 SOUTH MICHIGAN AVENUE.

**Silver Nitrate Many Times Diluted as an Antiseptic.**—Maurice Cazin, in *Bulletins et mémoires de la société de médecine de Paris*, March 26, 1915, refers to the investigations of Danysz, who has clearly shown the advisability and advantage of using for antiseptic purposes in the treatment of infected wounds only such solutions as will spare or actually excite the tissue cells themselves, while killing the germs. Many of the antiseptics, commonly used, not only fail to arrest infection, but by killing the tissue cells favor its progress and retard healing of the wound. Silver nitrate, while capable of rendering sterile a heavily infected water even in a one in one million dilution, was found to have no appreciable coagulating effect on defibrinated blood in a one in fifty thousand dilution. Danysz has therefore recommended that silver nitrate be used in a one in 200,000 dilution and mercury bichloride in a one in 300,000 dilution, to avoid all deleterious influence on the tissue cells. Cazin applied this principle in the treatment of severe wounds by firearms, with most satisfactory results. The one in 200,000 silver nitrate solution was prepared each morning by diluting a standard concentrated solution—kept protected from the light—with distilled water. Among the illustrative cases given are several severe wounds of the elbow, with exposure or comminution of the bones in this locality.



## Our Prize Discussions.

Questions for discussion in this department are to be mailed at the post-offices. No paper has been mailed in the prize questions for as follows:

CLIX.—How do you treat flatulence? (Closed.)

CLX.—How do you treat syncope? (Answers due not later than August 15th.)

CLXII.—How do you treat the effects of excessive smoking? (Answers due not later than September 15th.)

CLXIII.—How do you treat pernicious anemia? (Answers due not later than October 15th.)

Whoever answers one of these questions in the manner most satisfactory to the editors will receive a prize of \$25. No importance whatever will be attached to literary style, but the award will be based solely on the value of the substance of the answer. It is requested (but not required) that the answers be short, if practicable no answer to contain more than six hundred words; and our friends are urged to write on one side of the paper only.

All persons will be entitled to compete for the prize whether subscribers or not. This prize will not be awarded to any one person more than once within one year. Every answer must be accompanied by the writer's full name and address, both of which we must be at liberty to publish. All papers contributed become the property of the JOURNAL. OUR READERS ARE ASKED TO SUGGEST TOPICS FOR DISCUSSION.

The Prize of \$25 for the best paper submitted in answer to Question CLIX was awarded to Dr. R. S. Robertson, of New York, whose article appears below.

### PRIZE QUESTION CLIX.

#### THE ROLE OF THE DENTIST IN THE THERAPEUTICS OF INTERNAL DISEASES.

By R. S. ROBERTSON, M. D.,  
New York.

Perhaps physicians were more rudely shaken over various subjects in former years than recently over oral sepsis, a term which I use to imply all concomitant conditions in the mouth following untreated pathological processes. In this category for our subject we must place cavities, broken teeth, unextracted roots, alveolar abscesses, sinus fistulas, chronic gingivitis from lead poisoning (for it is recognized that those with perfect teeth and accustomed to care of the mouth are free from mouth symptoms of lead poisoning), and greatest of all, pyorrhœa alveolaris in its rapidly progressing stages. No place in the body is found with more of the growth requisites of organisms, pathological and otherwise, than the mouth; bacteria, amebas, and streptothrix, many of which can be recovered from one of two places, in, about, or around the teeth, or from the tonsil. We are concerned with the former.

Allowing that dentists are familiar with the foregoing facts, too great a presumption, I fear, we are under the necessity of expecting them to have a conspicuous part in the drama of the preservation or recovery of health, as a proper position for a man is the place where his training makes him efficient. Four years devoted to as highly specialized a subject as dentistry prepares for great efficiency on a subject relatively small compared with the physician's. It should teach him that practitioners of general medicine have a greater field and wider outlook and are, by reason of their varied experience with the human organism, in general, capable of logical deductions—even those that overlap and reach into the dentist's

domain. This gives the dentist a double capacity—that of consultant and operator, yet demands intensive cooperation with a physician.

We find a few dentists who are doing highly intelligent, excellent work, using the most modern equipment, x ray, etc.; a great many more, unfortunately, are like physicians in their mediocre routine. What we want are dentists who are alert to our new conceptions, who are awake to the crying need of oral asepsis (as far as concerns the teeth), and who have a keen appreciation of the duty they have to perform in conjunction with the physician or surgeon in the therapeutics of internal diseases.

A physician or surgeon devotes years of study and work along general lines; he gives to charity and institutional work unmeasured time. He has to do this, for his ability arises from his enormous experience. I want here to express my full meaning—that in order to perform a "proper role" a dentist must prepare himself along these lines. A greater variety and number of cases seen from a general standpoint gained in this way must be part of the dentist's equipment. Dentists should observe the stupendous reach over the whole metabolism of the human body, for instance, in pyorrhœa alveolaris. Charity and dispensary work is as indispensable to the progressive dentist as to the physician. I feel that the dentist must learn as the physician learns a specialty—through long experience and study without recompense. Dentistry would be farther advanced today if we had a few cases of great unselfishness and self sacrifice on the part of dentists, as we have in thousands of cases among physicians.

In this way a dentist can recognize his special training in an increased ability to treat conditions on a sound and rational basis, using the fundamental principles of today in pathology. The internal disease being diagnosed by use of these principles, the internist having recognized the fundamentals, the dentist can get a proper conception of his function. As experience with cases proceeds and the routine life and ailments of the patient are known, the relative influences of disease processes are pointed out, *by the physician*; then only can the dentist do his part in the application of "nonmedicinal influences to the preservation or recovery of health." The presence of pus in the mouth of his patient must mean more to the dentist than a continuous source of income; it should bring to his mind a possible train of symptoms, chronic rheumatism, septic ulcer, bacteriemia, amebic dysentery, etc., and cause him to work more diligently, using the aid of an efficient internist, who is capable of judging the internal resulting or complicating disease.

Principles of hygiene of the mouth must be part of a general educational propaganda backed by dentists. It is an important function for anyone to seek to enlighten the masses on the care and preservation of the teeth from infancy to old age. No "atmospheric" influence has a greater effect on health than the air being drawn into the lungs through a clean, sweet mouth. Neglect of the teeth means neglect of personal hygiene.

Diet does not concern the dentist. In the language of the day, it is "up to him" to provide his patients with proper masticating surfaces; *a*, there must be proper alignment of the molars for chewing; *b*, there

must be opposing surfaces for crushing food; *c*, the cutting edges of the teeth must be in proper condition; *d*, there must be a general effort to instruct proper cleansing of the teeth. These are little things, but the little things count.

92 DECATUR STREET, BROOKLYN.

Dr. Karl A. Meyer, of Chicago, observes:

The past few years have brought to the attention of the alert medical man the great importance played by the dentist in the treatment of medical conditions. The subject to be covered is so extensive in its possibilities that we discuss only a few of the more important ones and enumerate the balance. The first condition which comes to mind and which alone merits the question to be discussed is rheumatism and arthritis deformans. The medical man who to-day does not look after the hygiene of the mouth in these conditions and send every case to the dentist for diagnosis and treatment is guilty of absolute neglect. It is the dentist's business to make a most thorough inspection of the oral cavity for any atrium of infection. This means not only a most rigid inspection for pyorrhea alveolaris, but each tooth must be tested for hidden infection of the root canals and small alveolar abscesses. The same dental therapeutics holds true in all cases of myalgia, obscure cases of septic arthritis, neuritis, etc.

The next important class of cases to be mentioned because of their frequency are the anemias. Here we have the run down anemic youth and the chlorotic girl common to every city. Oral hygiene among this class is unknown, and before dismissing them with the usual tonic they should be advised of the importance of oral sepsis in their condition. Many of these patients suffer from glandular enlargements of a tuberculous nature and many more from incipient tuberculosis.

Probably of even greater importance is syphilis and its relation to the dental surgeon. This disease should be as familiar to the dentist as to the physician himself, and under no circumstances should the physician send these cases for dental treatment, without first informing the dentist of the diagnosis. However, the same holds true of the dentist, who should advise every patient with suspicious lesions of the oral cavity to have a diagnosis from his medical confrère. During the course of mercurial treatment all cases should be under dental observation. In a case of dental caries associated with congenital syphilis, the physician and dentist should work hand in hand.

Accurately to discuss the remaining pathology in which the dental surgeon plays an important role we will enumerate the subject by systems:

1. *Gastrointestinal*: *a*. Gastric and duodenal ulcers have been found by Rosenow to be due to a streptococcal infection, and in consequence all dental infections should be cleared up to prevent infection from this source. *b*. The primary cause of cholecystitis and appendicitis is infection, and here again we must clear up all atria of infection to the intestinal tract. *c*. Many mild dyspeptic symptoms are due to improper mastication either from habit or dental pathology and absorption and these must be remedied to secure a cure. *d*. Recurrent tonsillitis and pharyngitis should have an accurate diagnosis of the

dental pathology to prevent infection from this source.

2. *Cardiovascular*: *a*. In obscure endocarditis a minute examination by the dental surgeon is always indicated, both for diagnosis and treatment. This holds true also for cases of septicemia without a visible focus of infection. *b*. The role played by chronic sepsis of the mouth in the causation of arteriosclerosis should be known to both internist and dentist.

3. *Renal*: *a*. In mild cases acute nephritis may have its etiology in the constant absorption of small amount, of pus from the oral cavity, and it is of marked importance to the internist to have every focus of infection eliminated. *b*. Pyelitis may have its focus of origin from the oral cavity.

4. *Pulmonary*: *a*. Whether the teeth are primarily the source of tuberculous infection is questionable, but those who treat many cases of tuberculosis will agree that the teeth and gums are harboring millions of pathogenic bacteria and to build up the general condition it becomes necessary for the dentist to put the oral cavity in the best possible condition.

5. *General*: *a*. The dentist is called upon to aid in diagnosis and treatment of many more conditions which may owe their presence to infection from the oral cavity. They are myelitis, chorea, herpes zoster, iridocyclitis, otitis media, sinusitis, actinomycosis, etc. *b*. The physician and dentist should work hand in hand to obviate the danger of oral carcinoma from local irritation.

The dentist is not alone a mechanic for the physician, but should thoroughly understand the principles of focal infection and should have a good working knowledge of bacteriology better to fit him for his place in internal medicine. In conclusion, the physician who does not avail himself of his highly diagnostic and therapeutic branch of medicine does not give his patient the benefits he deserves and will not have the diagnostic acumen necessary for good results.

(To be continued.)

## Therapeutic Notes.

**Treatment of Typhoid Fever.**—Letulle and Mage, in *Bulletins et mémoires de la société médicale des hôpitaux de Paris*, November 27, 1914, report their experiences with colloidal gold in typhoid fever. In all suspicious cases, the Widal test and blood culture having been made, they gave an initial injection of sixteen to twenty-four minims (one to 1.5 c. c.) of a preparation containing about 0.00025 gram of the metal itself in colloidal form. A characteristic reaction followed in twenty to thirty minutes, consisting of a pronounced chill, often accompanied by slight cyanosis of the face and extremities, and giving way in fifteen minutes to sweating, which persisted half an hour or more. Promptly after cessation of the chill the patient experienced a notable sensation of well being, even though the temperature had risen one or two degrees. Thereafter the temperature dropped toward normal, or even went below it, and remained at the new level or but slightly above it for ten to eighteen

or even thirty hours. It was made a rule not to administer more than one intravenous injection per diem. This was given as soon as the rectal temperature reached  $38^{\circ}\text{C}$ . In addition cold baths (at  $19^{\circ}\text{C}$ .) were given at three hour intervals whenever the temperature exceeded  $39^{\circ}\text{C}$ . At times the baths were given during periods of artificial hyperthermia caused by the colloidal gold, with quite satisfactory results. Where sixteen minims (one c. c.) of the colloidal gold lost their effect or produced only a slight reaction, thirty-two to forty-eight minims (two to three c. c.) were given with success. While the colloidal gold treatment is not capable of aborting typhoid fever, the marked relief afforded renders its employment advisable, according to the authors, in all cases, including the more severe.

**Iodized Carbon in the Treatment of Infected Wounds.**—L. Lemaire, in *Presse médicale* for February 18, 1915, recommends the use of iodized carbon, a product of the adsorption of iodine by powdered animal charcoal, in the treatment of local infections. The preparation is essentially a solid solution of iodine in the animal charcoal, and gives off iodine slowly but constantly in alkaline solutions—such as the body fluids—as well as when subjected to heat. The specimen of the drug used contained ten per cent. of iodine, and had been employed for two years in cases of accidental wounds, old varicose ulcers, wounds remaining after incision of carbuncles and abscesses, etc. The iodized carbon powder was merely dusted generously over the wounds, and the latter then covered with sterile gauze. Under this treatment the appearance of the wounds rapidly changed, grayish covering membranes disappearing and fleshy granulations developing, together with discharge of a pale yellow serous fluid. When the dressing is lifted up from the wound, the charcoal adheres to the gauze in the form of a moist crust, none remaining in the wound itself, the margin of which is found tinted yellow as if a light coating of tincture of iodine had been applied. The dressing may be left in place several days, except in cases of gangrenous wounds, where daily changing is necessary. Generally the wound need not be washed before the iodized carbon is applied; if such washing is resorted to, solutions of a mercurial salt, which would form irritating and caustic mercury iodide with the iodized carbon, should not be used—but merely such agents as alcohol, ether, hydrogen dioxide solution, and formaldehyde solution. The carbon is never retained in the tissues, and no local irritation or toxic effects such as occur from the use of iodine or iodoform, are ever observed.

**Treatment of Obstinate Hemorrhage in Purpura.**—Gaucher, Cottin, and Gastinel, in *Presse médicale* for November 19, 1914, report the case of a soldier who had a purpuric eruption accompanied by copious hemorrhage from the gums, epistaxis, and hematuria. The bleeding persisted for ten days, at the end of which time the patient's body was covered with broad ecchymoses, and otorrhagia was added to the preexisting hemorrhages. Numerous measures employed to arrest the bleeding, including tampons, antipyrin applications, ferric chloride, calcium chloride internally, antitoxin, horse serum, and hepatic extract, all failed, and rapid

emaciation and profound anemia supervened. Examination of the blood revealed a markedly diminished coagulability. As a last resort Pagliari's hemostatic fluid was given by mouth in the dose of two dessertspoonfuls a day:

|                        |                    |
|------------------------|--------------------|
| R Benzoini, .....      | 5ss (30 grains);   |
| Aluminis, .....        | 3iij (100 grains); |
| Aque destillate, ..... | ℥i (1000 grains);  |
| Fiat solutio.          |                    |

In the preparation of this solution the mixture is boiled for six hours, with constant stirring, in a glazed earthenware receptacle. Boiling water is added as the fluid evaporates. The preparation is then filtered. The results obtained were surprising. In less than three days the hemorrhage stopped, the purpuric spots disappeared, the general condition improved rapidly; the patient almost completely recovered in a few days. The authors suggest the use of Pagliari's fluid in all similar cases.

**Treatment of Lumbago and of Sciatica.**—A writer in the *West Virginia Medical Journal* for September, 1914, states that the greatest reliance may be placed on massage in lumbago. The procedure is greatly assisted by a lubricant made after the following prescription:

|                            |                   |
|----------------------------|-------------------|
| R Camphorae, .....         | 3i (30 grains);   |
| Mentholi, .....            | 3i (30 grains);   |
| Olei gaultheriae, .....    | 3i (30 grains);   |
| Adipis lane hydrosi, ..... | ℥i (1000 grains); |
| Adipis benzoinati, .....   | ℥i (1000 grains); |

M. et ft. unguentum.  
Sig.: To be used locally.

The writer begins with a gentle stroking of the affected part. Pressure is then increased so that the procedure becomes a kneading of the muscles. First the fingers are used, next the palms, and finally the closed fist. The part should then be struck with the finger tips as one strikes on the piano. This should be done briskly and rapidly. But little pain is caused by the procedure; the patient finds that he can move with greater ease. A most comforting aftereffect is exerted by the ointment. In certain severe cases the writer has found it necessary to strap the patient with adhesive strips from the middle of the back down over the hips, the strips being overlapped so as to form a species of jacket. Where counterirritation seems advisable, rapid stroking of the skin over the affected area with the Paquelin cautery is one of its most efficient forms.

Internally, sodium salicylate, fifteen to twenty grains (one to 1.3 gram) three times daily, with potassium iodide, ten grains (0.6 gram), is often of service. Blue mass, one grain (0.06 gram) twice daily, has been recommended by Gowers. Morphine, one eighth to one quarter grain (0.008 to 0.015 gram) hypodermically, if required, should be administered only by the physician himself. In sciatica the author has found of value the same forms of massage as have already been described. In practising massage, the nerve should be followed from its exit from the greater sciatic notch along its course down the leg as far as the pain is experienced. After such treatment a patient who had been walking with the knee flexed and body bent away from the affected side may be able to stand straight, and complete relief from pain may be procured by three or four daily applications.



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CHARLES E. DE M. SAJOUS, M.D., LL.D., ScD.

CLAUDE E. WHITTELL, A.B., M.D.

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## THE DENTIST'S DILEMMA.

As long as bacteriology was unknown, as long as dentistry was a mechanical art, practised by amiable and honest gentlemen, fit to hold authority over a misgoverned world, there was no need for articles like the present; for the painstaking if slow professors of the science filled teeth without looking at the clock and polished and cleaned with charitable severity. We say this who had the honor to know them. With much skill they carried into dentistry—*ars utens*—their ardent fiction that they were anatomists, that they gave a new and rapid soul to the tedious processes of physiology, and they dallied tenderly with a new superfluity, an ornamental evil, improvised by the long threatened specialist whose exhibitions are in the grand style of making showy "turn-outs" of our faces. Have our readers studied these achievements? What the dentist of a former age wished to believe, or yearned to welcome as novelty, was truth to them, the good of their patients; what their wholesome feelings either disliked or feared in the folly of turning worshipping women into martyrs, was a thing to be hurried out of existence. In their minds three of the most modern ideas played at mastery—health, cleanliness, beauty of the mouth. There was no end to the healing victories that these older practitioners intended to win for mankind. Few conventional scientists can lay claim to rank higher than Professor Miller, of the

Universities of Berlin and Ann Arbor, the author of that advanced book, *Die Mikroorganismen der Mundhöhle*. There will be no great discoveries in dentistry until such another book is written—and then stereotyped in the dentist's mind.

Those of us who treasure comely and good actions in modern as well as old forms, must often wish for an answer to the question, which we proposed as to the dentist's place in medicine, an answer expert in the handling, and studied and produced with authority. We shall have to wait to enjoy such an answer. The question itself occurred to us after an experience of a case in point. This case will be discussed fully in the JOURNAL later; meanwhile we may mention that the particular error which was committed, and the particular confusion which arose were owing to the twofold fact—that the dentist employed had not studied medicine and that the doctors had not studied dentistry; briefly, both had inadequate ideas of the two sciences. The diagnosis was pernicious anemia and the cause—a pure assumption—was pyorrhœa alveolaris. A blood examination disproved the one, and the history, the other. As a matter of fact, the case was one of nephritis and the patient soon after died in uremic coma.

The question here has been put clearly by a writer in the *British Dental Journal*, xxxiv, 1316, 1913, "Does the prescribing for general diseases lie within the province of the dental practitioner?" The author wisely replies in the affirmative—with important reservations; for the question is like what mathematicians call an asymptote, always approaching the curve of definition and never touching it. We speak, of course, of the efforts of the dentist in diseases caused by ill kept or defective teeth. The value of his assistance is undeniable, and we must deplore the want of ambition that prevents him from trying his hand at something bigger.

The truth is that great masses of the public, dentists, physicians, hygienists, and their disciples have been wasting their attention and exhausting their energies on *cries*, "wild and wondering cries," cries which are commonly started by honest and ignorant persons, but which propose reforms or public exhibitions that have not been thought out, that are impracticable, and in many instances have originated at superheated meetings. There is the extraordinary cry about the cause of pyorrhœa alveolaris. This particular cry reposes on very inadequate ideas. Different organisms have at different times taken the public fancy. These germs have high sounding but hollow names. When this huge, amorphous mass of bacteriological science is put away, something tangible like the discovery of two Russian physicians will satisfy a small circle. In pyorrhœa alveolaris,

there is a process called osteoporosis. Its genesis is various; it may originate in the bone of the socket, and in the course of time suppuration appears. Such a truth is what we want. We want to know exactly where to find the cause of constitutional dental diseases and where to seek the serviceable dentist. We do not suppose the search will be difficult if the educated dentists see the dilemma, and if the proposal is supported by the men of clear and powerful intellect in their profession.

#### WAR AS THE PSYCHOLOGIST SEES IT.

In all of the many books and articles that have recently appeared on the causes of war in general, and the European war in particular, there is a noticeable failure to take due account of the psychological factors in the situation: thus Professor G. T. W. Patrick, of the University of Iowa, writes in the *Popular Science Monthly* for August. The theories of G. Lowes Dickinson, for example, trace war to artificial rivalries between abstract beings called states, rivalries unshared by real men, women, and children. These abstract states, says Professor Patrick, contain no such myths as peace-loving, law-abiding, land-tilling citizens, but inhabitants who are complex products of biological evolution and in whose brains are the powder magazines responsible for war. Man, today, is a high tension being, with a highly organized brain, with enormous potential energy in unstable equilibrium; beneath the brain is a vast network of inherited predispositions connecting the man of today with his warlike savage ancestors. He is a restless and aggressive person, who prefers the city to the country, frequents the stock exchange, the theatre, the moving picture show, likes to gamble and speculate, is fond of rapid transit, passes too much time indoors, delves into new problems, exploits new lands, devises new methods of transportation, is addicted to tobacco, alcohol, strong coffee and tea, sometimes to narcotics, is subject to chronic fatigue, and has a tendency to small families, insanity, and suicide. Supported by this man is another man, not peace-loving nor land-tilling either, but dependent, delinquent, and defective.

To understand the psychology of war, it is necessary to go back and trace the actual history of the development of the human being. Here lies the trouble with all our schemes of pacificism and all our Utopias and all our pleasure and peace economies. They deal with an ideal human being, not with actual men. Sociologists will make futile contributions to human progress unless they keep in close touch with the facts of human evolution and of human history.

Modern man is a topheavy being whose brain is disproportionately superior to his other organs either. But war is fast becoming irrational and a

This is an age of hard mental work, which brings stress on the highest and most recently developed brain centres; it was inevitable that something should snap, and something has snapped; there is a temporary reassertion of primitive human impulses. In America, reaction was taking milder forms; the automobile, the baseball diamond, the gridiron relieved the tension, particularly the dancing mania which swept over us like an obsession. Dancing is the most primitive form of reaction and tends quickly to reestablish equilibrium. In Europe, where the temper of the people lends itself less readily to lighter forms of release, the reaction has taken the form of a return to the most primitive bloodshed. Before the war, there was everywhere a great "unrest"; at the outbreak of war, a great "peace" settled down on the warring nations. In less than two months we began to hear of a new Russia, a new England, a new France, full of high aspirations and purified visions. Man who obtains temporary relief of tension through sport, seems to demand periodically a deeper plunge into the primeval; he is naturally a fighting animal. War used to be rather a matter of course; now, in the face of peace societies, the potential has to become very high before the spark is struck, and when this happens we have the ludicrous spectacle of the warring nations apologizing and explaining to an astonished world.

Probably man does not want peace and tranquillity, which are too close to ennui, his greatest dread. Professor James was dreadfully bored by a visit to Chautauqua, with ice cream soda as its utmost offering, and its "atrocious harmlessness." He knew man wanted something with more zest and adventure. Present society, however, seems to tend in outward form toward the Chautauqua plan; meanwhile passions burn inside the human units until they find the insipid life unendurable. They resort to amusement, to alcohol, to politics, to epidemics of crime, finally to war. Alcohol and tobacco relieve in an artificial way the tension upon the brain by slightly paralyzing temporarily the higher and more recently developed brain centres. The increase in the use of these drugs is therefore both an index of the tension of modern life and at the same time a means of relieving it to some extent. Were the use of these drugs suddenly checked, no student of psychology or of history could doubt that there would be an immediate increase of social irritability, tending to instability and social upheavals.

Psychology, therefore, forces upon us this conclusion. Neither war nor alcohol can be banished from the world by summary means nor direct suppressions. War is not social insanity nor is it even social criminality; it is too normal to be classed as

adventure for it must be found. As the mind of man is constituted, he will never be content to be a mere laborer, a producer, and a consumer. He loves adventure, self sacrifice, heroism, relaxation. These things must somehow be provided. There must be a system of education of our young differing widely from our present system. The new education will not look to efficiency merely and ever more efficiency, but to the production of a harmonized and balanced personality. We must cease our worship of American efficiency and German *Streberthum* and go back to Aristotle and his teaching of "the mean."

### MUSIC AND HEALTH.

The power of music to influence the health of the listener has been recognized from early times and became historical in the attempts of David to drive out Saul's distemper. We believe no one has been bold enough to ascribe any direct influence of tonal vibration upon the material of the body, but through the medium of the nervous system marvelous changes, physical and chemical, come to pass; and the effects of the art, which, above all others, plays upon the emotions, must certainly be more than trifling. Even the unmusical, those who are not especially susceptible to sweet sounds, are affected differently by a jig or a funeral march.

Attempts have been made to classify musical compositions as to their effects, and mental disturbances have been treated privately with varying success. Some hospitals for the insane make much use of music as a general means of influencing their patients and always with favorable results for the time being, if for no longer.

A National Society of Musical Therapeutics was founded last year and the name of a number of physicians appear on the list of members. A magazine for the purpose of helping along the movement to use music as a means to health has been started, and it seems as if the subject would be looked into deeply and the place of music as a therapeutic agency placed in its proper pigeon hole, for reference in suitable cases.

No matter to what extent music may restore a person to the normal, there can be no question that it may help other influences to incline the person from the normal. There are many compositions, notably among those by Chopin, which are the outcome of more or less melancholy moods, and, while they are beautiful and harmless to the healthy, when made a steady diet and source of self consolation by those suffering from depression from mental or bodily causes, their effect is undoubtedly pernicious, just as a too exclusive diet of olives or meringues would depress the general bodily condition and men-

tal atmosphere of a person so indulging a sickly appetite. The physician, knowing this tendency to make too much of morbid music, can do much to rescue his patient and restore him to health by the suggestion or command that he abandon his or her—it is usually her—present emotional exercise and adopt something equally beautiful but more robust.

One wonders what is the general influence of the present rag time craze upon the mental and physical condition of its hearers. Being in no wise serious, but, on the contrary, happy-go-lucky in mechanism and performance, it certainly cannot depress vitality and is far better in this respect than the popular melodies of a generation or two since, which were, with few exceptions, tinged with melancholy. The African jingles of the present day create an emotional atmosphere of restlessness and excitement which is typically American, and which is opposed to health only so far as our national restlessness and lack of poise tend to make us a people whose national disease is nervous exhaustion. National music is a part of national life and it would be as difficult a matter to abolish rag time as to check our tendencies to be constantly straining on the leash.

### THE EVOLUTION AND COMPLICATIONS OF EARLY SYPHILITIC PHLEBITIS.

Early syphilitic phlebitis has a silent evolution. General or functional signs are frequently absent, and the lesion is revealed only by an ensemble of physical signs, which must be sought for. The patient frequently is ignorant of the affection, continues to work without experiencing the slightest inconvenience, and, therefore, is not inclined to take to his bed. Strange to say, serious complications do not ensue.

Embolus, so much to be feared in phlegmasia alba dolens, has been observed in only one case, and there it was remarkably benign. In all the other reported cases the venous lesion has ended in a more or less complete resolution of the induration. Usually the thrombosed vein regains its functions, its calibre, and normal consistence. Occasionally a slight degree of induration of the vessels involved may remain for some time. Consequently, the prognosis is essentially good.

This progressive disappearance of early syphilitic phlebitis under the influence of mercurial treatment or by the use of 606, usually requires from fifteen days to two months. Mauriac's case is an exception to the rule, for the duration of the affection was more than six months, but it is to be noted that the subject presented a malignant lues. In Mendel's case the duration was also long and the symptoms were intense, while in Hoffmann's case the phlebitis



had not completely disappeared at the end of seven months in spite of an intense antisiphilitic treatment.

Relapses in syphilitic phlebitis have been observed in several instances. This occurred in Mendel's case already referred to, while Hoffmann's patient presented a recurrence seven months after the first attack and this recurrence of the venous lesion coincided with a return of the secondary manifestations. Dieulafoy, Campbell, and K. Marcus have also observed recurrence of the phlebitis several weeks after recovery from the process.

In the other cases of Finger, Fournier, and Loeper, Michelean, Gaucher, and Touchard, the patients did not have a recurrence properly speaking in the veins previously involved, but rather successive attacks during a process in evolution in veins which had not been involved during the first attack. These recurrences do not appear to be of serious import, as they readily give way to antisiphilitic treatment.

#### THE TREATMENT OF RIGID OS.

Dr. A. T. Brand, having read in the *British Medical Journal* of the use of tartar emetic to relax the os uteri in labor, communicates to the issue of that publication for July 17th his own method, already published in his book, *Clinical Memoranda*. Recalling that antimony may have serious as well as disagreeable effects on a parturient woman, Doctor Brand states that he applies a tampon of lint or absorbent cotton soaked in cocaine or beta eucaine, ten grains to an ounce of saturated boric acid solution. This has never failed to relax the most recalcitrant os and, in addition, by anesthetizing the mucous membrane of the vagina, it permits the fetal head to pass the outlet with a minimum of discomfort; as the author says, it acts *cito, tuto, et jucunde*.

#### RECOVERY FROM TETANUS.

Norman Scott and C. H. Barber communicate to the *Lancet* for July 24, 1915, a history of a case of tetanus cured by intracerebral injection. The patient, a Moslem, was admitted into hospital on March 2, 1915, with pronounced trismus, easily evoked prolonged spasms in the sternomastoids, deltoids, biceps, pectorals, and recti abdominales, and rigidity in both legs. He had been ill for five days. No external wound could be found. On the 3rd he was worse; the spasms were more frequent and he had some opisthotonos. Five c. c. of the Pasteur Institute antitetanic serum was injected into each cerebral hemisphere after turning down a small flap at Roux's point and drilling a hole in the skull. On shaving the scalp preparatory to operation a small scabbed wound was discovered over the left parietal bone. There were also injected five c. c. intravenously, but a little of this was split. On the 4th, serum, ten c. c., was given intravenously, and hypodermic injections of five c. c. of one in forty

carbolic acid every two hours were commenced, but were discontinued later on in the day. On the 5th, serum, ten c. c., was injected intravenously. On the 10th continued improvement was manifest. The muscles of the lower extremity were still stiff. He was discharged completely cured on the 26th and went out in his normal state of health.

The case seems to show that severe tetanus, even with a short incubation period, is not absolutely hopeless, but that energetic treatment is worth trying. The wound in this case looked about a week old or less.

#### News Items.

**Michigan State Medical Society.**—The fiftieth annual meeting of this society will be held in Grand Rapids, August 31st, September 1st and 2d, under the presidency of Dr. Reuben Peterson, of Ann Arbor.

**American Red Cross Will Continue to Send Aid to the Warring Nations.**—While in all probability the American Red Cross physicians and nurses will be withdrawn from European war hospitals on October 1st, American Red Cross funds will still be used in sending medical and surgical supplies to Europe and in aiding the Red Cross societies of the nations at war. The sanitary work in Serbia will also be continued.

**American Aid for Belgian Physicians.**—The report of the treasurer of the Committee of American Physicians for the Aid of the Belgian Profession for the week ending July 31, 1915, shows that during the week two contributions to the fund were received as follows: Washington County, Arkansas, Medical Society, Fayetteville, \$14; Dr. J. F. Pressley, of San Francisco, \$5, making a total amount of \$77,769.84. There is a balance on hand of \$459.80.

**Health Department Cleaning Up in Queens.**—Two hundred and thirty-six cases taken to court, 184 found guilty, and \$347 collected in fines, is the record of the department of health in Queens in its work of enforcing the provisions of the sanitary code during the last six months. According to the detailed figures prepared by Assistant Sanitary Superintendent Barry, the largest number of prosecutions were for violation of the health department's dog-muzzling ordinance; next in order of frequency were violations of the ordinance relating to garbage and ash receptacles. Thirty-two people were prosecuted for keeping chickens without a permit, and seventeen prosecutions were brought to abate smoke nuisances.

**Hot Weather and the City's Health.**—Figures issued by the department of health show that despite the hot weather of the past week, the death rate was 0.12 point lower than for the corresponding week of last year. This decrease in rate is equivalent to a saving of 13 lives. Compared with the previous week, there was an increase of 29 deaths caused by the greater number of diarrheal diseases under five years. As might be expected the deaths of infants under five years of age showed a rather sharp increase. The deaths of persons over sixty-five years, however, showed a very marked increase. There were 1,328 deaths in the city of New York during the past week with a corresponding rate of 11.94. The lowest rate was seen in the Borough of Richmond; the highest in the Borough of The Bronx.

**New England Alumni of Jefferson Medical College Hold Annual Meeting.**—The tenth annual meeting of the New England Association of Graduates of Jefferson Medical College, Philadelphia, was held at Rocky Point, near Providence, R. I., on July 28th. Dr. T. F. Fitzmorris, of Lewiston, Me., vice-president of the association, presided in the absence of the president, Dr. P. F. Gahan, of Medford, Mass. The secretary's report showed that the association has now nearly three hundred members. Officers were elected as follows: President, Dr. T. F. Fitzmorris, of Lewiston, Me.; vice-president, Dr. E. R. Storrs, of Hartford, Conn.; secretary, Dr. W. P. MacCallum, of Boston; treasurer, Dr. F. I. Payne, of Westerly, R. I. A committee of three was appointed to decide at which place the association will meet next year.

**Bequest to the Medical Society of South Carolina.**—In the will of Mr. John H. Simpson, late of Charleston, S. C., the Medical Society of South Carolina are directors of the Bequest. Pursuant to the bequest, the trustees bequeathed to the members of the Medical Society of South Carolina the money is to be used for the establishment of a memorial to the late Joseph Thompson, the construction of an annex to the Simpson Building is to be completed and enlarged. The trustees of the foundation is to be charged to the Joseph Thompson Foundation.

**Changes in the Medical Faculty of McGill University.**—The following appointments have been made in the medical faculty of McGill University: Assistant professor of chemistry, Dr. F. W. Skirrow; assistant professor of physiology, Dr. J. A. Gray; associate professor in pathology, Dr. Horst Oertel; assistant lecturer in physiology, Dr. T. P. Shaw; lecturers in immunology, Dr. J. C. Meakin and Dr. Fraser B. Gurd; lecturer in hygiene, Dr. R. St. J. Macdonald; lecturer in biology, Dr. F. S. Jackson, and assistant professor of physics, Dr. L. V. King.

**Ordeal by Bureaucracy.**—An account of the oppression conceived by tabloid official brains reaches us from Jacksonville, Fla. Physicians must conform to the law regarding the prescription of reduced amounts of morphine. L. L. Fronberger, special agent in the service of the internal revenue and one of the leading figures in the present war against the local "dope" fiends, requests that every local physician conform strictly to the orders of the commissioner of the internal revenue department regarding the decision in the prescribing of drugs to patients. Mr. Fronberger states that he has been somewhat lenient with physicians in this respect in the past, but now that a hospital has been secured for the treatment of the patients the decision must be lived up to. An inspection of the records of all druggists who dispense "dope" will be made in order that the conditions in general may be checked up and the law violators punished.

**Medical Society of the Missouri Valley.**—The twenty-eighth annual meeting of this society will be held in Des Moines, Iowa, September 23d and 24th, under the auspices of the Polk County Medical Society, with headquarters at the Savery Hotel. A scientific program is being prepared which is said to be of unusual interest. The oration in surgery will be delivered by Dr. John B. Murphy, of Chicago, on the evening of the first day, and on the second day Dr. George W. Crile, of Cleveland, will read a paper on Cancer of the Pylorus. Arrangements for the meeting are in the hands of a local committee composed of Dr. Robert A. Weston, Dr. Charles Ryan, Dr. Thomas Dubigg, Dr. Charles F. Howland, and Dr. Arthur Steindler. Elaborate preparations are also being made for the entertainment of the visiting doctors and their friends. The officers of the society are: President, Dr. Granville N. Ryan, of Des Moines; first vice-president, Dr. J. C. Waterman, of Burke, S. D.; second vice-president, Dr. A. E. King, of Blount, Ia.; treasurer, Dr. O. C. Gebhart, of St. Joseph, Mo.; secretary, Dr. Charles Wood Fassett, of St. Joseph, Mo.

**The Dangers of Habitually Working Overtime.**—The *British Medical Journal*, discussing the returns given by the White Paper concerning Particulars of Time Worked in Week ending April 13, 1915, among Shell Workers, states that, according to the report, nearly ten per cent. were working eleven hours a day for a seven day week. Thirty-six per cent. were working ten or more hours a day for seven days a week. The percentages in detail were as follows: Working over 80 hours a week, 94.37 per mille; over 75.80 hours a week, 86.77; over 70.75 hours a week, 177.43; over 65.70 hours a week, 130; over 60.65 hours a week, 156.27; over 53.60 hours a week, 109.96. In commenting on these figures, the *British Medical Journal* says: "The danger of impelling the best of the workmen who remain to average ten hours a day for seven days a week is obvious. . . . Physiological need for rest forbids the utilization of overtime to any advantage. The tired worker must go slow, impelled by Nature's call. The Sunday holiday is physiologically right; it is found to pay in reckoning the output of work. The man who is over driven and nervously exhausted finally breaks down, and takes weeks to recover. Overtime spent in factories badly ventilated and artificially lighted is one of the most fruitful sources of phthisis."

**New York and New England Association of Railway Surgeons.**—The twenty-fifth annual session of the New York and New England Association of Railway Surgeons, celebrating the quarter-century anniversary of the organization of the association, will be held at Hotel Astor, New York, October 21st, 1915, under the presidency of Dr. W. H. Marcy, of Buffalo, N. Y. A very interesting and attractive program has been arranged. Railway surgeons, attorneys, officials, and all members of the medical profession are cordially invited to attend. Dr. George Chaffee, corresponding secretary, 338 Forty-seventh street, Brooklyn.

**What the War Has Cost the American Red Cross Society.**—The annual report of the American Red Cross Society covering the first year of its war activities in Europe shows that since hostilities began the American Red Cross has spent \$1,400,306 for relief of suffering due to the war, leaving on hand a balance of \$174,818. Never in history, the report says, has a Red Cross organization rendered so great a service to the peoples of other countries. Every country engaged in the war is represented in the expenditure of the great fund. The personnel now in Europe totals 71 surgeons and 253 nurses, and of these all but about four surgeons and twenty-four nurses will be recalled not later than October 1st next. The financial statement covering the year's work shows the following receipts: Contributions, \$1,560,124; special for Serbian Agricultural Relief Committee, \$10,000; special for the Rockefeller Foundation for the Sanitary Commission, \$65,000; total, \$1,635,124.

The Rockefeller Foundation also contributed \$30,000 additional directly to the Commission in Serbia. The report also includes an itemized list of all the articles shipped to Europe by the American Red Cross, a list in which are hundreds of articles having to do with medicine, surgery, sanitation, and other phases of Red Cross work.

The list includes, it is stated, supplies purchased and donated, designated as well as undesignated, but does not include supplies still waiting shipment to the warehouses of the Red Cross.

**Personal.**—Dr. Charles F. Sanborn, formerly superintendent of the Cincinnati General Hospital, was recently appointed head of the new Greenpoint Hospital, in Brooklyn, N. Y.

Dr. Francis A. C. Scrimger, of Montreal, now at the front with the Army Medical Service, has had conferred upon him the Victoria Cross for heroism displayed during the battle of Ypres.

Dr. Thomas F. Harrington, of Boston, who has retired as director of hygiene of the Boston public schools to become deputy State superintendent of labor and industries, was given a farewell reception by the Boston playground association and received a mahogany clock as a testimonial.

Dr. George E. de Schweinitz, of Philadelphia, was elected president of the American Ophthalmological Society, at the annual meeting held recently in New London, Conn.

Dr. M. Allen Starr, of New York, has resigned as professor of neurology in the College of Physicians and Surgeons, Columbia University; and Dr. Frederick Tilney, of Brooklyn, has been appointed his successor.

Dr. Richard Norton, of Cambridge, Mass., founder of the American Volunteer Ambulance Corps, has been awarded the *Croix de guerre* by the French Government, for bravery in work among the wounded on the battlefield.

Nine more Canadian medical men have been gazetted temporary lieutenants in the British Army Medical Corps, namely, Dr. H. G. Coulthard, Dr. L. A. C. Patton, Dr. N. E. MacDougall, Dr. M. J. Vigneux, Dr. J. D. Adamson, Dr. W. W. Kennedy, Dr. R. Ingram, Dr. O. E. Finch and Dr. W. D. Lambert.

Dr. Richard H. Creel, of the United States Public Health Service, has definitely declined to accept the position of health commissioner of Boston, on account of ill health, and Dr. Francis X. Mahoney, for three years chairman of the board, has been appointed to the position.

Dr. William H. Welch, professor of pathology in the Johns Hopkins Medical School, sailed for China on July 17th, where he will be joined by Dr. Simon Flexner, director of laboratories of the Rockefeller Institute for Medical Research. They go on behalf of the China Medical Board of the Rockefeller Foundation to report on the medical schools and hospitals in China.

## HEMADENOLOGY: A NEW SPECIALTY.

THE INTERNAL SECRETIONS, THEIR FUNCTIONS AND BEARING ON DISEASE AND THERAPEUTICS.

BY CHARLES F. DE M. SAJOUS, M. D., LL. D., SC. D.,  
Philadelphia.

(Fourteenth Communication.)

## THE THYMUS (Continued).

In former articles of the present series, the general principles of defective development of the neurons, the manner in which—from my viewpoint—these nerve cells were nourished, and the role of the thymus, thyroid, and adrenals in the process, were all reviewed. In the preceding communication (NEW YORK MEDICAL JOURNAL, July 24, 1915) the general principles of organotherapy in their application to idiocy due to defective nutrition of cerebral cells were also outlined. The salient features were stated to be: Use of thymus to supply nucleoproteids to the myelin of the nerve cells; of thyroid to sensitize by means of its iodine in organic combination, the phosphorus of the nucleoprotein in the myelin; and lastly, adrenal or pituitary to enhance oxidation of the same element. While these various organic bodies were stated to form part of the metabolic process of the nerve cell (which includes, of course, the participation of other active bodies, ferments, etc.), they were identified as the main factors in its development. This applies only, of course, to soil possessed of neuroblasts or capable of generating these seedlings of the nerve cell. We have seen that there is good ground for my belief that many cases of idiocy—cases which could be aborted if recognized and treated sufficiently early—are of this type. Surely the soil is prepared for the growth of neurons in the young cretinic idiot, in whom thyroid gland produces development of body and mind truly marvelous to behold. Here the soil is, so to say, supplied with phosphates. Yet, through functional failure of the thyroid gland, the mobilizer, the organic agent iodine, which renders their phosphorus susceptible to oxidation, is deficient. We supply it, the seedling sprouts, the partly developed neuron throws out new tufts, and the organ of mind blooms forth. In the more common forms of idiocy, including a large proportion of our school defectives or "backward" children, the phosphates themselves are deficient; the mental plant lacks, not only its very food, through inadequate activity of the thymus, but also the element which endows the food with heat energy, phosphorus. Finally, in all, a low oxygen intake and a correspondingly low vascular tension (unless catabolic wastes predominate) points to *inability* of the human sap, the blood plasma, to take up the air of the pulmonary alveoli, owing to deficient activity, primary or secondary, of the adrenals.

These comparisons with Nature's methods elsewhere in the organic field may seem irrelevant, but this is because our ideals as medical men have kept us too closely within the precincts of the human or-

ganism for profitable analysis. Indeed, nothing in the realm of medical science illustrates more clearly the kinship between the physical attribute of the plant and those of man than the functions of the ductless glands. And nowhere in the organism is this better illustrated than in the cerebrospinal system.

We have seen, however, that a large proportion of idiots show, post mortem, lesions such as sclerosis, atrophy, softening, etc., which no longer are cultivable soils. Yet why, notwithstanding the presence of paralytic phenomena, can we obtain sometimes quite distinct mental improvement in such cases by adequate treatment? It is because the degenerated areas are seldom bilateral, the corresponding area of the other side being thus enabled, through improved nutrition and oxidation, to compensate in a measure for the shortcomings of the functionless areas. Again, can we assert that the latter are not subject to favorable change? Cattani, Klebs, and others have shown that regeneration occasionally occurred where the lesions were comparatively slight and recent. Let it be borne in mind in this connection, since it emphasizes the importance of early diagnosis and treatment, that atrophy, sclerosis, cysts, etc., are tardy lesions. Careful investigations by Parrot (1), Litzman (2), Sachs and Peterson (3), and others have shown that precisely, as we have seen, as is the case with corresponding lesions in the ductless glands, *hemorrhage is often the primary lesion* of the cerebral paralyzes of children which in most cases are associated with mental impairment varying from feeble mindedness to profound idiocy. As urged by Peterson (4), the site of the meningeal hemorrhage, which is commonly the primary lesion, is the determining factor in the establishment of the symptoms. If the Rolandic area is mainly implicated, either on one or on both sides, we have a hemiplegia or diplegia, as the result, and these paralyzes may be severe or light, according to the extent of the hemorrhage, and may be associated with idiocy or epilepsy, according also to the extent of the lesion and the degree of irritation produced.

Two important deductions impose themselves in this connection, which, duly accepted as guides, would serve to reduce considerably the development of feeble mindedness and idiocy. From the standpoint of prophylaxis, *toxemias in the mother, which, through accumulation of toxic wastes during pregnancy, provoke hemorrhagic foci in the brain and ductless glands and thereby mental impairment in the offspring, should be prevented or met by appropriate diet and treatment in a larger proportion of instances than has been the case.* This question is of special interest to the obstetrician, and should receive the benefit of his special competence. From

\*Hemadenology, *ἡμαδενολογία*, *hēma, dēno, lōgia*, *hēma*, discourse, meaning thereby (as do ophthalmology, laryngology, and other terms) simply to synthesize the aggregate of our knowledge on the ductless or blood glands.



the standpoint of treatment, we are brought to realize, in view of the fact that the lesions such as sclerosis, atrophy, etc., which, both in the brain and ductless glands, entail idiocy and paralysis in most cases, are tardy developments of these hemorrhagic lesions, that every effort should be made to recognize as early as possible the signs of mental impairment to insure, where need be, arrest of the morbid process before the final lesions, sclerosis, softening, etc., have had time to develop. This means close watching of a child during the first five years of life. Were this done, a large proportion of children could be redeemed from a life far worse in its consequences, in many instances, than death itself.

What are the signs through which these cases can be recognized? A brief enumeration of the danger signals can alone be furnished in an article; yet a few salient diagnostic points in the main disorders and the treatment indicated in each, may serve a useful purpose, beside emphasizing anew the importance of the ductless glands in the process. We shall start with the most unpromising forms.

#### AMAUROTIC FAMILY IDIOCY.

This name was given by Sachs, of New York, to a disease which was attributed to some obscure congenital defect by most authors and which was uniformly fatal. Any time between the fifth and tenth month a normal infant born at term, will more or less suddenly cease to grow physically and mentally, the physical phenomena consisting mainly in increasing weakness and blindness. The infant can no longer hold up its head, sit, or grasp; and its myasthenia soon becomes so marked that virtual paralysis is suggested. Marked pallor supervenes, owing doubtless to atony of the vascular muscles. These phenomena present some kinship with the profound myasthenia of Addison's disease, a fact which suggests failure of the adrenals and of its functional corollary, the chromaffin elements of the sympathetic system, as a feature of the morbid process. The infant also presents evidences of diminished vision: it fails increasingly to notice its mother or nurse and also objects which, before, attracted its attention. Examination of the fundus at this time reveals a picture which has been considered pathognomonic: While atrophy of the optic nerve may be more or less marked, the region of the macula lutea is dark red, and surrounded by a whitish gray or pearl halo through which the retinal vessels may be readily seen. Strabismus, nystagmus, irregularities of the pupils, and dysphagia further indicate profound involvement of the muscular system. What mental development—which may have been quite normal previously—the infant may have shown, gradually recedes, the first signs being loss of interest, the torpor in responding to things which before attracted its attention previously referred to, and indifference concerning its food.

Another suggestive feature in the pathogenesis of this disease is one commonly met in the cerebral palsies of children, viz., periodical convulsions. If the prevailing view that a toxemia underlies the disease is justified, another link with the adrenals asserts itself. In 1801, for example, Abelson and Langlois were led experimentally to conclude that

"the adrenals possess the function of neutralizing or destroying toxic substances evolved during muscular labor." Since then, the investigations of Charrin, Oppenheim, of Paris, and others, including myself, have shown that this antitoxic function is exercised in many directions and that poisons of exogenous origin, toxins, inorganic toxins, and drugs are all neutralized as well as endogenous organic poisons such as those of muscular origin identified by Langlois as "fatigue poisons." A toxin of some sort has been incriminated by practically all authors as the cause of amaurotic family idiocy, yet no one so far has identified it. Extreme adrenal insufficiency, by permitting the accumulation of certain (probably myogenic wastes) in the blood, not only corresponds clinically in many particulars with the disease in question, but it explains also, in the infant so prone to convulsions, the periodical occurrence of the latter. Convulsions under these conditions occur when the accumulation of poisons reaches a certain limit, the convulsive paroxysm being a protective reaction which brings into abnormal activity all the antitoxic functions of the body, including those exercised by the ductless glands, which, from my viewpoint, along with the digestive glands, form the foundation of the immunizing mechanism, in so far as its chemical attributes are concerned.

Yet, if the adrenals are profoundly deficient in amaurotic family idiocy, the important part I attribute to these organs in tissue oxidation, including that of all nerve cells, involves the necessity of showing that the latter undergo degenerative changes in that disease. This is a characteristic feature of its pathology. Sachs, in the three autopsies he was able to obtain out of a series of nineteen cases, noted degenerative changes in the gray matter of the whole cerebrospinal axis, including particularly the cortical cells, with chromatolysis as main histological feature.

The foregoing is not intended to urge that advanced insufficiency of the adrenals and the chromaffin system of which these organs form part, is the only pathogenic factor of amaurotic family idiocy; but it has served to bring to light the fact that all the main features of the disease correspond with those awakened when the functions of the adrenals and of the chromaffin system are profoundly inhibited.

Such being the case, the treatment indicated, as soon as the initial symptoms of the disease are detected in an infant, is one in which the use of adrenal (or better, posterior pituitary or infundibular extract, its therapeutic homologue) predominates. If the little patient is still a suckling, the remedy may be administered to the mother. To arrest the degenerative process, intramuscular injections of infundibular extract may be used; or vaporole, an imported fluid preparation, may be employed in two to three minim doses, diluted in saline solution, and injected into the muscles of the gluteal region of the infant after the skin has been carefully aseptized. To the nursing mother the full dose, fifteen minims, may be administered. Small doses of thymus and thyroid are also indicated to restore the metabolic equipoise in the nerve cells or facilitate their regeneration. The diet is an important feature in these cases. It is, in fact, possible that in some instances the ma-

ternal milk is deficient in those agents which, we have seen, are of primary importance in the development, physical and mental, of the child. When a possibility of this exists, the diet of the infant should be reinforced with fresh drawn cow's or goat's milk.

Will these measures prove more efficient than those employed so far, all of which have been found of no avail? All I can say in this connection—having never seen a case of amaurotic family idiocy in its incipency—that the measures indicated are not, as have been those so far tried, based on empiricism, our only resource before the functions of the ductless glands afforded the new line of inquiry submitted above.

By way of contrast, we shall now review a more familiar form, the stigmata of which are far more frequently met in children than is generally believed, forming, as it does, the pathological foundation, with thymic and adrenal deficiency in some instances, of many of the cases of mental torpor or "backwardness" met in our school children, viz.:

#### CRETINISM AND HYPOTHYROIDISM.

In typical cases of cretinism, the characteristic symptom, myxedematous infiltration of the tissues, seldom appears before the first year, especially in breastfed infants, owing to the fact that, as previously stated, the infant receives, through the maternal milk, sufficient thyroid secretion to compensate for the deficiency due to degeneration or lack of development of its own gland. The earlier signs in the infant are in the main deficient development, mental and physical, with, in most instances, an unusual thickness of the neck, which is rendered irregular, frequently by swellings, or pads due to localized myxedematous infiltrations. These frequently involve the supraclavicular spaces and extend sometimes to the axillæ. Gradually the whole body becomes obese, the abdomen particularly. The lips are thickened and kept apart by an enlarged infiltrated tongue which protrudes more or less, a condition which is accompanied by an almost constant flow of saliva. The lids and circumorbital tissues being also infiltrated, the eyes appear small and half closed.

As the child grows older, arrest of development becomes evident. There is marked delay in learning to speak and walk. The thickened skin becomes dry and scaly and the hair dry, coarse, and brittle. The nasal bones failing to develop, the nose remains squatty, the face assuming a type which causes all cretins to look alike, as is the case with the Mongolian type previously referred to. In severe cases, the child reminds one of an aged person, being wrinkled and yellowish. What voice there is, is husky, and both hearing and eyesight are, as a rule, defective. The thyroid gland is enlarged in severe cases, but not always in the hypothyroid type, in which it may be hardly discernible. The teeth, which may only be represented by a few sharp points, are irregular and tend to decay early.

The intelligence of the child depends upon the severity of the case. In some it is not far removed from absolute amnesia. The child fails to distinguish its parents or its nurse from an object. It neither weeps nor laughs; is absolutely apathetic,

sits quietly without manifesting any special want. It may, even when several years old, only show signs of hunger or thirst, either by crying like an infant or by grunting. In the higher grades a few words may be spoken; there is recognition of the parents and familiar faces, and some sign of affection shown for them, but beyond the acquisition of a very limited vocabulary, no progress is made. Still higher grades of cretins may show some degree of intelligence, but their mental development remains low and in some cases retrogresses with time after the tenth or twelfth year. As a rule, they are timid, childish, and not vicious.

The wonderful results of thyroid treatment in these cases have caused the thyroid gland to predominate in all classic conceptions of the disease, but we must not overlook the fact that the deficiency of thyroid secretion which diminished activity of the gland entails, deprives other ductless glands of this important hormone (which, as elsewhere, enhances their functional efficiency by sensitizing the phosphorus of their cellular nuclei) and inhibits their activity. Thus, both the adrenals and the thymus show by clear stigmata that they are more or less involved in the morbid process.

While the thyroid secretion renders the tissues "inflammable," as Hutchison defined it, it does not carry on oxidation; it only paves the way, as it were, for this process. This is, as I have urged, the role of the adrenals. Indeed, these organs show distinct post mortem evidences of compensative effort through hyperplasia, precisely as a deficient thyroid hypertrophies to sustain compensative effort. Yet, the adrenals fail even then; for we note in the cretin subnormal temperature, cold extremities, marked sensitiveness to cold, marked diminution of the nitrogen output, atony of the heart and bloodvessels—all adrenal stigmata.

The thymus is no less implicated. Thus, we may administer thyroid and obtain mental and physical improvement. But in many cases the osseous system fails; the thickened articulations grow worse, and the child becomes distinctly bowlegged. This recalls the various thymic stigmata we have reviewed when the physiological attributes of the thymus were studied, all of which are plainly discernible in the cretin. Hence, the defective development of the osseous system, the saddleback nose, the stunted growth, the tardy closure of the fontanelles, the lordosis, and the distortion of the limbs, which give the cretin his wobbly gait.

Does thyroid gland give us the best results attainable in the treatment of these cases? In our next communication we shall see that such is not the case.

#### REFERENCES.

1. PARROT: *Campes des Nervs*, 1880, p. 27. 2. LITZ-MANN: *Archiv für Gynäkologie*, xvi, 1880. 3. SACHS and PETERSON: *Journal of Nervous and Mental Disease*, May, 1900. 4. PETERSON: *Id.*, 1902, 1904, 1907.

(To be continued.)

**Treatment of Infantile Scurvy.**—Hess and Fish, in the *American Journal of Diseases of Children* for December, 1914, report a study of the cause and treatment of infantile scurvy. Weakness of the bloodvessels, which ruptured under a relatively slight increase in pressure, is mentioned as the chief etiological factor.

## Pith of Current Literature.

### BULLETIN DE L'ACADEMIE DE MEDECINE

**Arterial Constriction and Varices Complicating Nerve Wounds in the Upper Extremity**, by O. Jannet. Arterial insufficiency sometimes accompanies wounds of the radial and ulnar nerves; successful operative treatment of the arterial condition is possible even after an interval of some months. In a case of thick cicatricial deposit round the ulnar nerve after a shell wound six months before, dissection of the nerve was followed by return of pulsation in the constricted ulnar artery for a distance of eight cm., showing that, in spite of the cessation of blood flow in the artery for some months, no disorganization of the vessel walls had taken place. Very often in similar cases the artery showed a series of varicosities, of varying size; this condition was met with in eight out of about a hundred cases operated in for nerve wounds. Disturbances of the sympathetic nerve supply, manifested by a purple color of the skin of the hand, with profuse local sweating and massive desquamation, were also seen at times. In a recent case, with absence of radial pulsation on the affected side, liberation of the axillary artery after an eight months' interval was followed by a partial return of the distal pulse. These results demonstrate the possibility, in some cases of hemorrhage, of avoiding an unnecessarily high ligation of a large arterial trunk by placing a provisional loose ligation of coarse catgut around the main trunk, next making a careful search for the precise point of bleeding, and finally restoring function to the main trunk by removal of the provisional ligation.

### PRESSE MEDICALE.

**Gonorrheal Orchitis Following Traumatism of the Testicles**, by Gaucher, Bizard, and Delcamp.—Two cases are reported illustrating the fact that gonorrheal orchitis may be excited by injury to the testicles even where apparent recovery had taken place from urethritis contracted years before. The patients were soldiers, and in each instance the injury had been caused by a fragment of shell. The orchitis was subacute, and effusion in the tunica vaginalis a persistent feature.

**Myxedema and Leprosy**, by Jérusalemly.—The case is reported of a young Chinaman whose parents had leprosy and who presented various stigmata of myxedema, with distinct atrophy of the thyroid. There were no evidences of leprosy in the patient save hyperemia of the mucous membrane of the middle turbinates. Examination of the nasal mucus, however, revealed leprosy bacilli. Thyroid medication seemed to aggravate the symptoms—especially general malaise and joint pains—but under Chaulmoogra oil and eucalyptol distinct improvement took place. The case is looked upon as one of myxedema occurring as a dystrophic disturbance due to leprosy infection.

**Destruction of Lice in Epidemics of Typhus Fever**, by C. G. Delta.—Where a hot bath to all the exposed was impracticable, general washing of

the body with strong Cologne water of inferior quality was found far more effectual in controlling typhus epidemics than simple washing of the body with hot water and soap. Experiments in test tubes showed that lice are very sensitive to the action of odorous alcoholic fluids.

### JOURNAL D'UROLOGIE.

June, 1915.

**Stricture of the Ureters**, by E. Jeanbrau.—The author describes both congenital and acquired stricture of the ureter. When there is no infection the symptoms are precisely those of intermittent hydronephrosis, with kinking of the ureter; the only difference being that the portion of the ureter above the stricture becomes dilated, while in hydronephrosis the pelvis of the kidney is dilated. In the former the pain is felt a little lower down than in hydronephrosis. The onset of pain almost immediately after much drinking is a marked feature. The kidney may become distended and atrophied; if infected, nephrectomy is the operation of election. In earlier non-infected cases, gradual dilatation with the ureteral catheter, or cutting the stenosis is indicated. If the stricture is near the kidney pelvis or bladder, it is usually best to cut the ureter and implant it in the kidney pelvis or bladder.

### RIFORMA MEDICA.

July 10, 1915.

**Hypertrophic Cervical Pachymeningitis**, by S. Rizzardo.—This special form of meningitis first described by Charcot and Joffroy in 1869 is still considered by some to be really a syringomyelia, with accompanying meningitis. It is distinguished from Pott's disease by the absence of cold abscesses, of tenderness on pressure over vertebrae, by the negative skiagraphic findings and cerebrospinal fluid examination. The etiology and exact nature of the disease are still obscure. In the case described, trauma seemed to play an important part; the von Pirquet and Wassermann tests were negative.

**Artificial Pneumothorax**, by G. Cicconardi.—Indications for this procedure are unilateral localization, advanced cavitation, and rapid progress of the tuberculous disease. It is especially obligatory and urgent as a means of rapidly checking hemoptysis. By pulmonary compression it prevents aspiration and ingestion of infective material and lessens the chance of circulatory and lymphatic reinfection. Contraindications are extensive pleuritic adhesions, presence of tuberculosis elsewhere, especially in the intestinal tract and serious morbid conditions of the heart and circulatory system. Two to three per cent. of cases of pulmonary tuberculosis are amenable to this procedure. The unilateral nature of the disease should be made certain by all possible diagnostic means, especially x ray examination.

### REVISTA DE MEDICINA Y CIRUGIA PRACTICAS.

July 10, 1915.

**Psychic Disturbances in Cardiac Insufficiency**, by Santa Maria y Marron.—These are quite marked in the terminal stage of cardiac disease, with periods of hallucinatory delirium with fear of enemies, fire,



and drowning. There are frequently seen suicidal attempts and failure to recognize even the closest friends. These disturbances seem to be clearly of a toxic nature and largely due to attacks of asystole with ischemia of the cerebral cells. The best sedative is morphine, as it is most efficacious and acts as a marked tonic to the heart and vessels, strengthening the cardiac systole and diminishing the number of heart beats. Small doses of digitalis or digitalin at short intervals are of service, while caffeine is of great value both by its diuretic and heart tonic action. Recent experience seems to show that pituitrin is a valuable addition to therapeutics in such cases.

#### SEMANA MEDICA.

June 3, 1915.

**Inversion of Radial and Patellar Reflexes**, by F. U. Maglione.—Inversion of the patellar reflex just noted by Déjerine and Jumentie in a case of tabes consists in a contraction of the flexor muscles of the thigh with consequent flexion of the leg on the thigh. It has also been seen in anterior poliomyelitis and was noted in the present instance in a case of myelitis in the dorsal and lumbar regions. There was also observed an inversion of the radial reflex in a case of traumatic myelitis in the fifth and sixth cervical segments.

June 10, 1915.

**Extraction of Foreign Bodies from the Esophagus**, by E. Ferreyra.—The only apparatus required is a urethral sound, a strand of silk and a mouth gag. After inserting the mouth gag, the sound is lubricated and passed into the esophagus several times, withdrawn and the silk wound around it. It is then reintroduced and gentle to and fro movement causes the silk to detach the foreign body and withdraw it. The extreme simplicity of the method is its chief recommendation.

**Therapeutic Action and Indications of Cumarin**, by A. Soldano.—This is a newly discovered active principle of apocynum which thorough experimentation shows to be a rapidly acting cardiac stimulant, best given intravenously. It produces no gastric disturbance when given by mouth, and it acts on the cardiac centres, the vasomotor system, and the heart muscle. It is also a true diuretic with a selective action on the renal cells.

**Cystic Transformation of a Strangulated Epiplocele**, by U. R. Moreno.—A reducible epiploic hernia in a boy aged nine years became strangulated and transformed into a cystic mass. This strangulation occurred without any pain or disturbance either local or systemic.

#### BRITISH MEDICAL JOURNAL.

June 7, 1915.

**Diagnosis, Prognosis, and Treatment of Nerve and Muscle Injuries Resulting from Gunshot Wounds**, by Francis Herniman Johnson.—In the diagnosis and prognosis of such injuries the Lewis Jones condenser apparatus was found of especial value. By this apparatus it is possible to secure currents of great constancy in strength and rate of interruption so that much more delicate differentia-

tion between normal and abnormal nerve and muscular reactions is possible. It is quite possible by means of this apparatus to determine with considerable accuracy those cases which will certainly require surgical interference and those which will almost as surely end in recovery without surgical treatment of an operative type. The apparatus has a further extensive and fruitful field of usefulness in the treatment of injuries of these types, for by this means it is possible to determine just the amount of electrical contraction which will tire a given muscle and then to administer a measured proportion of this amount daily until the muscular capacity has increased. This form of treatment, combined with massage and the partial fixation of the injured part in a position of relaxation of the uninjured muscles so as to avoid contracture, has proved of material assistance in hastening recovery. The significance of the various reactions and the details of the use of the apparatus are set forth in the original at some length. In addition to the use of mechanical measures and electricity in the treatment of these conditions, the author has found that the frequent application of a very hot bath to the affected extremity, or the use of diathermy prior to massage or electrical exercise gives particularly favorable results.

**The Elastic Tissue Enigma**, by William Ewart.—The mystery of the elastic tissue seems to be its normal endurance which would almost seem a function of its mechanical exercise. It seems to be capable of a patchy sort of regeneration, but once seriously damaged, it is very rapidly disposed of by phagocytosis. We know nothing of the nutritional processes which take place in elastic tissue, but there is evidence that its viability and function are independent of direct innervation and are largely dependent upon little understood motile and hygro-metric factors. The preserved lung specimens of Roosevelt are cited in support of this contention. While elastic tissue was thus shown to be most remarkably durable in the preserved state and to retain its function almost perfectly in this state for long periods of time, it is yet one of the tissues of the body which is most easily destroyed by overuse or disuse, as in obesity and in emphysema. All that we know about the elastic tissue is that it is the last of our tissues to die and it is that which restores our normal lineaments after muscular rigidity has passed.

#### LANCET.

June 7, 1915.

**Breast Feeding**, by Harold K. Waller.—Waller holds that it is the lack of accurate knowledge of lactation which has given bottle feeding its main impetus. The chapter on the physiology of lactation holds nothing of value to the physician, for, although the milk has been analyzed, our knowledge of the functional behavior of the breast has advanced but little. Unless the periodical character of the flow of the milk is taken into account efforts to control it will usually result in failure. It is entirely wrong to believe that lactation is an unreliable function and a very variable one. The reputed failure of the breasts to supply enough milk for the nutrition of the child after the first few weeks is

also an exceedingly rare occurrence in fact and the common failure of lactation at this time is due entirely to extraneous causes. The first cause of this type of failure is the neglect of the periodical character of the secretion of milk. If there has been regular stimulation by suckling with sufficient intervals of rest the mother will become aware of a sensation variously described as a rushing, tearing, or painful stabbing in the breasts known as the draught, which is felt as soon as the child's mouth is applied to the nipple, or even before. The breasts can be seen to swell and become full at this time in some women and milk often runs spontaneously from the nipples. The maintenance of this draught throughout lactation is probably one of the surest signs that the breast feeding has been normal, and infants so fed almost always progress well. The opposite is also true—when the draught is not felt after the child has been on the breast for three or four weeks suspicion should be aroused regarding the satisfactory nature of the nursing regime. The commonest evil is the too frequent feeding of the infant and this is the cause of early weaning in an enormous number of cases. Where the draught has been well established and has yet disappeared after a few weeks of a given regime, the proper measure is to lengthen the interval between feeds rather than to blame the milk or the function of the breasts. Actual weighing experiments have shown that with the longer intervals the child gets a considerably larger amount of milk per diem than with the frequent nursing so commonly advised. Not only so, but the mother is spared many feeds and gets unbroken sleep and the child is given time to digest his food and also to sleep for long periods. These weighings have also shown that the post mortem measurements of the infant's stomach give no evidence as to the proper size of his meals and it is probable that a considerable portion of his milk passes rapidly into the intestine through canalization of the stomach. A child can take seven ounces of milk from the breasts at one feeding as early as the twenty-first day without suffering harm.

#### PRACTITIONER.

**Correct Life History of Fistula in ano**, by Ivor Back.—Back believes that not more than five per cent. of all cases of fistula in ano are due to tuberculosis, and that the etiology of the remaining ninety-five per cent. is not that given in many textbooks. He has come across but one example of a fistula caused by the passage of a fish bone through the bowel wall, and thinks that in almost all cases an anal papilla situated between the two sphincters is torn by the passage of a constipated movement. If it is torn away completely with a strip of mucous membrane, a fissure is produced, but if it is only detached at its base an inadequately drained opening is formed, which becomes infected with a resultant suppuration and formation of a sinus. He is convinced that this is the starting point of ninety-nine out of every hundred fistulae. The internal opening is always above the external sphincter, and may be above the internal. The paper is well illustrated by diagrams.

**Paralysis of the Diaphragm, Probably Post-diphtheritic**, by Walker Downie.—A woman had some affection of the throat, probably diphtheria, manifested symptoms of paresis of the palate four or five weeks later, followed by symptoms that pointed to an extension of the paresis to the muscles of the pharynx and larynx. Still later the diaphragm became paralyzed and respiration was wholly thoracic. With the involvement of the nerve supply of the larynx and the consequent abolition of sensation and movement, food gained entrance into the air passages without exciting cough, and when the diaphragm became paralyzed neither the insufflated food nor the secretions could be expelled, and numerous abscesses formed in both lungs.

#### JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

**Influence of Age and Sex on Hemoglobin**, by C. S. Williamson.—This is a report presenting a spectrophotometric analysis of 919 cases. The hemoglobin value is greatest at birth. The decline begins at once and is very rapid until the fifth month, from which time it is slowly progressive until one year, when the minimum is reached. This decline is quite independent of nutrition, and it is not a question of artificial feeding, since in the great majority of cases studied, especially up to the sixth month, the infants were breastfed. There is a fairly rapid rise up to the sixteenth year, and from then onward the variations in the different periods are relatively small. It is found that in the period from sixteen to twenty the values have practically attained the maximum, and from this time to middle age the curve is nearly horizontal. The very highest point is reached in the fifty-one to fifty-five year period, but the variation in this period from the other adult ages is insignificant. From the fifty-fifth year onward the values decline, though it is noteworthy that in the case of males there is a slight rise from seventy-six onward. As to the influence of sex, it is found that at birth, and up to the fifteenth year, the values are almost precisely the same for both sexes. From the sixteenth year the difference is distinctly seen. From sixteen to sixty years, inclusive, the females average more than the males. Beyond seventy-one years the values for the sexes so approximate as to be practically identical.

**Abortive Treatment of Typhoid Fever by Sensitized Typhoid Vaccine Sediment**, by F. P. Gay.—Although Gay and Claypole had in mind before the publications of Kraus and of Ichikawa the treatment of patients by means of the killed, sensitized typhoid vaccine sediment they had developed for prophylactic immunization, it is only recently that the opportunity has been afforded of applying this. In seventeen out of twenty-two cases of typhoid in which the diagnosis was verified by blood culture and the Widal reaction, it has been possible to carry out the treatment exactly as intended, and in this small number, an abortive cure was produced in eight patients, or forty-seven per cent., following either a single or two or three intravenous injections. In these cases the average time at which the temperature permanently reached normal, and the patient was symptomatically well, was the nineteenth

day. In two of the nine cases not abruptly cured the Widal reaction was negative in a dilution of one in ten, and remained so, and in none of these cases did it exceed a dilution of one in eighty. This suggests, at least, that the cure is due to the cooperation of hyperleucocytosis and the presence of substances antagonistic to the typhoid bacilli in the serum.

**Acute Yellow Atrophy of the Liver in a Child of Four Years**, by W. H. Mayer.—Rolleston has reported twenty-two cases of this disease in children under ten years of age. This case is unusual, however, on account of its extreme rapidity after the first acute symptoms, death occurring in thirty-six hours. This also serves to explain the findings of the pathologists, who reported that the degeneration was only partial in certain areas. The urinary findings early in the disease were not unusual, and, except for the entire absence of gastrointestinal symptoms, there was nothing to alter the diagnosis of catarrhal jaundice, for which the child had been treated for about three weeks. In the last twenty-four hours, however, the diagnosis was evident.

#### MEDICAL RECORD

*Continued from p. 317.*

**Angina pectoris**, by Richard Stein.—Stein's conception of this affection is that it is a syndrome or clinical complex made up of pectoral and extrapectoral symptoms, subjective and objective. These symptoms are the expression of disturbances in the nervous system, and they are called forth by irritations of various kinds, which act directly or by reflex upon the nervous complexes—peripheral, regional, and central—of the sensory, motor, and vasomotor apparatus of the cardiovascular system. The heart is directly or indirectly implicated, and will, in the last instance, determine the outcome. A degenerated heart, a heart with degenerated coronaries, will react in proportion to the amount of reserve force it is able to exert; if the reserve force is small, death follows from cardiac insufficiency, either directly by syncope or more gradually by decompensation, cardiac asthma, hypostasis, pulmonary edema. On the other hand, angina pectoris may originate in, be transmitted to, disfunction, play itself out in the nervous system, and kill by vagus inhibition, or paralysis of the nerve centres. To his mind, the essential element in angina pectoris, as in all anginas, lies in the irritation of the nervous system; there is no reason why we should not consider it, first and last, as a disturbance of neural values. There is no organ richer in nerve fibres than the heart. It contains sensory nervous filaments, and a cardiac angina, in the true sense, is therefore not only possible, but probable. The cardiovascular system is under the direct control, from within and from without, of the vasomotor system, and the latter reacts upon the sympathetic directly, as well as by reflex, and vice versa. Abdominal and cerebral anginas originate in the same way. The heart itself, though it is the most important link in the chain of the mechanism of angina pectoris, is primarily not essential in the causation of the attack.

**Internal Therapeutics of Radium**, by Samuel Delano.—A large number of cases are presented, and it is stated that one important particular distin-

guishes this series from previous ones, namely, the mode of exhibiting the radium—radium emanation. Radium emanation may be introduced in several ways, as by injection, by inhalation, by bath, and in solution by drinking; but rarely, however, has it been given conjointly with its source, radium, because this yoking up has not until now been generally available. Among the cases reported are instances of gout, rheumatism, acute and chronic, rheumatoid arthritis, arthritis, neuritis, and neuralgia, and also nephritis and metabolism cases. As to what radium emanation can do, as revealed in this series, Delano finds that, first, it is a diuretic. This appears to be the most constant single effect of radium being observed in perhaps seven out of ten cases. It would not seem to be ascribable to direct action on the kidney, because radium is not excreted to any extent by the kidney; but rather to general influences, such as systemic effects or changes in the constitution of the urine. 2. It is a laxative—not so often as it is diuretic, but in a good proportion of cases. This does not mean that it procures loose movements, but only what seems ascribable to quickened peristalsis. 3. It is tonic and stimulant. It is remarkable with what consistency one may predict that radium will make a patient look and feel better. It is indisputable that as a direct hematinic it will stimulate a pronounced increase of red blood cells and hemoglobin; so that cases of pernicious anemia lose their perniciousness (if we may not speak of cure). The direct effect on the blood, however, is not all, for there appears to be an independent stimulant action. 4. Metabolism and nutrition. While the physiological action of radium may not as yet have been as thoroughly studied as it probably will be, there is not much dispute as to its increasing the nitrogenous metabolism. It is stimulating to the innumerable ferments of the body: as supplying a goad, so to speak, to the vital processes. A corollary to this would be that it ought to be an equalizer, tending to restore the balance of forces. 5. External and topical. Even a weak solution (two micrograms to two ounces) is anodyne. It instantly relieves toothache, and, held in the mouth for a few minutes, a small quantity of such a solution will produce, after some hours, softening of the mucous membrane, swelling and blanching of the lip, and viscosity of the pharyngeal mucus. In a metropolitan surgical clinic all pus cases have been treated with the solution mentioned, and the control of the radium over the process has been surprising. Chronic empyema of the accessory sinuses (cures of which by radium internally have been reported) has been treated in two instances.

**Diagnostic Sign in Inflammatory Conditions and Traumatism in and about the Liver**, by M. R. Bookman.—In the round ligament of the liver we have a natural tractor; an operation in the upper abdomen, and traction on the ligament cause some motion and displacement of the liver bulk; so that in the presence of any inflammatory or traumatic conditions in this region this will cause pain at the seat of trouble. To elicit this sign the patient's shoulders should be elevated, to relax the recti muscles. The examiner standing on the patient's right, his right index finger is hooked in the umbilicus and



a slight gentle traction forces it downward in the direction of the pulps. Should the umbilicus be too shallow for this, the finger may be reinforced by a damp cloth or a strip of adhesive plaster with the adhesive surface outward. By this maneuver the round ligament is put on the stretch, which causes some traction on the liver and slightly rotates it downward and forward. It is easy of application, and at the bedside it may serve in many cases to accentuate correlated signs and symptoms.

#### ARCHIVES OF RADIOLOGY AND ELECTROTHERAPY

**Some Injuries Caused by Bullets**, by George A. Pirie.—A bullet entered the elbow, broad end first, doing very little damage, and leaving a useful arm after removal. In another case, the bullet came to rest behind the tonsil very near the pharynx, which was also only slightly injured. When a bullet hits a bone, the results are most disastrous. One bullet alone caused a fracture of the tibia in two places, the lower fracture being comminuted; also a fracture of the fibula in two places, the total damage being represented by three simple fractures and one compound and comminuted fracture.

**Sabouraud Pastille and X Ray Filters**, by Agnes F. Savill.—A series of observations on the changes of the pastille with different forms of filters, different thicknesses of filter, and different penetration readings of the tubes used during the experiments were made. Two pastilles were used, one on top and one below the filter. It was found that 0.4 mm. aluminum retards about one fourth, while three mm. retards less in proportion, only three fifths to one half. When chemical methods of measurement were employed different results were obtained; 0.5 mm. allowed the passage of fifty-five per cent., three mm. allowed passage to only fourteen per cent. of the rays. The penetration differed little when soft or hard tubes were used. Twelve layers of felt were equivalent to four layers of sodium tungstate lint, and if the lint was heavily impregnated, two layers would give the same retardation. Plain lint formed a very slight barrier to the passage of the rays.

**Radiography of the Maxillary Antrum**, by N. S. Finzi and G. Secombe Hett.—In examining the antrum an unduly prolonged screen examination may cause epilation. A distance of the anticathode of twenty inches from the nearest point on the scalp is a suitable one, this being about twenty-eight inches from the plate in an anteroposterior view. The most important view is the anterior, in which the plate is placed against the anterior surface of the head. The oblique view is of importance because it shows the associated teeth. Working with a bismuth filled antrum in a skull, it was found that the best angle for the examination of the antrum was obtained when the normal incident ray passed parallel to the skull and about one and a half inch below it. Normally the antrum is full of air and when this is replaced by liquid or solid matter the antrum appears darker. Thickening of the bony wall of the antrum produces marked opacity, and for this reason the antrum after a radical operation always appears opaque. In themselves, radiographs

are not sufficient to make a diagnosis. The patient's history and symptoms must be taken into account, anterior and posterior rhinoscopy should be performed, and the antrum should be transilluminated. The symptoms and physical signs associated with disease of the antrum are: Pain over the antrum, tenderness, swelling of the cheek, unilateral discharge (in unilateral cases), an unpleasant smell (which is experienced by the patient), chronic post-nasal catarrh, unilateral nasal obstruction, a streak of pus seen under the middle turbinate, polypi in nose (due to coexisting ethmoid disease), pus or mucus on puncture, syringe blocked on washing out, suggesting polypi, and pus seen in the middle or inferior meatus on posterior rhinoscopy.

#### AMERICAN JOURNAL OF OBSTETRICS AND DISEASES OF WOMEN AND CHILDREN.

July, 1945.

**Pubiotomy and the Course of Subsequent Labors**, by Williams.—As a result of his experience, Williams has become more conservative in employing pubiotomy, believing that it should be done mainly in young women with funnel pelvis. It is also restricted to patients presenting moderate degrees of contraction, the smallest pelvis having a true conjugate of seven, cm. In more than one third of the cases, pubiotomy resulted in a sufficient enlargement of the pelvis to permit subsequent spontaneous labor. As it has been found that a fibrous union after the operation is more satisfactory than a bony one, the pelvis is no longer immobilized. Convalescence is somewhat prolonged, but in the course of a few months the patient is able to walk and work as well as ever, although motility remains. Incidentally, Williams speaks strongly against the induction of premature labor in cases of contracted pelvis, as he believes that with proper training this method can be abandoned.

**Röntgenotherapy in Uterine Fibroids and Uterine Hemorrhage**, by Pfahler.—Pfahler has treated with the Röntgen ray forty-six nonmalignant cases. He finds that deep x ray therapy stops the hemorrhage associated with uterine fibroids and that this is accompanied by a gradual disappearance of the tumor. This atrophic process may extend over several years and continue long after the end of treatment.

**The Etherometer: A Means of Mechanical Anesthesia**, by Montgomery.—In construction and mechanical principle the etherometer is similar to the Vichy siphon. It consists of an airtight graduated glass container having a top arranged with two valves. One valve is an inlet valve for air, similar to the valve in an automobile tire, which permits air to enter but none to escape. The other valve is an outlet valve to control the flow of anesthetic forced out by the air pressure. This valve is so adjusted that the number of drops a minute discharged from the container may be accurately controlled. The air pressure is obtained by means of a small rubber hand bulb. The anesthetic is discharged through a long flexible tube to the face mask, where it is diffused upon the gauze by means of multiperforated tubes arranged in the mask. The rate of flow is observed through a glass sight feed on the cap of the bottle.

## Proceedings of Societies.

### AMERICAN ASSOCIATION OF IMMUNOLOGISTS.

*Second Annual Meeting, Held at Washington, D. C.,  
May 10, 1915.*

The President, Dr. GERALD B. WEBB, of Colorado Springs,  
in the Chair.

(Continued from page 268.)

**Blood Counts in Relation to Vaccine Therapy. Autoinoculation in Mouth Infections.**—Dr. JOSEPH HEAD, of Philadelphia, during the past year, as in previous years, found vaccine to be of great value in the treatment of mouth infections, but vaccine treatment without effective surgical treatment could be of little service. He had found blood counts of value in the use of vaccines in that they had taught him to be more moderate in the doses, for it was found that patients responded at least as well, if not better, than when the doses were pushed to the point of getting marked reaction. He might cite a number of cases in which unquestionable injury might have resulted from excessive doses with vaccines had it not been for the blood counts. Lymphocytosis did not seem to be as much of a factor as he thought last year. The results which he wished to present had been greatly hampered by the difficulty of finding individuals with a normal leucocyte count. With reference to ameba he would say that he had used emetine, one third of a grain, administered hypodermically in the arm or back, for ten successive days during the treatment and felt that as an adjunct it was of great help to the vaccine treatment of mouth infections. However, they had had remarkably good results in cases in which the vaccines were used without emetine. As a real specific for pyorrhea, he felt as though as he had one as effective as the typhoid vaccine for the prevention of typhoid fever. This was the autoinoculation produced by the scientific use of the floss silk and tooth brush. The usual methods of brushing the teeth were palpably defective. The brushes in common use were improperly constructed. They should be smaller and the bristles shorter if the real bristle friction was to be obtained.

An error was the impression that brushing the gums caused them to recede; they should be brushed vigorously. An effective method of cleansing the teeth was that first the spaces between the teeth should be swept with dental floss so that all bacterial masses would be removed from the sides of the teeth and gums. This would at first cause bleeding and make the interdental spaces sore. If the infection had not spread beneath the gums beyond the reach of the floss silk, autoinoculation would soon cause a healing little short of miraculous. After using the floss the short flat bristled brush should be used.

Dr. C. C. BASS, Tulane University, New Orleans, had been interested in the subject of pyorrhea alveolaris for many months and the more he studied this disease, the deeper he got. He was now studying the pathology and later intended to take up the

study of the bacteriology, the protozoology, and the treatment. So far the information he had obtained was simply appalling in showing the great prevalence of this disease. The diagnosis made by the dentist was no better than the one made by him. The average dentist made a diagnosis of pyorrhea alveolaris when he was able to squeeze pus from the gums or a pocket around a tooth. The speaker believed this condition could not be cured by the giving of medicines alone; there must be surgical interference. They had seen about 500 cases and had made microscopical examinations; they believed that with proper technic many cases could be properly diagnosed; in this number they had found but two adults in whom they were unable to demonstrate pus and *Endameba buccalis*. Further work on this subject remained for the future. *Endameba buccalis* was the essential cause of the disease. The endameba did not attack normal tissues. The evidence was strong that it was first necessary to have a damaged tissue, one that was particularly susceptible to infection, before the endameba could infect. The endameba lived, grew, and reproduced in the peridental membrane of the human being, and probably in that of other animals. This was their normal habitat. They fed upon certain cells, such as were found in some suppurative foci. The kind of cells they feed upon were much more numerous in suppurations next to bone tissue. They were continually crawling around and hunting for food and were in communication with the bacterial flora contained in the mouth. He did not believe in any treatment that did not take into consideration the role played by the endameba; he was greatly surprised at the duration of the disease. He did not think that more than five per cent. escaped this infection before they had grown up. Many people lost their teeth before the age of thirty years and the molars were the first to be affected. This was a slow sloughing process of from five to thirty and even forty years, and much depended upon the flora contained in the mouth. If they lived long enough, all of them would lose their teeth from this disease.

**The Production of Immunity to Tuberculosis.**—Dr. GERALD B. WEBB and Dr. BURTON GILBERT, of Colorado Springs, had previously shown that a thick emulsion of blood platelets added to a lethal dose of tubercle bacilli appeared to modify the course of the infection or to prevent it. However, this did not furnish a practical and safe method of inoculating living virulent bacilli for the purpose of immunization. It seemed to them desirable, in view of the importance attached to the lymphocyte in Nature's battle against tuberculosis, to determine whether an emulsion of lymphocytes added to a lethal dose of tubercle bacilli, could influence or prevent infection. The lymphocytes were obtained by injecting four c. c. of sterile Ringer's solution into the peritoneal cavity of guineapigs, and about ten minutes later withdrawing some of the fluid by means of capillary pipettes and immediately mixing with a definite number of bacilli obtained by the Barber method. After incubating for twenty minutes, this mixture was inoculated subcutaneously in the nipple area of the adult guineapigs. Samples of the fluid obtained from the injected guineapigs when strained showed a practically pure emulsion of

**Lymphocytes.** Both normal and tuberculous guinea-pigs were used for obtaining the leucocytes in different experiments without appreciable difference in the results. In this series of five experiments, an uniform and constant action by the lymphocyte emulsion so far as actually preventing infection could be detected nor indeed any uniform modification of the course of the disease.

**Direct Treatment of Cerebrospinal Syphilis According to Swift and Ellis.**—Dr. CLYDE L. CUMMER and Dr. RICHARD DEXTER, of Cleveland, had noted certain criticisms of this method, one being its danger. A search of the literature showed that the reported deaths had been among paretics, and no fatalities had occurred after the treatment of tabetics. Another criticism was that arsenic had access to the spinal fluid when present in the blood stream, and therefore its direct introduction into the arachnoid space was needless. This point was at least open to argument; since Camp stated that he had been unable to discover arsenic in the subarachnoid fluid after salvarsan had been administered intravenously. In addition to two preliminary cases they had treated eight cases of definite *tabes dorsalis* or syphilitic meningo-arteritis. They had followed rigidly the Swift Ellis method. Their cases were divided into three classes according to whether they showed decided clinical improvement, moderate or slight improvement, or had been under observation so short a time that it was unfair to draw conclusions. To the first group belonged four of the patients, one having cerebrospinal syphilis, and three moderately advanced *tabes dorsalis*. Two cases belonged to the second group, one of moderately advanced *tabes*, and one of advanced *tabes*. Two cases had been under treatment too short a time to warrant any conclusions. In all they had given forty-eight intraspinal injections of serum, and seven treatments of a similar nature not reported in detail. They had had no untoward or unfortunate results in any instances. With all the patients but two sharp reactions followed the intraspinal injections. When any form of crisis or lancing pain had been present, the reaction had usually taken the form of an exacerbation. The greatest improvement usually followed the severest reactions. Study of the laboratory findings showed that lymphocytosis disappeared quite promptly after one or two injections. The globulin test was usually slower to disappear. The Wassermann reaction, in their experience, was the most obdurate. Practically the only changes in the physical condition which they had been able to detect were restoration of sensation, when this had been impaired, increase in muscular strength, and a diminution in ataxia. In no instance did pupillary reactions return to normal, neither had deep reflexes disappeared. The greatest improvement was in symptoms. The striking feature was the disappearance of the lancing pains and the improvement in general condition. They might state fairly that the Swift Ellis method was safe when the original technique was employed painstakingly. This treatment was a valuable adjuvant in the treatment of syphilitic diseases of the central nervous system, as alleged by the originators. It was a method that was not necessary in all cases, but applied carefully and

controlled intelligently, it would bring about a definite amelioration in laboratory signs and in symptoms in cases in which the accepted forms of treatment had failed.

**Laboratory Methods in the Examination of Cerebrospinal Fluid.**—Dr. RICHARD DEXTER and Dr. CLYDE L. CUMMER, of Cleveland, had examined a number of spinal fluids by means of the Wassermann reaction cell count, globulin content, and more recently by the Lange colloidal gold reaction. The number of fluids examined were considerable, embracing 177 from cases of indubitable lues of the central nervous system, and 132 spinal fluids in which lues was either nonexistent or nonactive. It might be said that the use of amounts of spinal fluid up to ten times the amount of the Wassermann test dose would increase the number of positive Wassermann reactions in syphilitic disease of the nervous system. The use of such large amounts of spinal fluid did not tend to nonspecific binding in nonlucetic cases. The use of double or maximum dose in the control tube rarely tended to anticomplementary action. The Lange colloidal gold reaction in the spinal fluid seemed to be present in cases of syphilitic involvement of the central nervous system more frequently than a positive Wassermann reaction, an increased cell count, or an increased globulin content. The colloidal gold test was constant in paresis, and the "typical curve" was also very constant. While string reactions occurred in *tabes* and cerebrospinal syphilis, they had rarely seen the typical curve described for those conditions.

Dr. WILLIAM EGBERT ROBERTSON, of Philadelphia, had reached the same conclusion as the authors with respect to the amounts of spinal fluid to be used in making the Wassermann test. In his earlier work he stated that 0.4, 0.6, and 0.8 were employed as a routine, but a series of observations led him to the conclusion that larger amounts were necessary, and for two years he had used three tubes containing 0.5 c. c., one c. c., and 1.5 c. c. respectively. Occasionally only the largest amount would yield a positive result, the others being negative. In paresis, however, it was the rule to find all three tubes positive. In every instance he had not only made a Wassermann on the spinal fluid, but counted the cells, did a Nonne, Noguchi, Fehling's, and gold solution test. In regard to the count he would like to refer to the very interesting work of Dr. Paul Weston, of the Warren State Hospital, Pennsylvania, who made a large number of counts and found that they varied day by day without apparent reason. Doctor Weston was led to the conclusion that counting the cells was of no practical value. In all instances Doctor Weston's counts were made within a few minutes of taking the spinal fluid, so that no opportunity for cytotoxicity was given. The speaker had had no opportunity to make daily studies of the cell count, but in his experience there was always a direct relationship between the degrees of pleocytosis and the protein content of the spinal fluid. As to the gold solution, though the preparation of the solution was extremely difficult, the application of the test was simple and the results were of considerable value, not only in suspected cases of syphilis, but in disease of the brain and cord or their coverings, whether of a primary or secondary nature. For instance, in uremia one



found almost constantly that the first tube would go down completely, while the others remained unchanged, or but so slightly changed as to be of no special moment. In one instance with a negative Wassermann both in the blood and spinal fluid, with a low cell count, an absent Nonne and Noguchi and reduced Fehling, tube No. 5 became water clear, while all the rest remained unchanged. In genuinely specific cases the gold solution reaction was variable: for instance, in advanced cases of paresis and tabes all of the ten tubes which they employ might become water clear. Speaking very generally, they had usually found that the curve was more apt to be irregular, the first two or three tubes being water clear, then two or three tubes of variable color, while perhaps six and seven might again be water clear, with little or no change in the last two or three. In the tabetics of the less advanced type, the earlier changes would be slight, while tubes four, five, and six would often be water clear and perhaps the rest of the series water clear. In one instance of gumma of the brain, the first two tubes were slightly changed, while the remainder from the third to the tenth were all water clear. In one case of multiple sclerosis in which the fluid was under considerable pressure, as usual in this type of case, there was a negative Wassermann, both in the blood serum and in the spinal fluid, with a very slightly increased cell count, with a slightly positive Nonne and Noguchi, Fehling's reduced; the gold solution showed no change in the first six tubes, was slightly progressive in the seventh and eighth, while the ninth and tenth were water clear. They did not feel that their work had been sufficiently extensive to enable them to draw definite conclusions as to the value of the gold solution reaction, but one thing they could state most positively, that the character of the curve varied materially with the improvement or retrogression of a particular case, and in two instances in which they had had a positive Wassermann reaction in cases of tabes, with marked gold solution reactions, when the patients improved clinically and the Wassermann reactions became negative, the gold solution likewise became negative.

Dr. GEORGE P. SANBORN, of Boston, had made 200 observations and in paresis had obtained from the analysis of the cerebrospinal fluid just what was obtained at the Johns Hopkins Hospital in Baltimore in tabes. In tabes they had never obtained tubes that were absolutely decolorized. In the suspected cases that gave the clinical signs of tabes, and those alone, the tubes were decolorized in the first three or four days; but in these cases the nerve infection was more extensive than the clinical diagnosis suggested. In other words, there might have been a paretic element in the case. After the injection of the salvarsanized serum in a number of cases, the intensity of the gold solution diminished with successive treatments, in some instances from three to four days. He had never seen a case of tabes in which they could not get any definite decolorization in one tube and an ordinary growth in the rest of the tubes.

**The Blind Dental Abscess.**—Dr. HENRY L. ULRICH, of Minneapolis, considered blind dental abscess a rather loose term. Other terms such as alveolar abscess, periodontal, or apical abscess,

though not entirely satisfactory, were better. Apical abscesses were never found at the roots of vital teeth. The pathological anatomy of these areas was not well understood. The skiagraph indicated a range from a rarefying infiltration to a well defined area of bony necrosis. At the University of Minnesota Hospital, in an effort to correlate oral sepsis with systemic lesions, a special inspection of mouths was made for pyorrhea, gingivitis, caries, and by means of the x ray, for apical abscesses. They were struck by the frequency of apical abscesses in these cases. A further search for apical abscesses was made by studying the roentgenograms of the mouths in the medical x ray laboratory. The findings were startling. A little over sixty-eight per cent. of all artificially devitalized teeth were found with apical abscesses, including those found in pulpless teeth due to caries or death from accident or too proximal fillings, was eighty-three per cent. In the examination of 500 cases, 1,350 dead teeth were found, and of these 976 had root canal fillings. Of these 159 cases with apical abscesses had bacteriological review, and of 100 cases from the university clinic, 100 showed the presence of *Streptococcus viridans*. Of fifty-two cases from his private clinic, fifty gave a viridans or a hemolyticus; occasionally mucosa was recovered. Occasionally *Staphylococcus aureus* or *albus* or *Micrococcus catarrhalis* was also observed in conjunction with the streptococcus. The apical abscess was merely another evidence of a focus of streptococcal focal infection, just as the heart, the mucosa of the stomach, the articulations, or the kidneys were evidence of secondary deposits. In other words, it was of hematogenous origin. The pathogenicity of these abscesses and their relation to other concurrent foci had had ample clinical verification. A recent analysis of seventy-six cases in which a streptococcus had been isolated from apical pockets, showed that thirty-eight cases belonged to the rheumatoid group, six cases to the cardiovascular group, three to the asthenic, four to the gastrointestinal, two to the genitourinary allied to the rheumatoid group. A subgroup of eight cases consisted of those in which the streptococcus focal infection was superimposed on syphilis, tuberculosis, primary anemia, or vice versa. The striking feature of this analysis was the diversity of clinical manifestations for which streptococcal focal infection was possible. Experience with alveolar infection in which systemic symptoms were present, had made them cautious concerning the apparently innocent looking tonsil; invariably the same tonsil on closer inspection, and particularly after it had been removed under protest, had proved their suspicions correct. The blind dental abscess had a practical significance: it might be the only focus left and might hold the balance of power in the struggle of the body for complete sterilization. In every case of streptococcal infection its presence or absence must be determined. Such a focus would furnish material for the preparation of vaccines, and much trouble and disappointment from attempting cultures from glands and tonsils could thus be avoided. Of the more striking symptoms in these groups they had manifestations of rheumatoid conditions in fifty-one per cent.; secondary anemia, forty-three per

of the tonsils, forty per cent.; pyorrhœa, twenty-five per cent.; ulcers, fifteen per cent.

Dr. GEORGE P. SANBORN, of Boston, said that in cases of rheumatism or joint infections, they should find some local infection which was the cause of the trouble. If that cause was eliminated, good results would follow. There were many cases, however, where it was impossible from a clinical study to tell just where the local infection was and, in such cases, the use of the x ray was of great value in seeking for the local infection, or the foci in the mouth. He wished to emphasize the importance of having a man examine the throats, one who was experienced. He would report an interesting case of a chauffeur who, every two or three months, after being exposed to severe cold while driving the automobile, suffered with chills and high fever, which after a short time disappeared. In looking carefully into his throat, nothing could be noted. A casual examination of the tonsils was made and with the use of a tongue depressor, pus was expressed from the tonsil. He had had no evident trouble with his tonsils; they had never even been sore. A tonsillectomy was performed and then he was relieved of his rheumatic affection and was no more annoyed with the attacks. It was possible that there might be such foci of trouble which gave no clinical symptoms.

Dr. JUDSON DALAND, of Philadelphia, wished to speak regarding the occurrence of a tonsillar infection without clinical evidence of such a condition. Many of them had met with such cases where the pus foci were deeply situated in the tissues. In many cases, even after the tonsils were removed, the symptoms persisted and, after careful search, there would be found a posttonsillar abscess which they had not been able to diagnose. There seemed to be an extraordinarily large number of such cases.

Dr. JOSEPH HEAD, of Philadelphia, recalled a case where the condition of the tonsil appeared to be all right; the tonsils, however, were removed and the joint affection persisted. It then occurred to him that the use of the x ray might reveal some foci of pus around the roots of the teeth which would account for the symptoms, probably certain deposits around the roots. Was it the tonsil that caused the trouble?

Dr. CLAUDE P. BROWN, of Glenolden, Pa., believed that the tonsils were undoubtedly the habitat of bacterial flora, even when they appeared to be in normal condition.

Dr. MARTIN J. SYNNOTT, of Montclair, N. J., wished to relate a personal experience. He suffered from pyorrhœa alveolaris, and every once in a while there would occur a "blow up." He also had a severe tonsillitis which was treated with nitrate of silver, sprays, etc. The interesting thing was that the tonsillitis always came along with the acute exacerbation of the pyorrhœa. Since the pyorrhœa had been cured by the extraction of certain teeth, he had not had any trouble with the tonsillitis.

Dr. GERALD B. WEBB, of Colorado Springs, wished to know if the x ray would enable them to make a diagnosis of the apical portion of the teeth when there was a pus focus present. Would the x ray fail to show such a focus of infection?

Dr. HENRY L. ULRICH, of Minneapolis, showed

some pictures which were quite characteristic. With regard to the x ray interpretation, this was a matter about which they are still at sea; they did not care to extract teeth to find out the cause of the trouble, but when they had done so, they found the cause of the trouble, bacteria. As a matter of fact, after extracting teeth because of abscess formation, and when they made sections, they did not find necrosis, but only the results of ordinary inflammatory conditions. Histologically they had not worked out the study of this subject to their satisfaction. There was nothing to be found of value in the literature. In many cases there was simply a round cell infiltration.

#### **Therapeutic Inoculation in a General Hospital.**

—Dr. GEORGE P. SANBORN, of Boston, believed that cases requiring vaccine treatment could at present be treated successfully, economically, and efficiently in the various departments of a general hospital where they occurred. Hospital organization for the purpose of carrying on this part of the work was an important problem. In 1908 he made it his chief work to organize a department in the Boston City Hospital, which should receive from already organized departments suitable cases for active immunization. At the start the activities of this department were limited largely to the out patient clinic, with the idea of giving the greatest good to the greatest number. The work of the department included curative vaccine inoculations against typhoid, salvarsan chemotherapy, and later chemoserm therapy for nerve syphilis. The routine work of the last two years showed that vaccine inoculation had been practised in 994 cases. These patients visited the hospital 6,697 times and received 5,880 bacterial inoculations. As a basis for their treatment, more than 650 culture had been examined and over 600 vaccines had been prepared. The type of cases treated were as follows: Acne, 161 cases; furunculosis, 369 cases; carbuncle, thirty-nine cases; gonorrheal arthritis, 101 cases; tuberculous adenitis, 162; other cases of local tuberculosis, thirty-seven; superficial pyogenic infections, forty-nine cases. These conditions furnished about seventy-five per cent. of all the cases treated. It had been the rule to prepare autogenous vaccines for every patient from whom proper cultures could be obtained. The results had justified the additional labor involved. It has been possible to shorten the course of treatment compared to that of 1912 in at least seventy per cent. of all cases. The average number of visits for each person having dropped from 10.8 in 1912 to 6.7 in 1913 and 1914. Since June, 1911, anti-typhoid vaccination had been applied in 535 individuals, with practically the same results as those reported in the United States army. In the division of chemotherapy 327 cases of syphilis had been treated. These made altogether 3,589 visits to the clinic and received 954 doses of salvarsan and 608 intermuscular injections of salicylate of mercury. There were 866 specimens of blood taken for Wassermann test, fifty-eight lumbar punctures, made for diagnostic purposes, and numerous salvarsan injections given for diagnosis. The cases of syphilis were mostly in the tertiary stage, in which the requirements were elaborate and had been thoroughly

met. The most important aspect of this work was the early detection of nerve syphilis. A systematic study of all cases of tertiary syphilis was made with the possibility of nerve syphilis in mind. It had been the rule to perform lumbar puncture at the beginning of the treatment, if consent could be obtained, in order that the spinal fluid might be tested for abnormalities. In the treatment of primary and secondary syphilis no reliance had been placed on a single dose of salvarsan. There had been no deaths and no untoward happenings from salvarsan. The Swift-Ellis method of treating tertiary syphilis had been found efficient in producing clinical improvement and in eliminating conditions in the spinal fluid pathognomonic of syphilis. 870 injections of salvarsanized serum having been given. The advantage of a laboratory whose final interest was specific therapy, and the advantages of the interrelation of clinic and laboratory made desirable the installment of such a department in large general hospitals.

### Letters to the Editors.

#### HONOR DUE TO AMERICAN MEDICAL WORKERS.

NEW YORK, July 31, 1915.

To the Editors:

MY REPLY to the NEW YORK MEDICAL JOURNAL for July 24th, which you honored by heading Famous American Medical Men, began with the statement that a periodical of the standing of the NEW YORK MEDICAL JOURNAL was not the place for a controversy between medical men, and I refrained from personalities and believe that I confined myself to the scientific and historical question at issue.

In a letter signed E. Palier, which appeared in the NEW YORK MEDICAL JOURNAL of today under the heading Late Congenital Syphilis, the author, after taking issue with Doctor Berkowitz as to the pathology of nodules of the lungs, criticises our hospital laboratories, and finally refers to my above mentioned tribute to our great American physicians as "patriotic twaddle of greatness" and to Ephraim McDowell, Marion Sims, William T. G. Morton, Jacobi, Theobald Smith, Welch, and Flexner as "routine workers" and not as pathfinders and great discoverers as I ventured to designate them. Whether I am wrong and Doctor Palier right in this matter I must leave to others to judge.

To Doctor Palier's evidently intended personal insult about my desire to "flatter the powers that be" and do "tail wagging," I intend to reply personally as soon as I can ascertain his address. Unfortunately his name does not yet appear in the latest medical directory of New York, New Jersey, and Connecticut. The latest directory of the A. M. A. gives his name, but his address and college of graduation are unknown.

Concerning Doctor Palier's depreciation of the work done in American laboratories when attached to hospitals, it is evident that he belongs to the class of men who cannot conceive how anything worth while in scientific attainments can come out of such laboratories, particularly when the work is done by young men. Yet it is just such a young man who, while working in just such a laboratory of an American hospital, recently discovered the typhus bacillus. I refer to Dr. Harry Plotz, now in Serbia, serving in the antityphus commission.

To Doctor Palier's accusation that the American hospitals and other institutions are controlled by cliques to advance their personal interest, I will say that this may be true in isolated instances, but it is by no means universal; and I may furthermore add that, because of a lengthy experience in foreign medical schools and hospitals, I can vouch for the fact that the European institutions, medical schools, and hospitals, are far from being immune from this kind of control.

S. ADOLPHUS KNOPF, M.D.

### GAS AND PAIN.

LEHIGH, N. Y., July 29, 1915.

To the Editors:

Does gas in the stomach or bowels ever cause pain or distress or inconvenience?

Every sufferer from chronic distress of the bowels or organs will rise to declare the question out of order, but it would be interesting to hear what the general medical opinion on this point may be.

We all know how frequently patients with gallstones or chronic appendicitis or duodenal ulcer complain of "the gas" and demand something to raise the gas. But is the gas itself a factor or a mere coincidence of the discomfort?

Apparently many attacks of acute indigestion (to give it a name) subside with the eructation or expulsion of a large amount of gas, and this seems to occur after the administration of some such agent as soda, magnesia, ammonia, or the various carminatives and antispasmodics. The therapeutic effect appears to be the release of gas; the actual effect, perhaps, is the neutralization of hyperacidity or the relaxation of painful muscle spasm. Is the eructation or expulsion of gas accountable for the relief or is it rather the result of these latter effects?

Since this subject is so familiar to every practitioner there may be some consensus about it. We should like to hear what it is.

WILLIAM BRADY, M.D.

### Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*The Meaning of Dreams.* By ISADOR H. CORIAT, M.D., First Assistant Visiting Physician for Diseases of the Nervous System, Boston City Hospital, Instructor in Neurology, Tufts College Medical School. (Mind and Health Series.) Boston: Little, Brown & Co., 1915. Pp. xiv+194. (Price, \$1.)

This is one of a series of semiscientific books intended to interest both physicians and laymen. Doctor Coriat assumes so thoroughly the correctness of Freud's theories, that Mr. H. Addington Bruce, in his preface, deems it wise to utter a word of caution. Freud, however, is the only man who has evolved a definite theory of dreams and dreaming and his opinions deserve respectful attention if only for that reason. From Joseph onward we have had interpreters, but none vouchsafed any explanation of his methods, until Freud presented his views, which are complete and logically connected, even if they have not yet been proved strictly accurate. Doctor Coriat has popularized the analytical method of regarding dreams in a workmanlike way, and we are sure that lay readers will find the book of fascinating interest, especially those—and they are not confined to the more humble ranks of life—who have always had a secret love for dreambooks. Physicians who have not considered that they had the time to consult the ponderous works of Freud and his enthusiastic followers, will find in this short work a capital summary of their achievements.

*The Operative Treatment of Chronic Intestinal Stasis.* By Sir W. ARBUTHNOT LANE, Bart., M.S., F.R.C.S., Senior Surgeon to Guy's Hospital, and Emeritus Surgeon to the Hospital for Sick Children, Great Ormond Street. Third Edition. London: James Nisbet & Co.; Chicago: Chicago Medical Book Company, 1915. Pp. viii+311. (Price, \$4.)

The third edition of Lane's well known book shows few changes in the underlying theories of the author. He has added a chapter each on the radiological, bacteriological, chemical, and clinical aspects by other authors, which he hopes will serve to clarify the subject. The work in its original form has received the careful attention of the profession in this country, and many surgeons have followed Lane's example in operating for kinks along the tract of the small intestine and excising the colon for symptoms associated with persistent intestinal stasis. The conservative



... professor in this country had sympathized with the radical views expressed by Sir Arbuthnot Lane, and even among the more progressive there is a tendency to believe that the most radical surgery is in this class of cases. One can scarcely believe that an extensive and dangerous operation like colectomy can be justifiable in the treatment of chronic joint diseases such as arthritis deformans and tuberculosis; nor can one credit that so many and varied diseases as the author cites can all be cured by the same remedial operation. One is impressed with the feeling that the discovery of the fact of a causal connection between unusual intestinal stasis and some forms of ill health had led the author to lose sight of the sense of proportion and magnify to an extreme degree the importance of the condition to the surgeon. If he has brought it more forcibly to the attention of the internist, nothing but good can result, and in fact his introduction of the use of paraffin and liquid petrolatum is of great practical value. To stimulate surgeons to the wholesale performance of major operations in these cases seems, however, most unwarranted and unwise.

*Handbuch der Augenheilkunde.* Von Dr. J. Hirschberg, Professor in Berlin. Drittes Buch, Zehnter Abschnitt. Englands Augenarzt 1800 bis 1850. Mit 5 Figuren im Text und 25 Tafeln. (Handbuch der gesamten Augenheilkunde.) 4. Aufl. XIV. Band. 1915. Leipzig: Verlag von Wilhelm Engelmann, 1915. Pp. xvi+483.

This history of ophthalmology is part of the new edition of the Graefe-Saemisch handbook. The increase in scope and detail over the first edition is striking. This issue, dealing with England's eye surgeons from 1800 to 1850, is appropriately and gracefully dedicated to Nettleship, who was of great service to the author in collecting material for biographies and data of the various British infirmaries, for, as Hirschberg says, the English were more active in making medical history than in writing it. The work is painstaking, complete, and interesting, and contains a number of portraits. It is significant of the times that Hirschberg adds to his text a copy of the protest of English university professors against the war on Germany, to which he, "as a German savant" wishes to add "no bitter word."

*Lehrbuch der Chirurgie.* Ein Leitfa-den für Aerzte, chirurgische Assistenten und Medizinalpraktikanten. Von Dr. O. NORDMANN, Oberarzt der II. chirurgischen Abteilung des Auguste Viktoria-Krankenhauses Berlin-Schöneberg. II. Teil. Spezielle Chirurgie. Mit 161 teils farbigen Abbildungen. Berlin und Wien: Urban & Schwarzenberg, 1915. Pp. xii+200. 16. 632.

The present volume is the regional part of the work on practical surgery of which the general part appeared some months ago. The author has included in this volume the results of his experiences in military surgery up to the first of January of this year. The text is prepared in a systematic manner, and all that is unessential to the needs of the student has been omitted. The work belongs among the list of textbooks, and as there is already a large number of most excellent ones already in the field we do not see the necessity of adding to them. The number of illustrations is limited. These are particularly missed in the chapter on stomach and intestinal surgery, where they are absolutely necessary for a clear understanding of the various methods of excision and anastomosis. The chapter on fractures and dislocations is inadequate, both in text and illustration. The author has attempted to crowd into a small space too large a field, with the result that the subjects are not given the necessary detail which they require, even for the student and general practitioner.

*The Nervous System.* By EDWARD C. PUTNAM, M.D., Professor Emeritus, Diseases of the Nervous System, Harvard University. Mind and Health Series. Boston: Little, Brown & Co., 1915. Pp. xvii+179. (Price, \$1.)

Despite its unpretentious appearance, this is a scholarly book, and while we wish it the best of success, we fear that its perusal will be confined to a limited clientele. Heaven knows there is need for books of this kind, especially in our country where so much time and money are expended on the silliest of pastimes and so little on good books. Yet what could be more interesting than the elementary metaphysics of Doctor Putnam's wise little work? He takes the reader to the confines of certainty, and shows

him the vast playground beyond, wherein have wandered the minds of the greatest thinkers of all times and countries, and whence have come the bases of all religions and cults. Many advanced readers may object to the support given to the theories of the modern psychanalysts, but a knowledge of these theories is absolutely indispensable to an understanding of the newer psychology, and the younger reader must at least understand what they are, even if further investigation leads him to proceed along other paths. H. Addington Bruce, a past master in popularizing advanced scientific concepts, writes an excellent introduction to this book, which we commend to our colleagues as well as to an intelligent laity.

*Surgeon of the Blood Vessels.* By J. SHULTON HORSLEY, M.D., F.A.C.S., Surgeon-in-Charge of St. Elizabeth's Hospital, Richmond, Va.; A Founder and Fellow of the American College of Surgeons; etc. Illustrated. St. Louis: C. V. Mosby Company, 1915. Pp. 304. (Price, \$4.)

Vascular surgery has made such remarkable advance in the past fifteen years that a monograph dealing with the various phases should be of special interest. This is particularly true of the American profession, since as the author points out a large amount of original work in this field has been done by American surgeons and laboratory workers. The author, who has himself devoted much attention to the perfection of the technic of the surgery of bloodvessels, has given us in compact form, not only the scientific data and the various methods worked out by the pioneers in this speciality, but also the results of his own work. In the subject of transfusion it seems unfortunate that the method of Linderan, of New York, which has practically supplanted all other methods should have received so little mention. This method has done away with the very difficult and time consuming methods of Crile, Carrel, and others, which are described fully by the author. The subject in general is well handled and the illustrations are excellent and numerous. The book will be of great interest to the general practitioner unfamiliar with the possibilities of this branch of surgery, and will form a reliable guide to the beginner desiring to learn the fine points of technic in the performance of operations on the bloodvessels.

## Interclinical Notes.

Dr John A. Wyeth, of New York, whose biography of General Forrest is one of the finest pieces of biographical writing produced in this country, contributes to the *North American Review* for July a discussion of the Mexican Problem in which he warmly advocates the annexation of Mexico by the United States as offering the only satisfactory solution of the Mexican problem. This disposal of the question, he contends, is best for the Mexican as well as for the American.

\* \* \*

There is something ludicrous in the astonishment of foreign residents and annual visitors to Paris at the sober and scientific way in which France has undertaken her defense. These people talk about a new France—one just reborn, with new ideals, a new outlook on life, a suppression of frivolity and lightheartedness, a France somewhat like the psalm singing and Scripture quoting New England of our four ancestors. As a matter of fact, the foreign pleasure seekers in France have never known anything about her; least of all have they realized that the small corner of Paris in which they moved was deliberately planned by a scientific people to lure the dollars from their weak fingers. An artificial night life was cleverly built up to amuse visitors, furnished with cabarets, peep shows, dance halls, and restaurants, of the existence of which no Frenchman, save the proprietor and his employees, male and female, was aware. This little Paris, admirably stage managed, represented to the silly young and rich visitors, ignorant of the very language, the France of 40,000,000 industrious and frugal inhabitants, which rose like the phoenix from the ashes of 1870. A few fast novels, also prepared mainly for foreign consumption, represented French literature; a literature rich not only in itself, but also in its translations; for every foreign book worth while is obtainable in the French language within a few weeks of its original publication; and at an average

price of seventy cents, a price which shows an excessive demand. Is it possible that the laughter which has always seemed to a certain kind of visitor to be so characteristic of the French, was aroused by contemplation of that visitor and a realization of his viewpoint?

*The Medical Press and Circular* for June 10, 1915, has an ingenious explanation of the much discussed English expletive, bloody, which collates it with the word, blood or blade, used to describe a virile young man, and avers that it means no more than strong, active, blade-y, despite its present exclusively vulgar usage as a synonym for evil or revolting. The *Press* laughs out of court Max O'Rell's explanation of the word, of which we used to think highly, that bloody is a contraction of "By'r Lady!" Perhaps by way of avoiding the vulgarity while trying to preserve its strength, the *Press* refers to the monthly English anti-vivisection organ, the *Zoophilist*, as "a menstrual eruption."

The *Popular Science Monthly* for July, 1915, opens with quite a fascinating article by Professor John Maxon Stillman, The Dawn of Modern Chemistry. Other interesting papers are Some Pioneers in Mosquito Sanitation and Other Mosquito Work, by Dr. L. O. Howard, of the Bureau of Entomology; The Moral Development of the Chinese, by Dr. Frederick Goodrich Henke; Water Conservation, Fisheries, and Food Supply, by Dr. Robert E. Coker; and Trade Unionism versus Welfare Work for Women, by Dr. Annie Marion Maclean.

## Official News.

### United States Public Health Service:

*Official list of changes in the duties and stations of commissioned and other officers of the United States Public Health Service, for the seven days ending July 28, 1915:*

**Banks, Charles E.**, Senior Surgeon. Granted two days' additional leave of absence from July 10, 1915. **Billings, W. C.**, Surgeon. Detailed to attend the meeting of the American Genetic Association, at Berkeley, Cal., August 3 to 6, 1915. **Cobb, J. O.**, Surgeon. Granted fifteen days' leave of absence, to be taken when convenient. **Lumsden, L. L.**, Surgeon. Directed to inspect the work of the service in rural sanitation in Wilson County, Kans., and Dallas County, Ia. **Manning, H. M.**, Passed Assistant Surgeon. Granted nine days' leave of absence, from July 25, 1915. **Roberts, Norman**, Passed Assistant Surgeon. Granted thirteen days' leave of absence from July 23, 1915. **Trotter, F. E.**, Surgeon. Granted thirty days' leave of absence from August 1, 1915. **Von Ezdorf, R. H.**, Surgeon. Directed to proceed to the Galveston, Texas, quarantine station, for duty in connection with the opening of the station.

### United States Army Intelligence:

*Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army, for the week ending July 31, 1915:*

**Beeuwkes, Henry**, Captain, Medical Corps. After arrival in the United States will repair to Washington, D. C., and report in person to the Surgeon General of the Army for duty in the office of the attending surgeon, Washington. **Billingslea, Charles C.**, Major, Medical Corps. Upon completion of the duty assigned to him in orders from headquarters, Central Department, will proceed to Texas City, Texas, and report in person to the commanding general, second division, for temporary duty. **Bispham, William N.**, Major, Medical Corps. Relieved from duty at the Army Service Schools, Fort Leavenworth, Kansas, to take effect on August 1st, and will then proceed to Texas City, Texas, and report in person to the commanding general, second division, for duty, with station at Fort Sheridan, Illinois. **Boyer, Perry L.**, Major, Medical Corps. Upon the arrival of Captain James L. Mabee at Madison Barracks, Major Boyer will proceed to Texas City, Texas, and report in person to the commanding general, second division, for temporary duty. **Brown, Henry L.**, Captain, Medical Corps. Relieved from duty at Fort Slocum, New York, and will proceed to Texas City, Texas, and report in person to the com-

manding general, second division, for duty, with station at Fort Brady, Michigan. **Buntin, Grover C.**, First Lieutenant, Medical Reserve Corps. Resignation as an officer in the Medical Reserve Corps has been accepted by the President, taking effect July 21, 1915. **Chilton, Frank N.**, Captain, Medical Corps. Upon arrival in the United States will proceed to Jefferson Barracks, Missouri, and report to the commanding officer of that post for duty. **Culler, Robert M.**, Captain, Medical Corps. Now on temporary duty at Fort Robinson, Nebraska, is relieved from further station at Fort Mackenzie, Wyoming, and is assigned to duty at Fort Robinson. **Coffin, Jacob M.**, Captain, Medical Corps. Relieved from further temporary duty at Columbus, New Mexico, and will proceed to Fort Yellowstone, Wyoming, and report in person to the commanding officer of that post for temporary duty. **Dale, Frederick A.**, Major, Medical Corps. Now on leave of absence, is relieved from duty at Galveston, Texas, and after the expiration, to said leave will proceed from Fort Crook, Nebraska, to Fort Ontario, N. Y., and report in person to the commanding officer of that post for duty and by letter to the commanding general of the Eastern Department. **Donlan, Charles E.**, First Lieutenant, Medical Reserve Corps. Ordered to active duty in the service of the United States, on account of an existing emergency, and will proceed to Fort Strong, Mass., for duty until July 26th, when he will return to his home and stand relieved from active duty in the Medical Reserve Corps. **Edwards, Daniel B.**, First Lieutenant, Medical Reserve Corps. Ordered to active duty, to take effect August 10, 1915, and will report in person on that date to the commanding officer, Fort Screven, Georgia, for duty until August 26th, when he will return to his home and stand relieved from active duty in the Medical Reserve Corps. **Edwards, George M.**, Captain, Medical Corps. Upon arrival in the United States, will proceed to Fort Sam Houston, Texas, and report in person to the commanding officer of that post for assignment to duty with Field Hospital No. 7, and by letter to the commanding general, Southern Department. **Foster, George B., Jr.**, Captain, Medical Corps. Upon arrival in the United States, and upon the expiration of such leave of absence as has been granted him, will proceed to Columbus Barracks, Ohio, and report to the commanding officer of that post for duty. **Gapen, Nelson**, Captain, Medical Corps. Upon being relieved from duty will proceed to Fort Hancock, New Jersey, and report in person to the commanding general, Eastern Department. **Gibson, Paul W.**, Captain, Medical Corps. Upon arrival in the United States will proceed to Fort Slocum, New York, and report to the commanding officer of that post for duty. **Hart, William L.**, Captain, Medical Corps. Relieved from duty at Fort Sam Houston, Texas, and will proceed to Madison Barracks, New York, and report in person to the commanding officer of the latter post for duty and by letter to the commanding general, Eastern Department. **Johnson, Howard H.**, Captain, Medical Corps. Leave of absence granted for four months, to take effect upon relief from his present duties. **Kremers, Edward D.**, Captain, Medical Corps. Upon arrival in the United States, and upon the expiration of such leave of absence as may have been granted him, will proceed to Fort McDowell, California, and report in person to the commanding officer of that post for duty. **Loving, Robert G.**, Captain, Medical Corps. Relieved from duty at the General Hospital, Fort Bayard, New Mexico, to take effect upon the expiration of the leave of absence heretofore granted him, and will then proceed to Fort Crook, Nebraska, and report in person to the commanding officer of that post for duty and by letter to the commanding officer, Central Department. **Mabee, James L.**, Captain, Medical Corps. Relieved from duty at the Letterman General Hospital, Presidio of San Francisco, Cal., and will proceed to Madison Barracks, New York, and report in person to the commanding officer of that post for duty and by letter to the commanding general, Eastern Department. **McAfee, Larry B.**, Captain, Medical Corps. After arrival in the United States, and upon the expiration of such leave of absence as may have been granted him, will proceed to Fort Riley, Kansas, and report in person to the commanding officer of that post for duty

the United States and upon the expiration of such leave of absence as has been or may be granted him, will proceed to the station specified after his name and report in person to the commanding officer thereof for duty and by letter to the commanding general, Eastern Department; Major Edward R. Schreiner, Medical Corps, Fort Myer, Virginia; Major, Robert M. Thornburgh, Medical Corps, Fort Oglethorpe, Georgia; Captain Roy C. Heflebower, Medical Corps, Fort Niagara, New York; Captain John S. Coulter, Medical Corps, Fort DuPont, Delaware; Captain George B. Lake, Medical Corps, Fort Oglethorpe, Georgia; Captain Daniel F. Maguire, Medical Corps, Fort Ontario, New York; Captain Edward C. Register, Medical Corps, Fort Jay, New York; First Lieutenant Henry F. Lincoln, Medical Reserve Corps, Jackson Barracks, Louisiana; First Lieutenant Edmund W. Bayley, Medical Reserve Corps, Fort Caswell, North Carolina; Lieutenant Colonel Merritte W. Ireland, Medical Corps, after arrival in the United States and upon the expiration of such leave as has been granted him will proceed to Fort Sam Houston, Texas, and report in person to the commanding general, Southern Department, for assignment to duty as sanitary inspector of that department and as surgeon of the Cavalry Division.

**Metcalfe, B. H.**, First Lieutenant, Medical Reserve Corps. Ordered to active duty in the service of the United States, on account of an existing contract and will proceed to Fort Leavenworth, Kansas, on July 28th, 1915, and report in person to the commanding officer of that post for duty.

**Owen, August S.**, Captain, Medical Corps. After arrival in the United States, and upon the expiration of such leave of absence as may have been granted him, will proceed to the Letterman General Hospital, Presidio of San Francisco, Cal., and report in person to the commanding officer of that hospital for duty.

**Ruffner, Ernest L.**, Major, Medical Corps. Relieved from duty at Fort Thomas, Kentucky, to take effect September 1, 1915, and will then repair to Washington, D. C., and report in person to the chief of the Division of Militia Affairs, for instruction and assignment to duty as inspector instructor with the sanitary troops of the organized militia.

**Schmitter, Ferdinand**, Captain, Medical Corps. After arrival in the United States, and upon expiration of such leave of absence as may have been granted him, will proceed to Columbus Barracks, Ohio, and report to the commanding officer of that post for duty.

**Shockley, M. A. W.**, Major, Medical Corps. Relieved from duty with the Division of Militia Affairs, to take effect August 1, 1915, and will then proceed to Fort Leavenworth, Kansas, and report in person to the commanding officer of the Army Service Schools, for duty at the schools.

**Smith, Lloyd L.**, Captain, Medical Corps. Upon arrival in the United States will proceed to the Letterman General Hospital, Presidio of San Francisco, and report to the commanding officer for duty.

**Snyder, Howard McC.**, Captain, Medical Corps. Relieved from duty at Fort D. A. Russell, Wyoming, to take effect as soon as his services can be spared and will then proceed to the Walter Reed General Hospital, D. C., and report in person to the commanding officer of that hospital for duty relieving Captain Thomas J. Leary, Medical Corps, who upon being thus relieved will proceed to the Canal Zone and report in person to the Governor of the Panama Canal for duty.

**Straub, Paul F.**, Lieutenant Colonel, Medical Corps. Upon arrival in the United States, and the expiration of such leave of absence as may have been granted him, will proceed to Fort Logan, Colorado, and report to the officer of that post for duty.

**Stuckey, Harrison W.**, First Lieutenant, Medical Reserve Corps. Will proceed to the Presidio of San Francisco, Cal., and report in person to the commanding officer of that post for duty, upon the return to Fort Rosecrans, California, of Captain Fred W. Palmer, from leave of absence.

**Thearle, William H.**, Captain, Medical Corps. Granted leave of absence for four months, to take effect upon his arrival in the United States; upon the expiration of this leave, will proceed to Alcatraz, Cal., and report in person to the commanding general, United States Disciplinary Barracks, for duty.

**Truby, Willard F.**, Major, Medical Corps. Upon the expiration of his present leave of absence will proceed to Texas City, Texas, and report in person to the commanding general, second division.

**Wall, Francis M.**, First Lieutenant, Medical Reserve Corps. Relieved from duty at Fort Columbia, Washington, to take effect upon the expiration of present leave of absence, and will then proceed to Douglas, Arizona, and report in person to the commanding officer of the troops of that post for duty.

Each of the following named officers will proceed to posts designated after his name after the expiration of leave: (Western Department) Captain James R. Mount, Presidio of Monterey, Cal., for duty with Field Hospital No. 2; Captain Edgar D. Craft, the Presidio of Monterey, Cal., for duty with Ambulance Company No. 2; Captain Fred C. Kellam, Jr., Fort Baker, California, (Eastern Department) Captain Louis H. Hanson, Fort Leavenworth, Kansas; Captain Francis X. Strong, Fort D. A. Russell, Wyoming, for duty with Field Hospital No. 1; John J. Reddy, Captain, Medical Corps, Fort D. A. Russell, Wyoming.

Each of the following named officers, after arrival in

the United States and upon the expiration of such leave of absence as has been or may be granted him, will proceed to the station specified after his name and report in person to the commanding officer thereof for duty and by letter to the commanding general, Eastern Department; Major Edward R. Schreiner, Medical Corps, Fort Myer, Virginia; Major, Robert M. Thornburgh, Medical Corps, Fort Oglethorpe, Georgia; Captain Roy C. Heflebower, Medical Corps, Fort Niagara, New York; Captain John S. Coulter, Medical Corps, Fort DuPont, Delaware; Captain George B. Lake, Medical Corps, Fort Oglethorpe, Georgia; Captain Daniel F. Maguire, Medical Corps, Fort Ontario, New York; Captain Edward C. Register, Medical Corps, Fort Jay, New York; First Lieutenant Henry F. Lincoln, Medical Reserve Corps, Jackson Barracks, Louisiana; First Lieutenant Edmund W. Bayley, Medical Reserve Corps, Fort Caswell, North Carolina; Lieutenant Colonel Merritte W. Ireland, Medical Corps, after arrival in the United States and upon the expiration of such leave as has been granted him will proceed to Fort Sam Houston, Texas, and report in person to the commanding general, Southern Department, for assignment to duty as sanitary inspector of that department and as surgeon of the Cavalry Division.

## Births, Marriages, and Deaths.

### Married.

**Frost—Brewster.**—In Oyster Bay, L. I., on Wednesday, July 28th, Dr. Inglis Folger Frost, of Summit, N. J., and Miss Barbara Brewster. **Lick—McLaughlin.**—In Springboro, Pa., on Thursday, July 22d, Dr. Maxwell Lick, of Erie, Pa., and Miss Mary Elizabeth McLaughlin. **Weaver—Haverty.**—In St. Clair, Pa., on Thursday, July 22d, Dr. Robert T. Weaver and Miss Frances Haverty.

### Died.

**Bell.**—In Phoenix, Ariz., on Tuesday, July 13th, Dr. William M. Bell, aged sixty-two years. **Brown.**—In Humerick, Ill., on Wednesday, July 21st, Dr. R. A. Brown, aged fifty-nine years. **Burchmore.**—In Winthrop, Mass., on Monday, July 26th, Dr. Charles F. P. Burchmore, aged fifty-six years. **Caruthers.**—In Baltimore, Md., on Tuesday, July 27th, Dr. Fred Caruthers, aged forty-five years. **Coffman.**—In Prospect Station, Tenn., on Tuesday, July 13th, Dr. A. J. Coffman, aged sixty-nine years. **Dawson.**—In Lagrange, La., on Sunday, July 18th, Dr. M. E. Dawson, aged fifty-one years. **Frankenberg.**—In Cedarhurst, L. I., on Tuesday, July 27th, Dr. Jacob H. Frankenberg, aged fifty-four years. **Gleeson.**—In Danville, Ill., on Sunday, July 18th, Dr. Benjamin Gleeson, aged thirty-eight years. **Goldlust.**—In New York, on Tuesday, July 27th, Dr. James Goldlust, aged forty-eight years. **Hofstetter.**—In Corsicana, Texas, on Friday, July 16th, Dr. George A. Hofstetter, aged forty-five years. **Kinnaman.**—In Cleveland, Ohio, on Sunday, July 25th, Dr. Charles L. Kinnaman, aged seventy-three years. **Laciar.**—In Baltimore, Md., on Thursday, July 22d, Dr. Albert J. Laciar, aged fifty-two years. **Manire.**—In Tullahoma, Tenn., on Wednesday, July 21st, Dr. Amasa W. Manire, aged seventy-eight years. **O'Brien.**—In Groveton, N. H., on Friday, July 16th, Dr. Charles C. O'Brien, aged sixty-six years. **Peters.**—In Mankato, Kan., on Tuesday, July 20th, Dr. Alexander B. Peters, aged sixty-eight years. **Price.**—In Matthews, N. C., on Monday, July 19th, Dr. William H. Price, aged fifty-five years. **Ruble.**—In Smiths Grove, Ky., on Wednesday, July 21st, Dr. W. R. Ruble, aged fifty-nine years. **Shattuck.**—In Malden, Mass., on Monday, July 26th, Dr. Charles H. Shattuck, aged fifty-eight years. **Umstead.**—In Wildwood, N. J., on Sunday, July 25th, Dr. David B. Umstead, aged fifty-nine years. **Willits.**—In Keithsburg, Ill., on Tuesday, July 20th, Dr. Azro P. Willits, aged sixty-five years. **Wolfe.**—In Columbia, S. C., on Sunday, July 25th, Dr. Walter W. Wolfe, of Fort Motte, South Carolina, aged sixty-one years. **Wollerton.**—In Scranton, Pa., on Monday, July 26th, Dr. Samuel H. Wollerton, formerly of New York, aged fifty-five years.



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### Original Communications.

#### THE TREATMENT OF OBESITY.

By BEVERLEY ROBINSON, M. D.,  
New York.

Despite the researches and writings of Banting (1), Ebstein, von Noorden (2), Gaertner (3), Loran (4), Salisbury (5), and many others, the reduction of corpulency in a satisfactory way is not fully determined for the ordinary practitioner. The best he can do, is to cull as far as possible from the experiences and statements of these prominent physicians, and mark out for his patients certain lines of doing, which to him seem most rational, and also such, in a given instance, as will be probably followed.

It is manifestly useless to lay down hard and rigid rules of habits and dietary, which will not be adhered to. It is true in some instances in which the gravity of the case is undoubted and obvious even to the patient, that a severe régime will be accurately followed and soon notable and beneficial results will be shown. Again, certain individuals, who have become annoyed with increase of weight, and by symptoms such as dyspnea or palpitations on slight exertion, will, if of energetic, determined personality, try so far as they can to follow closely their physician's orders. But there is a class of men and women, often complaining of their increase in flesh, who may for a few days or weeks diminish the amount of food and increase exercise, but who soon relapse into their former habits of excessive eating and drinking, and easily excuse themselves by saying it is too irksome, or that they do not see the use of it. In this category I place especially young married women and club men of middle life. Of course, their excuses are often valid in a certain measure, for their relapses from a straight and narrow course. The women say, "we must lunch or dine out frequently, and cannot control our food and drink." The men say, "What can a man do who has no home and is obliged to live at the club, or in a restaurant? Other men live in a certain way, eat various dishes, and drink different wines, as well as cocktails, and are seemingly none the worse. At all events, they do not add on weight apparently, or to their detriment."

Another difficulty in getting strict observance to dietary rules and regular exercise, is the differences of physicians as to the importance of one or other limitation. Thus doubt comes into the mind of the

patient, when notes are compared with a friend, who has another physician with different appreciation or outlook. There are, however, certain facts that are now generally known and admitted.

We should act preventively first of all; to wit, hinder a further increase of weight. Then, if there is real occasion for it, we should try to diminish the actual weight to what is probably a normal estimate of it, in view of the patient's previous history, and also having regard to his age and stature.

Moderation in diet seems to me the first and great requisite of any treatment which may be counted upon as ultimately satisfactory. A varied diet is also desirable; simple food, somewhat frequently given, and few dishes or foods, at any one repast; limitation of liquids. In addition, there are certain foods that should be eaten in very small quantity, if at all. First of all, *sugar* should be permitted only in small quantity and simple forms. Coffee and tea may be slightly sweetened, and little by little we shall find that a small quantity of sugar is even more satisfactory than a larger quantity previously. The appetite no longer craves it. A little simple pudding after dinner, or a little stewed fruit, or a very small portion of orange marmalade stimulates digestion and makes the meal to many more assimilable. There are numerous exceptions. Not a few men find that Camembert or Roquefort cheese after dinner takes the place thoroughly well of any sweet. With women this is not often true.

Potatoes are fattening for many, and to be deprived of them is a sacrifice, but a needed one. In my judgment, well boiled rice, with very little butter or gravy, takes their place with great advantage. Fresh bread should not be eaten; toast, crisp and brown, or zwieback, must take its place.

A moderate amount of roast or broiled meat, mutton or beef, is proper; so is poultry. Many of the green vegetables, well cooked and seasonable, are healthy and proper food. So are eggs—two in the morning, two at night. If milk is taken, it should be fermented as in kumyss or matzoon. A light dry wine, such as Moselle or Hock or Bordeaux, is permitted. Brandy and whiskey, and above all beer, should be forbidden, except sometimes to aid a sluggish digestion or promote sleep.

Water is preferably to be drunk between meals. Tea or coffee, at breakfast and at tea in the evening, freshly made, not strong, with very little milk or sugar, in small quantity, may be permitted.

To give what seems to me a very proper, sufficient, and excellent dietary, the following is offered:

*Breakfast*, 7 to 9 a. m.: Two thin slices of toast, with or without a very little butter; one or two

eggs, a little broiled bacon or ham; a cup of coffee with little milk and sugar or none.

*Lunch or dinner, 12 to 1 o'clock:* A slice or more of mutton, beef, or chicken, cold or hot; if hot, a very little simple gravy, preferably the juice of the meat; with this, one vegetable such as spinach, string beans, or rice in winter; in spring and summer, asparagus, cauliflower, tomatoes; sago or tapioca pudding, or orange marmalade, in small quantity; a small tumbler of water or a little wine and water—Moselle or claret.

*Tea, 5 p. m.:* A small cup of tea with a saltine, or one or two crackers.

*Dinner or supper, 7.30 p. m.:* A little thin soup (chicken, mutton, or beef broth); broiled fresh fish, a moderate quantity; or two eggs; two small slices of toast; a little wine and water or a small cup of tea; stewed fruit (pears, apples); cheese and a cracker.

The water should be preferably pure spring water, or one containing a little lithia or soda, like Buffalo lithia or Celestins vichy.

The bowels must be kept in a soluble condition, by a tablet of cascarn, podophyllin, and aloin.

The food and drink, at the beginning, may be weighed and the calories estimated so nearly as practicable, but to continue it is foolish and impracticable as a rule. The patient should be weighed once a week, and the food and drink modified in quantity or variety, as indicated by increased or diminished weight.

Every patient must be examined carefully as to the condition of his organs before treatment is instituted and later, must be treated as a personality and according to varying indications. Manifestly, if there is already evidence of cardiac impairment or renal inadequacy, such a one must not be treated in a similar way to the man or woman with organs still healthy.

As to exercise, it should be regular and sufficient, but not overdone. Loss of weight in a permanent way is not promoted by an excessive amount, and not infrequently it is positively injurious. For very many people, walking is by far the best of all exercises. Tennis is too violent. Moderate horseback riding or golf playing is allowable and advised, but nine to eighteen holes is sufficient and the pace should not be rapid. Life in the open air, so far as may be, is indicated.

Six to eight hours' sleep is sufficient. More tends to increase weight.

Among the people, young and old, who are or are becoming abnormally fat, heredity (6) is important and must be considered. If present, we cannot overcome it by diet or exercise. Among persons who inherit fat are those who have small appetites, and who also are very active and walk a great deal, through necessity or simply because they enjoy it. There is a distinct class of persons, mainly women, as recognized and emphasized forcibly by von Noorden, in whom no errors of diet or exercise are evident and in whose history heredity is not indicated as a cause of fat. These persons are fat, or become so, by reason of a deficiency in function of the thyroid gland, aided or not by others among the ductless glands. Whenever a well considered dietary and proper exercises have been duly fol-

lowed for several weeks, and little or no reduction in weight has taken place, perhaps indeed an increase, the causative condition should be suspected and treated.

Among the spas where obesity has been treated with happiest results, Marienbad and Carlsbad should be mentioned most favorably. It is probable that the regular habits, dietary, exercise, régime there insisted upon, is of greater real service than drinking of the water, or the baths. Occasionally, of course, a bath with a sweat, followed by a moderately cold douche and general massage, may promote nutrition and diminish the amount of fat, which is general, or even local.

In a measure also, rapidly intermittent electrical currents, judiciously employed, may lessen the growth or deposit of fat.

In our treatment of obesity we should be constantly on our guard not to do positive harm to the patient in our efforts to relieve him of an encumbrance or an evil. This is too apt to occur with many methods of rapidly diminishing corpulency. When these too radical methods are stopped for cause, whether it be the objection of the patient or the fear of the physician which occasions it, the fat returns very quickly and the patient has no real advantage from the treatment in any way. Indeed, in some instances, they have been injured permanently through heart weakness which has been thus brought on.

Personally, I have found two remedies of unquestioned value in reducing flesh and that, too, without causing injury to the patient. One is the phosphate of sodium, given at bed time in teaspoonful doses in a little water. The other is the solution of the hypophosphites of calcium and sodium, ten grains to the dose, given at meal time, as a general tonic to the nervous system. It does in some unexplained way, tend to reduce the amount of fat in the individual. The phosphate of sodium is particularly indicated in persons whose livers are engorged by numerous dinners and indulgence in rich wines and pure alcoholic drinks.

I would also urge strongly in many instances the use, after meals and at bed time, of the Bulgarian culture in tablet form, to be taken two at a dose. I am confident in many instances of obesity, the increase of fat is due in a degree, more or less important, to fermentative processes going on constantly in the bowels and from which poisonous results are constantly derived. Corpulency is, as I view it, certainly a morbid condition not infrequently, and here we have a clear indication for remedial treatment.

In cases which are endogenous (von Noorden), where the thyroid is deficient in function, and judicious diet and exercise have proved ineffective, the thyroid gland given internally has been useful in some instances. While it may be useful, it may also be harmful. It should never be taken unless the patient has the frequent counsel and oversight of his physician. In every instance, the dose of the dry extract should be a moderate one, say, from one to three grains, three times daily. Whenever the pulse becomes rapid and weak, it should be stopped immediately. The same is true when other doubtful or threatening symptoms occur. In any case,

even where the effect of the thyroid has been very satisfactory, its use should be interrupted occasionally, and resumed only after a while and if it is found that the patient is again acquiring flesh rapidly and too abundantly.

I am conscious that in writing this article, I have not said much that is new; on the other hand, I have felt that a brief article on this subject, at the present time, might be really useful. If other practitioners have been as frequently embarrassed as I have, to give sound, practical advice to some of these patients, they will be indebted to me for what I believe to be common sense views.

## REFERENCES.

1. BARTHOLOW: *Vitæ Medica and Therapeutics*, p. 50.
2. VON NOORDEN: *Diseases of Metal Iam and Nutrition*, p. 1.
3. GARDNER: *Reducing Weight*, p. 100.
4. LORAN: *Heart, through Nutrition*, p. 5.
5. SALISBURY: *The Relation of Nutrition and Disease*.
6. ERSTEIN: *Osteitis, Gout, and Diabetes mellitus Considered as Diseases of Cell Metabolism Transmissible by Inheritance*, *Medical Record*, Sept. 28, 1907, p. 505.

42 WEST THIRTY-SEVENTH STREET.

## CARDIOVASCULAR DISEASE.

BY EDWARD E. CORNWALL, M. D.,  
New York.

Cardiovascular disease is the great disease of the latter half of life, and occupies relatively as important a place in the morbidity of that period as do diseases of microbic origin in youth. The structural or degenerative changes and functional disorders which characterize it, vary in location and degree so much that it is impossible to formulate a definition which will include all or any considerable number of them, and the term, cardiovascular disease, is accepted because it is indicative or suggestive and not because it is definitive. It points to disorder of the apparatus for carrying to the tissues the material required for metabolism and removing waste. This disease, in spite of the extent and diversity of its pathology and clinical symptoms, possesses a unity which appears both in its etiology and in the interrelationships of its different manifestations. It is logical to conceive of it as a clinical entity, and practical to treat it as such.

There are three principal pathological foci around which the clinical manifestations cluster, so to speak, viz., chronic myocardial degeneration, arteriosclerosis, and chronic nephritis. In every case one or other of these is apt to predominate and determine the character of the clinical picture.

The diagnosis of cardiovascular disease is not so much of the disease itself as of the extent and distribution of the lesions and the character and degree of the functional derangements, and consists chiefly in finding out to what extent myocardial degeneration, arteriosclerosis, and chronic nephritis are present in the particular case. This is often easy; the myocardial degeneration may appear plainly in the foreground, the nephritis may be frankly exposed, or the arteriosclerosis may be palpable, or there may be evidence of local interference with the circulation or of a ruptured artery. But in a considerable proportion of cases, particularly in the early stages, the diagnosis of the pathological panoramic picture and the functional moving picture is attended with more difficulty.

In making this diagnosis we have to take into account the patient's heredity, his previous diseases, his personal habits and experiences as regards work, play, diet, use of drugs, and anything which might constitute an etiological factor, as well as his subjective symptoms and physical signs.

Heredity plays a large part in the etiology of cardiovascular disease. The quality of the material of which the cardiovascular renal apparatus is made may differ widely in different individuals; and this quality is inheritable. One may inherit such an apparatus of poor material as readily as he inherits a constitution subnormally resistant to tuberculosis. Similar tastes and tendencies, occupations and environments, moreover, are apt to be present in successive generations, and increase the effect of heredity.

Among the diseases which predispose to, or produce cardiovascular disease, syphilis holds a prominent place. The baleful effects of the latter are often seen in sclerosis of particular parts of the arterial system, particularly the aorta, coronary arteries, and arteries of the brain, and in early myocardial degeneration. Typhoid fever, also, may be a causative factor, particularly if other etiological factors are working in the patient. Beside the long continued toxemia and subnutrition which regularly belong to typhoid fever, a causative factor may be found in symptomatic or subsymptomatic cardiac overstrain produced by excessive physical exertion indulged in before convalescence is complete, which may excite chronic degenerative processes in the myocardium, as well as in other parts of the circulatory apparatus. Rheumatic fever, likewise, may be a causative agent, irrespective of direct damage to the heart. Any acute infection may become an etiological factor.

The same is true of hard work, both physical and mental. Acute cardiac overstrain may leave the heart permanently dilated or predisposed to degenerative changes; and long continued physical overexertion may produce cardiac hypertrophy, arterial hyperplasia and a similar predisposition to early degeneration of the circulatory apparatus. Prolonged mental work, mental strain from responsibility, or worry long continued may do the same; so also may excessive indulgence in social diversions and dissipations and late hours and excitement. If physical, mental, or emotional overstrain compels the circulatory apparatus for long periods to maintain an average endarterial pressure considerably higher than it is accustomed to, it is easy to understand how permanent damage to that structure may result.

A factor of very great if not paramount importance in the etiology of cardiovascular disease is the excessive, or relatively excessive burden laid on the circulatory and eliminative apparatus by metabolism. The work of transforming crude material from the outside world into living tissue and available fuel, and of getting rid of the deleterious by-products formed in the preparation and utilization of the food materials and the end products of metabolism, rests to a large extent on this apparatus. Also, its structures are subjected meanwhile to the irritating and disintegrating action of the toxic by-products and end products of extensive chemical activity.



Essential to the toxic strain of an unfit diet, a related element in the causation of cardiovascular disease is found in the voluntary and involuntary ingestion of chemical poisons, among which the most commonly active are alcohol, coffee, tobacco, and lead. These drugs may disturb digestion, thereby favoring the production of intestinal poisons; or the liver, thereby weakening the defense of the body against toxins; or they may disturb organic functions, which directly or indirectly affect the circulatory apparatus; or they may directly irritate or injure the tissues which form that apparatus.

The symptoms of cardiovascular disease may be so slight as to escape notice for a long time after pathological lesions have developed, or they may be as various and severe as the extensive range of pathological changes and functional disturbances permits. Only a few of the more important of these symptoms can be referred to here.

Dyspnea is an important and often an early symptom. It may be slight, brought on only by unusual exertion, or it may be severe; it may even occur when the patient is at rest, and it may occur in paroxysms. Abnormal sensations in the precordium may appear among the early or late symptoms, and may vary from a slight sense of oppression or uneasiness to a dull pain with radiation to the shoulders or arms, or angina pectoris. Some of these sensations, in their milder forms, may be present without necessarily indicating lesions of cardiovascular disease. Headaches, dizziness, vertigo, and head noises are common symptoms, as are also mental disturbances, particularly insomnia, irritability, changes in disposition, and dementia. Neurasthenic symptoms are frequently met with in the early stages of the disease. A tottering gait, a trembling hand, transient attacks of aphasia, or a paralytic stroke, point to changes in the cerebral arteries.

The diagnosis of cardiovascular disease ultimately depends on the physical signs, although it may be suggested by symptoms and syndromes and by heredity and previous history. These physical signs, like the symptoms, may be shy in manifesting themselves, but usually before the disease has advanced very far some of them can be found if diligently sought for. A persistent rise in blood pressure is suggestive, particularly of the renal type of the disease. Impurity or roughening or enfeeblement or equivalence of the heart sounds or the appearance of a systolic murmur over the aortic cartilage, with or without much increase in the blood pressure, suggest myocardial degeneration or sclerotic changes in the aorta or its valves. Some of the earliest signs of the disease may be discovered in the ophthalmoscopic picture of the retina. Increase in the quantity of the urine and diminution in the quantity of urea excreted, with or without the appearance of albumin or casts, is also a significant sign. The later signs of the disease are usually plain, although not infrequently it happens that a cardiovascular accident suddenly reveals the unsuspected condition.

#### TEATMENT.

The treatment of cardiovascular disease is prophylactic and palliative; it cannot be to any extent curative because the lesions are, as a rule, permanent. The most that can be done after the disease

is established, is to delay its progress and to facilitate the establishment of compensative conditions.

The prophylactic treatment of this disease has not received from the medical profession, to say nothing of the people generally, the attention which its importance deserves. The disease is to a large extent preventable. It is a matter of almost mathematical probability that persons with a certain heredity, if they live as their forbears did, or even if they live in the conventional way, will acquire cardiovascular disease. This probability is increased if they show physical characteristics that suggest weakness in that line, such as early tendency to obesity or periodical headaches. These people, if they would escape this inheritance, must adopt a mode of living which will protect them as far as possible from the other causative factors of cardiovascular disease, whose effectiveness is enhanced by the presence of the inherited tendency. Certain ways of living and forms of activity, also, if persisted in, naturally result in the development of this disease in persons without hereditary predisposition; and in such cases prophylactic procedures are called for. The writer has written on this phase of the subject elsewhere, but its importance well deserves to be emphasized.

The treatment of cardiovascular disease after it has become established varies with the stage and the particular lesions and complications. Of the treatment of the local lesions and particular conditions and symptoms, nothing will be said here; only general principles of treatment will be mentioned which are applicable in all cases.

The main object of treatment is to lessen the work of the cardiovascular apparatus, which has shown signs of insufficiency or of structural defects in some of its parts. How can that be done?

The obvious mechanical burden of the circulation can be lessened by restriction of physical activity, in doing which the dangers of too close restriction should be kept in mind. The satisfactory regulation of the mental and emotional burden may prove more difficult. Some of this burden it may be almost impossible to remove, and to take away any of it altogether may be unwise. Bad results may come from sudden and complete taking away of all accustomed mental exercises and duties; for it is desirable to have the patient feel that he is still able to take some part in the general business of life and of his own business in particular. If it is necessary to take him entirely away from his regular business, he should be supplied with some suitable occupation or amusement to take its place, in order to prevent his mind from deteriorating faster than his condition would necessitate.

The lightening of the biochemical or metabolic burden probably means most in the treatment of the average case. The work involved in the metabolism of nutrition can be very greatly diminished by substituting for the conventional diet one which the writer has elsewhere described as the "easy diet." This easy diet does not necessarily mean a scanty one, although it does mean that an excess of food is avoided. It particularly means a diet in which the constituent articles are comparatively easy of digestion and metabolism, which introduce directly into the body few toxic agents, and which,

in their preparation for absorption, produce few deleterious by-products; a diet which supplies protein and fuel not much in excess of the minimum health ration; whose protein is comparatively purin free and nonputrefiable; which supplies necessary salts; and which is sufficiently varied to make a reasonable appeal to the palate.

In cardiovascular disease the blame usually rests on the patient, though it may be shared by his progenitors in greater or less degree. It often comes as a punishment for reckless driving of the human machine. Its prevention lies chiefly in keeping within the physiological speed laws which are established for each individual, and its palliation lies mainly in an easy life and an easy diet.

1218 PACIFIC STREET, BROOKLYN.

## THERAPEUTIC INDICATIONS FOR THE VARIOUS ELECTRICAL CURRENTS.\*

BY WILLIAM BENHAM SNOW, M. D.,  
New York.

When one addresses an audience of physicians and surgeons at the present time to explain and advocate the uses of electricity in medicine and surgery, it is always with the feeling that what he says is very apt to be misconstrued, or that he is looked upon as an enthusiast whose opinions should be taken *cum grano salis*.

The unfavorable attitude of the profession toward the employment of electricity in medicine is to be explained, I believe, by the errors of the early teaching which considered it generally from an empirical point of view. In every way in which electricity is employed in the arts and commercial uses, it has demonstrated itself to be a very trustworthy agent, but subject to many methods of managing and controlling the currents in order to adapt them to the various scientific and commercial uses for which they are employed; and so it is in medicine. We do not treat the subject today from a single point of view, and I wish to make it plain from the outset that we are not dealing with electricity as a single entity, in one form or of one kind; but as used in medicine, employing currents varying in voltage, quantity, and other conditions, with numerous modalities or methods of application.

The older conception of the uses of electricity in medicine is that which was given such emphatic recognition by Erb and his followers. At the commencement of my own medical career those were the methods in vogue, and with which I became familiar during my student days. Those views, I may add, are now practically obsolete as we employ electricity in medicine today. Yet I regret to be obliged to say that the same methods are the ones generally looked upon by neurologists and the profession at large as the methods still in vogue.

The methods that have been introduced during recent years have superseded most of the older methods just as the electric light has replaced the candle. Electrotherapeutics has been advanced to a science, keeping pace fully with its commercial progress. It is not boasting to say of therapeutics,

as recognized and employed by those familiar with its modern use in medicine, that as a science it is not a whit behind the progress in other fields. This is why those who are familiar with the progress have a mission to show those who are not; for in the modern conception, instead of being a mysterious means of suggestion, it is now recognized as an energizing force, altering and correcting errors of metabolism by restoring the functions of important organs.

In the commercial fields electricity is made use of for three purposes: 1. Electrolysis, producing chemical decomposition; 2, for the production of heat and light; and, 3, for its mechanical effects in setting matter in motion. In medicine we look to it to accomplish the same effects.

### ELECTROLYSIS.

*Electrolysis* is demonstrated in the chemical laboratory by the decomposition of water into its constituent parts, hydrogen and oxygen. If we pass a constant—or galvanic—current through a solution of potassium iodide, the iodine is promptly thrown down. When we pass the same current through the tissues, decomposition likewise takes place, different at the respective poles. At the positive pole fluids are abstracted, and acid with the oxygen radical is produced; whereas, at the negative pole the fluids collect with hydrogen, the alkaline radical.

An *electrolyte* is a conducting substance through which a current is passing, and which is acted upon by the current, producing decomposition. If the tissues are made an electrolyte, decomposition of different kinds takes place at the opposite poles. If a needle of any metal is inserted or driven into a tissue and the current from the negative pole is allowed to pass, decomposition of the tissue takes place without action upon the metal. So if a needle is passed through a wart or mole, electrical decomposition takes place of the substances of the wart with the accumulation of bubbles of hydrogen in the tissues, thereby disintegrating them. The part so treated will, after a day, appear as a black scab and will come away in a few days, if the application has been thorough.

If instead of the negative pole the positive is used, the metals except platinum, iridium, and aluminum, undergo marked decomposition, iron producing a black stain, copper a green, silver, zinc, and mercury practically no stain. The tissues become shrivelled from the abstraction of fluid, and a destructive process takes place from the action of the current with decomposition of the metal in the electrolyte (the tissues). At the positive pole the metals are diffused or ionized into the tissues. The electrons so become ions or *carriers* of metallic particles into the tissues.

*Ionization* methods formerly designated *phoresis*, *anaphoresis*, or *cataphoresis*, are methods of diffusing into the tissues the ions of various substances from the respective poles, the electronegative including alkalies, iodine, and other electronegative bodies from the negative pole, and the metals and other electropositive bodies from the positive pole.

Electrolysis in medicine, as previously stated, always employs the constant or galvanic current.

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Modern nomenclature has abandoned the term, galvanic, and we speak of it now as the constant current. Electrolysis has been and is still employed from the negative pole in hypertrichosis for the removal of superfluous hairs, and in strictures in the various canals of the body by the method of Newman; for the removal of moles and warts and also in the treatment of fibroma of the uterus; in some of which fields it occupies first place, particularly in the minor operations upon the face for the removal of hairs, moles, and warts.

Ionization from the positive pole has become a popular method in the treatment of various conditions where it is desirable to diffuse metals into the tissues for definite destructive action. The metals which are dissolved by the action of the current combine with the chloride solutions in the tissues, forming oxychlorides of the metals. An electrode of copper passed into the endometrium and diffused with twenty milliamperes of current for ten minutes is capable of causing an exfoliation of the lining membrane, which disinfects its own slough and is more certain uniformly to destroy the diseased endometrium than curettage.

The method of Dr. G. Betton Massey diffuses the metallic ions of zinc and mercury into malignant tissue and destroys it, after which it separates and comes away as a slough. During the operation it is easily determined when the malignant tissue has been thoroughly treated, by the softening of the induration, which takes place under the process. I believe there is no method superior to this in skilled hands for the treatment of cancer of the tongue, mouth, and other mucous cavities. It is also efficient for the removal of epithelioma of the face; whereas, in the major operations I question the wisdom of using the method.

Ionization is also employed for the production of local anesthesia. I question the advantage, however, of this method over the use of the hypodermic method. Frauenthal has shown that by ionization of the alkaloids of colchicum good results are obtained in cases of localized gout.

These uses of the constant current by no means include all that can be accomplished by the oldest of all currents. Many of the older authorities, and to some extent others are still advocating its employment in the treatment of neuritis, and some other conditions associated with inflammatory processes. It fills a very small place, however, in this class of conditions compared with the high frequency and static currents as employed for the thermal and mechanical effects to which I shall refer. It must be acknowledged also that when powerful currents are employed, detrimental electrolysis may be produced.

#### THERMIC EFFECTS.

The thermic effects of electricity as employed in the production of heat and light, are very important measures in therapeutics. The high frequency current is selected for thermic work in therapeutics, particularly the various modifications of the current of d'Arsonval. This current, alternating in character, produces absolutely no electrolytic effect. This is readily shown by passing the current through a solution of iodide of potassium which is so readily

acted upon by the current which produces electrolysis. The solution may be submitted to the high frequency current to the extent of boiling without any decomposition taking place. The use of this current for producing hyperemia vastly surpasses any of the methods which have previously been described for this purpose. Temperatures may be employed as high as the skin will tolerate—approximately 110° F.—without danger to the intervening tissues. The temperature throughout the intervening field will always be practically the same as at the surface. The application of this current for considerable time—twenty to thirty minutes—causes the fixed cells in the tissues through which it passes to become heated; they are gradually cooled by the blood stream. The passage of blood through the tissues is increased to counteract the effects of the heat produced. In other words, the hyperemia is produced in response to the thermal effects upon the vasomotor mechanism and persists until the tissues are at the normal body temperature.

Hyperemia, as a therapeutic measure, has not been correctly understood because the teachings have been, as a rule, empirical by the advocates of the so called Bier methods. The methods described by Bier, particularly the method employing suction, produces hyperemia of very brief duration; whereas the effects produced by electrothermal penetration will persist for several hours after prolonged administration.

Hyperemia produces in the tissues three important effects which are conceded because they are physiological, viz.: 1. Increased metabolism, the increased activity excited in the cells by the throbbing impulses of the accelerated circulation of heated fresh blood passing through the tissues; thereby inducing actively the processes of repair, and at the same time increasing the elimination of waste material. 2. Increased nutrition is also manifestly carried on in the tissues with the increased blood supply. 3. There is also an increase in the number of phagocytes that are carried into the tissues and under conditions favorable to a positive chemotaxis. Hyperemia, when induced in tissues of lowered vitality, particularly in infected tissues containing the germs which lymphocytes and leucocytes can destroy, is always beneficial.

Another valuable indication for the high frequency current which is probably due to a combination of thermic and current action upon the bloodvessel walls, is for lowering arterial hypertension. The time is now past when its efficiency in controlling arterial hypertension can be ignored. Autocondensation by the d'Arsonval method, together with a regulated diet low in animal proteins, and regulated exercise are effective means for prolonging human life for many years at a time when men may be reaping and enjoying the fruits of their labors. That this cannot be accomplished with diet alone has been shown, and that drugs are a failure in advancing arteriosclerosis has been too well demonstrated in the past, and is now conceded by all authorities. That the high frequency current will lower blood pressure to, and easily hold it at the compensation point, thereby relieving the labor of the overworked heart, removing the danger of pending cerebral hemorrhage, and at the same time lessening the tendency to nephritis, has been demonstrated by so many



scientific observers and in so many cases, that those who are disposed to deny the possibility are certain to bring no credit on themselves by denying its use and neglecting to employ it, or seeing that it is employed for those who consult them.

The beneficial effect of the autocondensation method upon general metabolism in patients of lowered vitality, furthermore, is demonstrated beyond doubt in the treatment of hypertension. The passage through the organism, to and fro, of the substantial electrons as administered by the autocondensation method are remarkably effective in promoting increased nutrition and a general sense of well being, together with the relief of extreme hypertension and the coincident establishment of freer circulation and increased metabolism throughout the tissues, and this without an element of danger or depression when intelligently administered.

Another useful field for the high frequency current is in the destructive methods which are employed for removing growths and neoplasms by the methods of *fulguration* and *desiccation*. These methods destroy the diseased cells, together with the tissues involved. In removing a malignant neoplasm by either of these methods, unless the diseased cells are all destroyed the agent will act as a stimulant to the growth, which may promptly recur with greater activity than before. For the treatment, however, of localized areas of angioma, or moles, this method is entirely effective; also for the treatment of localized patches of lupus, superficial epithelioma, and condylomata. In skilled hands it is possible to remove deeper tissues, including bone, by the desiccation method of Dr. William L. Clark, of Philadelphia.

The *fulguration* of *de Keating Hart* as employed by Doctor Bainbridge, of New York, in connection with surgery for the treatment of malignant disease, has accomplished many remarkable results in the successful attempt to prevent recurrence after operation. While this method has not triumphed in all cases, it has been so far successful as to demonstrate its value as an added possibility in prevention.

The *Doyon method* of employing high frequency currents for destroying tissue by carbonization or coagulation necrosis, is another practical method of treating malignant growths. Here, as in the methods of Massey, local areas are destroyed and caused to become necrotic, to be replaced by normal tissue growth. Under local or general anesthesia, a small electrode is placed over the tissue to be destroyed, and the other pole or indifferent electrode of large size is placed at some remote point. Great care must be exercised not to make the destructive action too deep or extensive. In skilled hands, however, this is a means for successful operation.

#### MECHANICAL EFFECTS.

The mechanical actions of electricity affecting the body are of two kinds, *imperceptible* and *perceptible*.

The *imperceptible mechanical effects* are derived more or less from all currents and are due to the passage of the substantial electrons through the tissues. When Silvanus Thompson demonstrated that electricity consisted of electrons, as from the

divided atoms of hydrogen, and in the language of Lodge "the electrons are the things of which matter is made," the substantial character of electricity was demonstrated. When administering an electrical current from one pole from a high potential source, to or against the body's capacity, the electrons are dispersed throughout the whole organism, passing to and from with the charge and discharge of a current which is administered, either a high potential alternating current, like the high frequency current, or a pulsatory current, like the static wave current. These electrons, moving in all directions, pass through the cells of the body, increasing metabolism by inducing mechanical tissue or cell gymnastics with consequent increase of the processes of tissue building and elimination.

The *perceptible mechanical effects*, the important local effects of electrical currents, are derived from the various interrupted current methods from various electrical sources. In the high frequency currents, the rate of interruption is above 10,000 a second, a rate to which the tissues do not respond to produce sensible effects, except heat with hyperemia.

The constant, induced, and sinusoidal currents, the older currents, and best known to most practitioners, produce motor response by stimulation at the motor points of the body, which are so accurately charted in all neurological textbooks. These currents produce muscular contraction through the combined effect upon the neuromuscular mechanism, nerve stimulation being followed by muscular contraction. The contraction induced in this manner is a mass contraction and is employed for the exercise of muscles for which the sinusoidal current is preferred for its greater nutritional effects in the treatment of the paralyzed muscles, as in anterior poliomyelitis, and in the peripheral treatment of other forms of paralysis.

The *static currents*, which are least understood and recognized by the general practitioners and neurologists, are *par excellence* the most important of the mechanical electrical currents. With them no other than mechanical effects are produced, except the heat of exercise. It is a constant current infinitely small in quantity and great in potential, but its use is not associated with any possibility of tissue electrolysis or disorganization. It is the most potent and most harmless of all currents.

The static current furthermore acts directly upon the cell structures, producing independent muscular contraction, except possibly the static induced current. With the modalities which are administered with the patient connected to one side of the machine—the wave current, static sparks, and static brush discharge—the charge which is formed upon the surface escapes at the time of the discharge from without inward and focuses from all sides through the tissues to the point or surface at which it discharges in its path to the earth. In other words, when the body is charged and a spark escapes from the patient, the charge which has surrounded the surface comes from every side to discharge, focusing through the tissues to the point at which it escapes, producing the mechanical effect of local contraction near the surface as it passes from within outward. This action effects a depth

or extent of tissue response in the form of contraction, causing an expression of the fluids and foreign and waste matter in the lymphatic channels to be forced onward, thereby draining the tissues and reducing swelling and pressure. In this way, by successive application to infiltrated areas, the condition of stasis, present in swollen tissues, is removed, and circulation and metabolism are restored. It is on account of this property of the static current in efficiently resolving stasis arising from the results of tissue shock, as present with local noninfected inflammation, that its value has come to be recognized. For there are no other means in therapeutics today so capable and effective in relieving infiltration in the glands or muscular structures of the body, as the static current. It is so capable, when administered by means of the three most useful modalities, static wave current, static sparks, and static brush discharge, of resolving local infiltration in such acute inflammations as sprains, contusions, and other inflammatory conditions not associated with infection, that its field of usefulness becomes the largest of any electrical current. These methods properly applied are capable of absolutely resolving and curing with a few treatments most cases of ankle sprain, synovitis, and other swollen conditions. When fracture has occurred, the static brush discharge also gives great relief and hastens repair by reducing the swelling.

*Its application to the kidneys in nephritis,* the liver in hypertrophic cirrhosis, and conditions of congestion and inactivity of the pancreas in diabetes, the large malarial spleen, the prostate gland, and the seminal vesicles, in short, to any gland in the body which is not the seat of a tuberculous or pyogenic infection or malignant tumors, is followed by marked reduction in size with restoration of function.

The method of administering the static wave current is from the positive side of the static machine with the negative pole connected by a metallic conducting route directly to the damp earth. The speed of the static machine which determines the volume of discharge and the regulation of the length of the spark gap, are the means of regulating the dose. The measurement of dose is by regulation of the spark gap and the size of the terminal balls of the discharging rods to the conditions to be treated. The size of the terminals determines the current condensation, which takes place with a given length of spark gap. The length of administration is pretty uniformly twenty minutes for the treatment of all types of inflammation to which it is adapted, and the length of the spark gap is regulated to the pain produced by the action of the current. The size of the dispersing electrode and the acuteness of the inflammatory condition will determine the degree of pain produced and the length of the spark gap indicated.

Another action of this current, which meets another coincident condition in inflammation of joint structures and other painful conditions, is the relaxation of muscular spasm. In other words, where static sparks or the wave current is applied over tense muscles, it removes the tension accompanying inflammation, affording a feeling of relief and lightness to the part.

It is not amiss to say that there are no modalities or methods in medicine capable of giving such great relief from pain and suffering as the static modalities in the numerous cases of inflammation to which they are adapted. Pain may be readily demonstrated to be due, in almost all instances, to pressure because it is relieved by the dissipation of infiltration and muscular tension at the site of pressure. This is well illustrated in sciatica. The lesion in sciatica causing the suffering is, as a rule, circumscribed at some place where the nerve is pressed upon, as by a fibroid tumor, a subinvolted uterus, an enlarged prostate, or inflation with swelling of the nerve at the sacrosciatic notch, where it is most exposed to injury. The pain, however, may be and is, as a rule, most marked somewhere on the outer aspect of a limb, as in the calf of the leg. The treatment should always be directed to the lesion. No condition better demonstrates this principle than sciatica, which is promptly cured in all early and uncomplicated cases by the static method used locally. A local lesion is readily diagnosed as the spot at which the greatest pain is produced beneath a sheet metal electrode, which has been placed in contact with the skin over suspected peripheral neuritis. If a patient complains of pain in the limb on the outer aspect of the thigh or leg, the suspicion is at once aroused that there may be a lesion at the sacrosciatic notch—the most common site of the lesion in sciatica. By placing a small metal electrode over the notch, with the spark gap of the machine closed before starting, and then starting with the proper arrangement for the wave current, pain will be elicited if the lesion is there, and will be unbearable when a spark gap more than one inch in length is employed; whereas, if no lesion is present a spark gap of twelve inches will induce no pain whatever. When so located, this is the site at which the treatment should be applied, after which relief is instantaneous. In early cases, neuritis is cured without exception within ten days.

The scope of this paper does not permit further consideration of special methods of treatment, but I wish to say that the results in the treatment of localized inflammation or infiltration by the static methods are marvelous and unbelievable to the unformed; so much so that they may require demonstration, which will be convincing, particularly so if the skeptic is the sufferer. The static modalities which have been ranked, and are still ranked, as a means of therapeutic suggestion by those who are not familiar with their qualities, are the most valuable of all of the electrical currents for the relief of pain and suffering, because the painful conditions to which they are adapted are most numerous.

In this survey, which refers briefly to the uses and indications for the electrical modalities, I have endeavored to outline the fields in which electricity meets important requirements in medicine and surgery. I wish to add, in conclusion, that the failures of those who use the measures to which I have referred, will be uniformly due either to errors of diagnosis or faulty technic. Great injustice is done to the science of physical therapeutics by would-be friends who undertake to use the various methods without a knowledge of how, when, and why they should be employed. As with surgery it requires

skill and experience to be able to succeed with physical measures and perhaps more skill even than surgery. The adverse reports, therefore, must be attributed to the faulty technique of those who assume to employ them without due knowledge and experience, to errors in diagnosis, or to attempts to accomplish the impossible. This is said in justice to the science and to those who are doing thorough and skillful work.

2020 BROADWAY.

## THE STUDY OF DRUG ACTION.

By THOMAS J. MAYS, M. D.,  
Philadelphia.

In these days of drugless therapy there exists a manifest impulse to get rid of the so called useless members of our materia medica. There can be no objection to such a procedure if it is carried out properly, but in the haste in which this is sought to be accomplished, drug agents are frequently victimized on grounds so trivial that would barely receive a moment's serious consideration from any impartial scientific tribunal.

The chief difficulty with those agents that are handed down to be "Jonahized" does not reside in their obsolescence, or in the bulky volume which they form, but in our imperfect comprehension of their behavior. So long as authors of works on therapeutics are content to discuss the action of such substances in the easy going and unclassified alphabetical fashion of the present, there is very little hope that this defect will be corrected. No branch of learning can lay claim to scientific station until its units and their action are organized into a systematic and coherent body. In other words, before therapeutics can aspire to the dignity of a science it must rise far above its present feudal existence, and attain that stage in which the fundamental concept is recognized that drug forces are amenable to, and are controlled by, laws that are just as immutable as those which hold true of all other physical phenomena.

Another reason for the effort to sidetrack the members of our materia medica is the influence of the so called age of preventive medicine, under the ægis of which it is believed that every illness will disappear at the shake of the modern hygienist's wand, and that the art of healing with drugs will soon be relegated to the forgotten past.

Preventive medicine has done much and will do much more, but the complete eradication of disease is a problem for the far distant future, and is largely an impossibility so long as the mental and physical imperfections of man endure. It is a fascinating study to man so long as he remains practically well, but the best are beset by weak and vulnerable spots in their make-up which will breed disease in spite of all the power that prophylactics can exert. To failing health and suffering, prevention is in large part a hollow mockery. The sick do not particularly seek it, but look for something that offers speedy redress, and if the medical profession is not capable of furnishing this requirement, to what other agency is an appeal to be made? Are the millions that are spent in the pursuit of

botany, zoology, anatomy, histology, physiology, chemistry, clinical and physical diagnosis, pharmacology, and therapeutics, dedicated to the purpose of preventing or of curing disease? It is to be hoped that medical institutions occupy no equivocal attitude on this point. Be that as it may, the indications are very clear and palpable that the genius and spirit of the profession are standing on an enduring basis. There is neither temporizing nor wearing of lions' skins here, and no presumption to hand out stones when bread is asked for.

There also exists an unreasonable degree of impatience with, and a tendency to expect too much from, drug action. We sometimes forget that the growth of any branch of learning bears an inverse relationship to its complexity, that the successful study of drug action as applied to disease is far more varied and intricate, is dependent on a much larger number of factors and conditions than any other sphere of medicine, and that for these reasons it must be the least understood of all.

Evolution, or the transition of things from a simple to a complex state, as applied to the biological sciences, not only serves the practical usefulness of placing old facts and observations in a new light, but solves many therapeutic phenomena which, without it, would remain inexplicable. It demonstrates that in principle, therapeutic action differs entirely from all the other concrete biological sciences. The elements of anatomy and physiology, for example, are founded on the structures, and on the relationship that exist between the structures and the functions of the animal body. Not so in the case of therapeutics. For between mercury as a pure and simple element, for instance, and the human body there is no more natural connection than there is between a South Sea Islander and the man in the moon; but when mercury is considered as a substance which has the power of influencing living structure and function in a special manner, it enters on a career which opens a domain of inquiry that has to do with a definite physical relationship between mercury and animal life—a relationship that connects and correlates the essential property of organic impressibility with the action and reaction of external forces. It is this rudimentary factor which, with the collaboration of physiology, pathology, chemistry, and pharmacology, forms the warp and woof of the science of therapeutics, and weaves the essential principle toward which the whole body of scientific medicine converges.

The developmental history of therapeutics may, therefore, be traced to a very remote origin. Just as the science of physiology became nascent when it was discovered that the lower forms of life possessed the power of motion, sensation, circulation, digestion, etc., and were capable of differentiating between the substances which subserve the processes of nutrition and motion, and those which do not; so the art and science of healing was brought forth in a later age, when the intellectual powers had advanced sufficiently to comprehend that pain and disease resulted in dissolution and death, and that the administration of certain agents or forces possessed the power of relieving pain and disease and of preventing death. Though far apart in time of origin and aim, physiology and therapeutics are,



therefore, complementary, the one natural and dealing with the forces that conserve the body and health, and the other artificial, which, by skillfully utilizing external agencies, aids the physiological resources of the body to combat and overcome the factors that make for disease and death.

What then are some of the fundamental factors in drug action?

First, the effect of a drug is proportionate to the quantity that is administered, and every drug produces at least two effects in minimum and maximum doses, which differ not only in degree but in kind. Small doses of pilocarpine check, while large doses produce sweating; small doses of apomorphine stop vomiting, while large doses cause it; small doses of strychnine stimulate the motor nervous system, medium doses cause tetanus and convulsions, while very large doses produce paralysis; and the same difference is probably characteristic of all drugs.

Second, the action of a large number of drugs is intimately dependent on their molecular weight, and boiling or melting point. Thus it appears that substances with the highest molecular weight, boiling or melting point, like mercury, iodoform, bismuth, benzoic acid, menthol, eucalyptol, etc., are known to have the highest antiseptic power. In other words, the greater the molecular weight and the higher the boiling point of a therapeutic agent, the more physical inertness it possesses, and the more pronounced is its antiseptic property.

This therapeutic mechanism becomes clear enough when we consider that cold is perhaps the most effective antiseptic, for no active sepsis or decomposition is possible at or near the freezing point. Cold produces this therapeutic effect merely by repressing or inhibiting organic molecular activity—the *modus operandi* of which, for all practical purposes, is analogous to that of antiseptics.

Moreover, it is also true that all our principal antipyretics, like acetanilid, antipyrin, phenacetin, etc., possess a rather high molecular weight and boiling or melting point, and it is probable that, like antiseptics, they produce antipyresis in virtue of their depressing power when given in large doses. The ultimate action of antiseptics and antipyretics is thus reduced to a mechanical basis, but such a feature is a characteristic of the action of possibly all drugs. For example, our important cathartics wield their influence in a mechanical way by exciting alimentary peristalsis and secretion by reason of their high molecular weight, slow diffusibility, and difficult absorption.

Third, the elective action of drugs constitutes another important element in the field of therapeutics. Many of the articles of the *materia medica* have a natural preferential affinity for certain structures of the body. Thus cathartics act on the intestinal canal, emetics on the stomach, cholagogues on the liver, digitalis on the heart, cantharides on the urinary tract, aloes on the lower bowel, etc.

Fourth, the appropriate dose is more or less a variable quantity, and cannot be so closely determined that it will always produce exactly the same effect in different individuals, or even in the same individual at different times or under different circumstances, but this is not an insurmountable obstacle to gauging the therapeutic effect accurately

enough to fulfill all useful and practical purposes. We must not only know that medicines act, but find out when and where they act under all possible conditions. Above everything else we must give up the oppressively current opinion that each and every drug possesses a single hidebound dose. To say, for example, that the dose of salicylic acid is fifteen grains, without defining the condition to which it is to be applied, is irrational. Whether the dose of this or any other drug is one, fifteen, or any number of grains wholly depends on the kind of work which it is expected to perform. So long as this is not defined, half a grain or two grains is as correct a dose of this drug as fifteen or fifty grains.

The dose problem must be regarded in the same light as the quantity of fuel which is required to fire a locomotive is viewed by the engineer. His coal contains sufficient heat force to run his engine over miles and miles of track. To the actual number of heat units, of which he may have full knowledge, he pays practically very little attention at this time, but estimates the amount of fuel which he needs in accord with his own and others' experience. This tells him that more force is needed to run his train of cars up grade, around a curve, or against a wind storm, than it does to propel it along the level, down grade, or going with the wind. He becomes so familiar with the process of approximating the necessary amount of heat force, that he is enabled to satisfy all the needs of his machine under all circumstances with an almost unerring precision. The physician occupies an analogous position. He, too, is charged with the task of steering the human machine safely through a pathway of difficulty and peril, the landmarks, the danger and safety signals of which are, or should be as well known as those of the railroad track, and holds in his hand the forces of cure, which, if properly unlocked and wisely adjusted and directed, will stem the tide of disease and restore his patient to health and strength.

Fifth, treatment should not be addressed so much to the patient as against the disease. There is a prevailing notion that successful treatment depends on thorough individualization of the patient, which is based on the theory that no two individuals are precisely alike, and that the same disease in different individuals must be of a somewhat different nature, and cannot, therefore, be amenable to the same treatment. There is a grain of truth in this contention, which is, however, entirely outweighed by the practical objection on the other side. There is undoubtedly some difference in the form of the same disease in different individuals, but in its totality it is the same—pursues the same general course, is characterized by the same pathology and morbid anatomy, and inclines to the same termination; and if it be true that a specific pathology underlies sound therapeutic principles, then the disease itself and not the individual must be the central point of attack in the treatment; and furthermore the disease that yields to one or a number of remedies in one person will yield to the same in another. If this principle is not true, then the thousand and one slight differences which exist between different persons, and which have to be taken into account, would lead to a maze of difficulties and

perplexities. To obviate this difficulty, it is argued that only the most prominent differences should be recognized. But why only these? Are the lesser of no consequence to the principle, or is this a tacit acknowledgment that the principle is not altogether valid?

At any rate the principle is never applied in practical medicine. We give a child a dose of castor oil for the purpose of removing some irritating material from its intestinal canal, without a moment's inquiry whether or not it differs in any special respect from other children under the same conditions. We treat the cause of the disorder—the material in the bowel and its offending effects—regardless of the child's varying individuality.

From the foregoing the inference must not be drawn, however, that the same disease is always the same under all circumstances. Thus, while acute pneumonia may practically pursue an undeviating course in many instances, it is well known that its etiology is frequently tinged with a malarial, rheumatic, syphilitic, alcoholic, or traumatic element—all important factors which, while not representing any peculiarities of the patient or of the individual, are peculiarities of the biology of the disease, which determine to a great degree the trend and gravity of the latter, and which must, therefore, receive vital consideration in planning the course of treatment.

Sixth, too little interest is taken in the proper mental training of medical students in the study of drug action. They should not only be taught the general and special behavior of drugs, but be impressed with the idea that it is of infinitely greater consequence to form a conception of the status and course of the disease from the beginning to its end than be able to recognize its effects in the autopsy.

There is a world of difference between the science of physiological pathology, and that of morbid anatomy. One is disease in a state of activity, and the other in that of rest. It is of much greater practical value, for example, to trace a mental picture of the intermediate mechanical process that obtains throughout the existence of aortic regurgitation that merely to recognize the disease as it is detected by its symptoms and physical signs, and as it appears on the post mortem table.

From such an angle of vision it will appear that in an affection of this kind the leaking flaps during diastole allow a back flow of blood from the aorta into the left ventricle, while at the same time a current is being driven from the left auricle through the mitral valve into the same ventricle; hence the latter is being filled from two separate directions. This naturally leads to an overdistention of the left ventricular wall, without, however, as a rule entailing much encumbrance on the circulation, so long as the defect is properly counterbalanced by proper development of the cardiac muscle, and provided the mitral valve remains intact.

If at any time the compensatory balance between the heart muscle and the circulation is disturbed, either by excessive strain on the heart, or on account of some inherent debility of the muscle itself, the circulation becomes impeded, the blood accumulates in the ventricular cavity, and engorgement of the left auricle, of the pulmonary veins, and of the

whole pulmonary circulation ensues, in spite of the absence of physical signs that point to derangement of the mitral valve. The lethal ending in such cases comes, therefore, not as a direct result of aortic insufficiency, but in the form of some indirect pulmonary complication.

With care and proper management, a contingency like the one described may be delayed for many years, provided that undue physical excesses like running, lifting, dancing, etc., are strictly guarded against. But if such rupture should occur, the first danger to be averted lies in the direction of conserving the deficiency in the aortic valve, while the second risk to be ward off demands efforts to overcome the fullness or overloaded state of the pulmonary circulation. The latter condition is naturally anticipated in all frank lesions of the mitral valve, but is less familiarly associated with derangement of the aortic valve, at least so long as the mitral valve shows no signs of giving out.

It will be seen that such an outline of the physiological pathology of aortic regurgitation, imperfect as it is, gives an interesting insight into the genesis and development of the emergencies and complications that may arise in the course of this disease, and gives a tangible clue to the therapeutic lines of defense which have to be made to check their advance.

That which is true of aortic disease in regard to the subject of physiological pathology applies to every other form of disease, especially to that which pursues a chronic or prolonged course.

Following this discussion on similar lines, other phases of therapeutic action will come into evidence, especially in the domain of the more intangible forces like heat, light, sound, mental effects, etc., which also exert a marked influence in shaping the destiny of living matter, but for fear of pushing this paper to undue length it is thought advisable to postpone this portion of the subject for future consideration.

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## TIC OR HABIT SPASM.\*

*Its Treatment by Education and Muscular Relaxation; a Report of Ten Cases with Description of the Method Used.*

BY MORRIS GROSSMAN, M. D.,

New York,

Adjunct Visiting Neurologist and Adjunct Visiting Physician, Central and Neurological Hospital; Clinical Assistant, Leubuscher Hospital, Outpatient Department.

To the French school, led by Brissaud, Meige, and Feindel, we are indebted for the assignment of ties their proper place among the numerous motor affections consequent on nervous and mental diseases. Tic, as defined by Meige and Feindel (1), in their most complete monograph, *Les Tic et leur traitement*, "is a coordinated, purposive act, provoked in the first instance by some external cause, or by an idea; repetition leads to its becoming habitual and finally to its involuntary reproduction, without cause or purpose. At the same time its form,

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intensity, and frequency are exaggerated." It assumes the characters of a convulsive movement, inopportune and excessive; its execution is often preceded by an irresistible impulse, its suppression is associated with a feeling of discomfort. The effect of volitional effort or distraction is to diminish its activity; in sleep it disappears. It occurs in predisposed individuals who usually show other indications of mental instability.

We have therefore to deal with, primarily, an abnormal mental state in which there is an inability to control the will; and, secondarily, a motor manifestation, due at first to an external stimulus, or a stimulus originating within the brain, such as an idea. In neither case is the result of this stimulus a definite, coordinated, purposive, muscular movement. The movement may be either of a clonic, or of a tonic type; the clonic type of movement is characterized by being unduly rapid, and is increased in frequency and intensity; the tonic type is characterized by its prolonged duration. These muscular contractions come on at irregular intervals, and are always coordinated.

*Etiology.* A few words may not be out of place about the etiological factors associated with this condition; briefly, tics may occur at any period of life except infancy; their onset frequently dating to the time of puberty. Where there is psychical predisposition, trauma and imitation may be noteworthy factors; infectious diseases may usher it in; acute chorea, particularly where it is of prolonged duration, or where the attacks occur frequently, should be looked upon with suspicion. The differential diagnosis between most cases of acute chorea and tic can readily be made. Chorea and tic may have many etiological features in common; a neurotic family history, a physical or a mental shock preceding its onset, a rheumatic history, etc. The movements in chorea are more irregular, incoordinated, and less rapid; and as Still says, "there is complete uncertainty where the next jerk will be." The movements in tic are more regular, purposive, and repeated at intervals in just the same manner. Observation of the patient usually increases the movements of chorea, and diminishes those of tic. By effort of will the tic can be controlled for a limited time. The twitching of the tongue when protruded, as pointed out by Sachs, serves as an important diagnostic feature.

Heredity, is of utmost importance; mental instability is usually evident in the family history of most of these patients. Dr. Charles Herrmann (2), in his paper, *Tic in Children and Their Educational Treatment*, *Archives of Pediatrics*, June, 1906, reports ten cases, in which, in the family history, this mental instability was a striking feature. Charcot maintains that "in every case of tic, however trivial, especially if attended with phenomena such as coprolalia, a hereditary element is discernible."

*Variety of tics.* Tic may affect any muscle or group of muscles throughout the body. There may be any combination of muscle groups coexisting at the same time; Cases I and III well demonstrate the multiplicity of tics which may be encountered in a single patient. Blinking tics of the eyelids are most frequently seen; they may be unilateral or bilateral, either of the clonic or tonic type of muscle move-

ment; sometimes both varieties being present in the same patient, as in Cases III and VII of the group here reported. Accompanying tics of the eyelid, we usually find facial grimaces, wrinkling of the forehead, and other movements about the head; Cases I, III, and VII show these combinations. Tic of the extrinsic muscles of the eye is sometimes met with, as in Cases III and IV, in which there was a deviation of the eyeballs upward and to the right every few seconds. Tic of the muscles of the neck is also quite frequently encountered; it may be of the clonic or tonic type; the clonic tic may be nodding, tossing from side to side, or salutatory as in affirmation or negation; Cases II and IV were of this variety. The mental torticollis of Brissaud (3) is a tonic tic, involving any of the muscles supplied by the spinal accessory nerve; it is a purely functional condition and should be unconnected with muscular articular, or osseous lesions of the neck. It is characterized by being ordinarily controlled by some simple device or procedure of the patient's own invention; this procedure may resolve itself into an antagonistic gesture, or some simple act, for example, placing the index finger upon the chin to overcome the spasm; if even momentary cessation of the spasm is effected, by suggestion or any other means, the torticollis disappears without leaving a trace; it, however, soon reappears. Case V was of this type.

Tic of the shoulder may affect one arm as in Case I, or both as in Case III. It usually consists of a drawing either upward, forward, or backward of the muscles of the shoulder. Case I shows a tossing tic of the arm, so violent that it resembles an athetoid movement; the woman can and does control it absolutely for any length of time requested, by holding it with the other hand; her fingers keep moving backward and forward continuously. In her case there is also an inward rotation of the left thigh, with slight flexion of the knee, with which she rubs the opposite side when she stands or walks.

Tics of respiration, such as sobbing, moaning, sighing, coughing, and whistling, are frequently encountered; Cases I, III, and VIII in this series demonstrate types of respiratory tics. The patients of Cases I and III would go about, unconsciously whistling, moaning, and making peculiar noises, and when asked to stop, would deny the fact that they had been making them. The patient of Case VIII would emit a series of explosive grunts without provocation, when his mind was concentrated on any work he might be doing.

*Treatment* is, 1, medicinal; 2, hygienic; and, 3, educational.

1. The only medicinal agent used in these cases was a general tonic where indicated.

2. The home surroundings of the patient must be closely scrutinized; they must be made as pleasant as possible; if a source of imitation, as tic in the parents or other members of the family, is present, the patient's contact with that member should be limited. With the exception of a few protracted cases it is usually unnecessary to send them away from their homes. A firm attendant on the case is of decided advantage. The diet should be bland; it should not contain any substances that are likely to increase the excitability of the peripheral system. Coffee, tea, and in adults, alcohol and tobacco should



be very sparingly used. Hydrotherapy in the form of tepid douches or spinal drip, is of great benefit. The bowels should be kept open with a mild saline, if constipation is present.

3. Educational treatment is divided into A, breathing and relaxation, and, B, muscular education.

A. *Breathing.* The patient is placed in a recumbent position; the clothes about the chest and abdomen should be loose, the room must be quiet, and the physician and the patient should be alone so as to eliminate all distraction. The patient is then instructed to breathe deeply, using his diaphragm, and to limit his thoracic movements, and to pause at the end of inspiration, then slowly and evenly expire and again pause; this deep breathing soon tires a patient, so after about ten or twelve deep breaths have been taken, the depth is decreased and the pauses are shortened, until the patient is breathing quietly, without effort, as in sleep.

*Relaxation* of the muscles is then begun; passive movements in which the muscles are alternately lengthened and shortened are employed. The muscles of the forehead, eyelids, cheek, and jaw are thus manipulated until wrinkling of the forehead and blinking of the eyelids diminishes or disappears and muscular spasm is eliminated. Next a shoulder is relaxed, then an arm; each in turn must be passively moved until all traces of muscular tension vanish and the part lies motionless and flaccid, and falls limply from any unsupported position. Then the leg on the same side should be taken. After a part is relaxed, those previously and that newly relaxed should be briefly dealt with again, in the order in which they were first relaxed. This linking of parts previously, to parts newly relaxed, is helpful in bringing the whole to a satisfactory state of relaxation. The muscles of the trunk are best manipulated with the patient sitting in a chair; by passively moving him from side to side, relaxation of the muscles is readily induced. These exercises were elaborated by Dr. William J. M. A. Maloney as an aid to the cure of ataxia in his method of treating tabes; described in his paper, *The Cure of Ataxia*, New York Medical Journal, November 29, 1913.

For a patient to relax properly, continued attention and mental concentration is essential; in this way, the first step in strengthening the deficient will power of the patient is begun. It is also a noticeable feature in these cases, that when one disturbs or manipulates parts at rest, whether proximate or distant, promptly an explosion of movement takes place in the area in which the tic is located. We know that repeated stimulation of a nerve increases its excitability and response to that stimulus. The apparent transmission of stimuli seen in cases of tic, is most probably due to hypersensitiveness of the cerebral centres, or peripheral nerve fibres that supply the tic area, resulting from their repeated stimulation. By teaching muscular relaxation, the patient soon learns to control the desire to gratify these extraneous stimuli, thus obviating their transmission. Relaxation produces a state typified by that existing during sleep; we know that during sleep the activity of a tic usually disappears. Repression of tic movements, as well as the gymnastics used in treating these cases, is always accompanied by a feeling of fatigue, which in some cases may be

quite marked. No other agent overcomes this fatigue as readily and thoroughly as muscular relaxation.

B. *Muscular education.* The patients are now ready to go on with educational movements; these movements are first passively performed by the operator; simple movements such as flexion and extension, followed by more complicated ones, should be used; the patient's attention should be directed to the control of the tic. The passive movements are then repeated, with the patient offering slight resistance; next the patient performs the movement alone, and finally the movement is done against the resistance of the physician. When manipulating the muscles in the tic area, the movement should simulate as closely as possible the tic being treated. The movements should be done slowly, regularly, in time, and at the direction of the physician. When the patient has mastered these movements in the recumbent position, similar exercises are taught in the upright position; at first with the patient standing still, then moving backward, forward, and from side to side, combining exercises directed to the tic area under consideration.

In addition to these exercises, Brissaud's (3) method of treatment, which is a combination of immobilization of movement with movements of immobilization, is of extreme value. The immobilization of the parts affected may be performed with the patient standing or sitting before a mirror. The length of time that a patient remains immobile should gradually be increased as the patient improves, until he is able to control the movements absolutely for five minutes; then the position of the head, body, and extremities may be varied, directing special attention and simple exercise movements to the tic area; at first, simple movements, followed later by more complicated ones.

The inhibition exercises elaborated by Oppenheim (4), of Berlin, are also of great assistance. These exercises consist essentially of some form of peripheral stimulation, for example, pinching, pricking, or tickling the skin; or bringing a sharp instrument toward the patient, who is commanded to control and repress the desire to move or touch the parts thus disturbed.

The exercises should be practised at definite hours, three or four times a day. The length of time devoted to each period of exercises varies from fifteen to thirty minutes, five minute periods of relaxation to every five minutes of active work. At least one of the periods should be performed under the supervision of the physician daily. He should encourage, or reprimand the patient, as necessary, and point out the progress made from day to day. The other periods must be supervised by the parent or attendant, who should submit a report of the work done to the physician at the next visit. Punctuality and attention to details must be insisted upon if a successful issue is to be obtained.

CASE I. H. O., aged sixteen years. American. Family history: One brother had chorea. Two sisters had enuresis. Past history: Measles and pneumonia eleven years ago. Scarlet fever eight years ago. Several attacks of tonsillitis. Seven years ago patient had her first attack of chorea; it lasted four months, involved her head, neck, and all extremities; and was quite severe. Ever since that attack, patient was never entirely free from twitching of

scarlet fever last July. Each year from May to August, she had a low grade toxic exanthema, which on subsiding would leave her with twitching of her left arm and leg. Began to menstruate at fourteen years; during her menstrual periods, her twitching became absolutely uncontrollable.

Present history: Present exacerbation began in August, 1913, and continued up to May, 1914. Movements became so severe that patient had to be sent to the hospital. She stayed there for five weeks, but did not improve to any great extent. From there she was sent to a sanitarium in the country, where she stayed for two weeks; there she improved slightly, but within two weeks after returning to her home, she was twitching again, more than ever before. Since then she gradually got worse.

For the past two years her mother noticed that the patient would go about the house whistling, humming, moaning, and smacking her lips, but would be entirely unconscious of the fact that she was doing so; she would stop when reminded, but would soon begin again.

Physical examination: Well nourished girl. Mucous membranes and conjunctiva pale. Heart and lungs negative. Unilateral facial grimaces of the tonic type, with wrinkling of the forehead. Sucked her lips and protruded her tongue every few seconds. She pulled her left shoulder upward and thrust it forward. Marked movement of left arm, resembling an athetosis. Fingers of the left hand continuously flexed and extended. Left thigh rotated inward, and rubbed the opposite side with it when she was standing or walking.

Treatment and subsequent history: This patient received about fifty treatments. Although she still had some slight twitching of her fingers, the movements of her face and arm were stopped.

CASE II. E. C., aged thirteen years, schoolgirl, American. Family history: Younger brother subject to attacks of convulsions. Past history: Diphtheria twice. Measles, chicken pox, pertussis. First attack of chorea, eight years ago. Five years ago had second attack, which lasted four months; it was general, involving head, neck, and all of her extremities, and of moderate severity. When it subsided, her mother noticed that she continued to draw her head upward and to the right. Present history: Patient had an acute attack of chorea beginning in May, 1914, which lasted until August, 1914. Attack was general, involving head, neck, and all her extremities. After general twitching had disappeared, patient continued to blink her eyes and toss her head upward and to the right. Intense desire to tic, which if repressed led sense of fatigue.

Physical examination: Well nourished girl. Heart and lungs negative. Tossing tic of head, upward and to the right; this movement occurred about six or eight times a minute. Also had a bilateral blinking tic of both eye lids. Slight drawing up of the nose on right side.

Treatment and subsequent history: This patient received twenty-five treatments in all; after which the movements had entirely disappeared. She returned, three weeks later, with a relapse which followed a fright received the night before. She was given three relaxation treatments and the tic disappeared. She remained free for two weeks when she was again frightened by brother having an attack of convulsions. This relapse also lasted one week, but readily responded to treatment. Afterward, for a period of four months, she was free from symptoms.

CASE III. M. L., aged ten years, American girl. Family history: Sister suffered with enuresis. Past history: Measles, enuresis, rheumatism five years ago. Present history: Patient had severe attack of chorea one year ago; all extremities, head, and face were involved. It lasted two months and then movements subsided slightly, but the patient continued to have spasmodic twitchings of face and shoulder, blinking of eyes, smacking of lips, with protrusion of the tongue. All these movements became worse when the patient was subjected to emotional stress of any kind, but ceased during sleep. Mother noticed patient kept humming and making noises when alone. Patient was irritable and excitable.

Physical examination: Poorly nourished child. Exceedingly suspicious. Lungs normal. Heart slightly enlarged, no murmurs, marked accentuation of second aortic sound. Blinking of both eyelids. Eyeballs rolled upward and to the right when eyelids were closed. Marked facial grimaces on right side. Patient kept smacking her lips and

protruded her tongue about fifteen times a minute. Both shoulders were frequently drawn upward and thrust forward.

Treatment and subsequent history: This patient received about thirty treatments up to the time when she stopped attending the clinic. Her condition was markedly improved at this time. Her facial grimaces and protrusion of her tongue had ceased. The blinking of her eyelids and eye movements were still present, but were not so severe as they had been.

CASE IV. J. A. W., aged nineteen years, stenographer, American girl. Family history: Sister had chorea, seven years ago. Tic involving face, shoulders, and arm. Brother had tic of the forehead. Past history: Scarlet fever at two, measles at six years. Present history: About eighteen months ago, patient began frequently to draw her head to the right side; at the same time she would turn her chin toward the left shoulder. She would then roll her eyeballs upward and to the left. These movements would occur about two or three times a minute; they would disappear if the patient was reminded to control them.

Physical examination: Well nourished girl. Heart and lungs negative. Mucous membranes pale. Movements of the head and eyeballs as described above.

Treatment and subsequent history: This patient received ten treatments, after which her tic had entirely disappeared. Up to the present time, a period of four months, no relapse had occurred.

CASE V. H. L., aged eight years, American boy. Family history: Negative. Past history: Scarlet fever at five years. Measles, chicken pox, and pertussis since then. Operated upon three times for adenoids. Present history: Patient had difficulty in articulation since infancy. Mentality good; patient very shy and hard to approach. Kept his head slightly inclined to one side.

Physical examination: Poorly nourished boy. Heart and lungs negative. Skin and mucous membranes pale. Wrinkling of forehead. Incomplete blinking tic of both eyelids. Tonic spasm of neck muscles of right side. This spasm was readily overcome by suggestion or slight pressure.

Treatment and subsequent history: Received about fifteen treatments. His torticollis entirely disappeared; speech much improved, though not entirely perfect.

CASE VI. M. W., aged sixteen years, American girl. Family history: Sister suffered from tic of the neck and eyes. Brother had tic of forehead and eyes. Past history: Pneumonia and pertussis when one year old. Second attack of pneumonia at three, scarlet fever at five, chorea at six years; chorea was general and lasted about three months. Present history: Since her attack of chorea, about eight years ago, patient suffered from tic which successively involved her face, eyes, forehead, shoulders, and upper extremities. As soon as one disappeared, the other would appear. For the past two months patient had a tic of the mouth. It consisted of a moistening and nibbling of the lower lip, sucking of the upper lip, with a yawning movement of the mouth.

Physical examination: Well nourished girl. Heart and lungs negative. Patient had a peculiar yawning movement of mouth, occurring about four or five times a minute. Had a labial eczema due to nibbling and sucking of her lips.

Treatment and subsequent history: This girl received fifteen treatments and remained free from her tic subsequently, for a period of three months.

CASE VII. S. H., aged thirteen years, American girl. Family history: Negative. Past history: Measles at one year. Present history: Three years ago, received a fright by being knocked down by a wagon. Since then had the desire to blink her eyes continuously. Blinking was attended with great desire, and repression was associated with fatigue. While asleep there was no evidence of extraneous movements.

Physical examination: Blinking tic of eyes of the clonic type about ten times a minute. Every fifth or sixth one was of the tonic variety. Otherwise well nourished normal girl.

Treatment and subsequent history: This patient received eighteen treatments, after which her tic entirely disappeared; no relapse.

CASE VIII. G. S., aged twelve years, American boy. Family history: Father died of nephritis. Past history:

Measles at three, mastoiditis, which was operated upon, at six years. Enuresis since infancy. Present history: One year ago, patient began to twitch his hands and fingers; these movements continued up to one month ago, when they disappeared, but were replaced by twitching around the mouth, blinking of the eyelids, drawing up of his forehead, and frequent emission of explosive grunting sounds.

Physical examination: Well nourished boy. Heart and lungs negative. Well defined clonic facial grimaces, with wrinkling up of forehead and nose. Blinking tic of both eyelids.

Treatment and subsequent history: This patient received ten treatments in all, after which his tic cleared up. There were no relapses.

CASE IX. C. H., aged fourteen years, American girl. Family history: Negative. Past history: Patient since infancy had always been irritable and nervous. Mild attack of chorea six years ago, which on subsiding, left her with twitching of her face and movements about the shoulders. She had never been entirely free from movement since, but would replace one for the other from time to time. Present history: During the past year patient's facial grimaces had become markedly worse and in addition she had acquired the habit of protruding her tongue and sucking her lips. There was a marked desire to perform these movements, and if patient tried to repress them, a feeling of disappointment followed.

Physical examination: Poorly nourished girl. Mentality better than average at her age. Heart and lungs normal. Facial grimaces with bilateral blinking tic of the eyelids. Protrusion of the tongue with sucking of the lips.

Treatment and subsequent history: This patient received about twelve treatments to date; her movements entirely ceased. There was no replacement by shoulder movements as had been the rule heretofore.

CASE X. B. K., aged ten years, American girl. Family history: Sister had rheumatism and enuresis. Past history: Measles at four, chorea at five and one half years of age; attack was general and of moderate severity. After its subsidence, patient remained nervous and would continually pick at her clothes. Present history: Two months ago patient began to have movements about her shoulders. She also would constantly suck and bite her lips. Every few seconds she would take a deep inspiration and sigh.

Physical examination: Well nourished girl. Heart and lungs negative. Respiratory tic of the sighing type. Upper and lower lips showed excoriations due to nibbling. Shoulders were constantly being raised and thrust forward, and every four or five seconds her left arm was tossed upward above her head in a most bizarre manner, and her head was jerked to the opposite side.

Treatment and subsequent history: This patient received about twenty treatments up to the present time. After about ten, the athetoid tossing of the left arm had ceased, and only shrugging of the shoulders remained. Her lips had entirely healed up. Her movements then entirely disappeared.

#### SUMMARY AND CONCLUSIONS.

From a study of these cases, it is evident that unless one takes into consideration the general nervous instability of the patients, as well as the local manifestation, the treatment instituted, whatever it may be, is likely to be disappointing. Cooperation of the patient and parent is absolutely essential, if a successful issue is to be obtained.

Of the cases here reported, in eight the movements have entirely disappeared; in Case I there is still at times a slight twitching of the fingers on the left side, but all the other symptoms have cleared up. Case III was markedly improved when last seen, but has discontinued attending the clinic. The marked tendency to recurrence or replacement of this condition must not be overlooked; these cases require observation for a long period of time before they can be considered cured. They should report for observation from time to time and continue their exercises after they are discharged.

There were no mental defectives in this group of cases, with the exception of Case III, the children were of average mentality and the parents cooperated heartily in the treatment. In mental defectives, where it is impossible to obtain cooperation and concentration of mind, the educational treatment is of no avail.

The deep breathing improves the circulation by proper oxygenation of the blood; it distracts the patient's attention from his tic, and also affords an outlet for the desire for muscular activity. By resistance movements, we also dissipate this repressed energy along legitimate channels.

In conclusion, I wish to emphasize the importance of persistence, regularity, and attention to details. The exercises as here outlined, if followed in detail, will yield astonishing results, even in the most protracted cases.

I should like to express my thanks to Dr. Charles Herrman and Dr. Samuel Kleinberg for allowing me the privilege of using the cases on their service at the Lebanon Hospital.

#### BIBLIOGRAPHY:

1. MEIGE and LEINDEL. *Les Tic et ses traitements*. Paris, 1901.
2. HERRMAN. *Les Tic et ses traitements*. Paris, 1901.
3. KLEINBERG. *Les Tic et ses traitements*. Paris, 1901.
4. OPPENHEIM. *Les Tic et ses traitements*. Paris, 1901.
5. SACHS. *Medical News*, 2, 1905.

1 WEST EIGHTY-FIFTH STREET.

## THE VALUE OF SOME TESTS OF RENAL PERMEABILITY.\*

By ROBERT HOLMES GREENE, A. M., M. D.,  
New York,

Professor of Genitourinary Surgery, Medical Department,  
Fordham University.

This contribution to a subject on which so much has already been written, represents the results of observation on various methods employed for this purpose, during the past few years, mostly at the City Hospital. The effort is being made through this means to help popularize this work so that it will come into more general use by the general practitioner, as well as by the specialist. Observations have been made on:

Cryoscopy, polyuria experimentale (Albarran), and indigocarmin, four series of comparative tests where one test has been compared with another on the same patient, have also been made by means of methyl blue, phloridzin, phenolsulphonethalein, and estimation of nitrogen in urine and blood.

For the purpose of this paper brief reference will be made only to the work done by means of cryoscopy and polyuria experimentale. There is no doubt as to their scientific value, for routine work they are too complicated. Ordinarily, to obtain accurate findings from cryoscopy, both blood and urine are required and a considerable amount of the former, although an investigator might become so trained in the technique as to be able to gather valuable information from cryoscopy from the urine

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alone. The work done on polyuria experimentale seemed to show that it would never become a popular method, that it has scientific value, but, unless modified, can never come into common use.

**Indigocarmin.** At the present time this substance is being tried out at the City Hospital, to determine its value as a method to be used without ureteral catheterization to show something about the state of the kidneys. There seems to be no doubt that used *with* ureteral catheterization it has considerable value. My associate, Dr. S. W. Schapira, who has investigated it thoroughly, reports its action to resemble very much that of the other dye tests, and it has the advantage over them of being quicker in its appearance. But like them its action is very much modified by the amount of water ingested. He uses comparatively a large quantity, twenty c. c. of a four per cent. solution injected intramuscularly. At the hospital our observations are being carried on with ten c. c. of a 0.08 solution to which has been added 0.1 of salt. This is according to the formula given in the book of Dr. H. H. Morton (1). It is not necessary in using this method to determine which one of two kidneys may be affected to introduce the catheter into the ureter, but, with the cystoscope in the bladder, to observe the ureteral orifices to see on which side the blue color first appears.

No water is to be ingested for five hours before the indigocarmin is used. This is the method of Voelcker and Joseph (2). Our endeavor being to find a method for easy general use, we are at present observing the effects without using the cystoscope. The urine seems, where the kidneys are healthy, to become blue in from five to ten minutes after the injection of the solution. The factors that militate against it are the relationship of the color to the amount of water taken, and the amount of fluid that is necessary to inject. At some future time we may report again the comparative results observed on the action of this with other substances.

**Comparative tests.** Some eight years ago, a series of cases were placed under observation in which both methyl blue and phloridzin were used on the same patient, the phloridzin was found to have the same diagnostic value of the two, both with and without ureteral catheterization. Methyl blue seems to have its color very easily changed in relation to the amount of water drunk by the individual. The result of these observations were published at the time (3).

Later on, when the use of phenolsulphonephthalein was first advocated, this and phloridzin were both used in the same series of cases. It was found then that phloridzin gave the more accurate picture of the diseased condition. The result of these observations was published in a later edition of the work above referred to (3). Last year another series of comparative tests were made on patients at the City Hospital, in which the effect of phloridzin and phenolsulphonephthalein was tested, and, through the courtesy of the chemist, Mr. Pine, an estimation of the nitrogen of the urine in comparison with the nitrogen of the blood was made. In some of these cases it was not practical to carry out every detail of the nitrogen test, that is, in some

cases only the amount of nitrogen in the blood was estimated, and in some of the other cases only the amount of nitrogen in the urine, phenolsulphonephthalein and phloridzin being used in every case. A few of these cases in this series were on the medical side of the hospital in which had been diagnosed a variety of diseases of the kidney, mostly nonsurgical. A small proportion of these cases ended fatally, and autopsy findings were obtained. The result of this third series of comparative tests seemed to show the nitrogen test to rank first, the phloridzin second, and phenolsulphonephthalein third in diagnostic value, but with a close relationship among the three. It is only within the last two years that it has been clinically practical to perform this nitrogen test on account of the amount of blood required, but as the test has now been modified, very accurate conclusions may be drawn from its use. A marked increase in the amount of nitrogen in the urine, together with the marked decrease of the nitrogen in the blood, shows positively that the kidney functions are not being properly performed (4). Naturally this test will probably never come into popular use from the fact that it requires special apparatus and a training in chemical technic not at the disposal ordinarily of the surgeon or clinician.

As an aid to the proper interpretation to be drawn from the findings of all tests, as those mentioned above, attention is called to three recent publications on the subject by Dr. William F. Braech, and Dr. G. J. Thomas (5), Dr. R. Fitz (6), and by Dr. Georg Gottstein (7).

The paper of Braech and Thomas deals to a great extent with the value of the phthalein test. As interpreted by the writers, they are not guided by its findings, if these are not in accord with the clinical evidence or the ordinary laws governing surgical procedure. The phthalein indication from a pus kidney can not be entirely relied upon; in some of the other surgical conditions of the kidney, however, they consider that the phthalein test gives diagnostic aid. Our views are in accord with those expressed in the paper just mentioned, as well as with those of Dr. R. Fitz, who thinks that in advanced cases of nephritis the presence of pus and of various infective processes tends to render inaccurate the findings of kidney values as shown by phthalein. He disagrees with this later when he considers the phthalein the most accurate of the permeability tests. As previously stated, phloridzin in our hands has furnished the more accurate results in diseased conditions. In very late stages of diseased kidneys, surgical or medical, while neither the phthalein or the phloridzin test gives accurate results, they are still of value.

The article of Georg Gottstein on phloridzin is an exhaustive one, and gives a good résumé of the literature of the subject up to the time his article was written. Considerable attention in his article is given to the estimation of the amount of sugar, as well as to the time of its elimination. It has not been our purpose to consider this, but to do what we can to popularize some working method on this subject, easy to apply for the ordinary observer. In his article a statement is made that all diseased kidneys show some modification of the normal phloridzin output. This is in accord with the results

shown in our comparative series of cases. He also states that the converse of this proposition is not true, and that to some extent some normal kidneys act the same way and the appearance of sugar in the urine is delayed. He states that the cause of this delay, where the kidneys are normal, has been found to be (a) lowering of the sugar contents in the blood, (b) difficulty of elimination of sugar in the kidney, (c) innervation disturbances in the kidney, especially in carcinoma, arteriosclerosis, nerve disease, and cirrhosis of the liver.

Our observations resemble to a considerable extent those of Gottstein; there does seem to be quite a proportion of individuals with apparently normal kidneys, in whom the appearance of sugar is delayed and a smaller proportion still in whom it is entirely absent, but these individuals we have found to a very great extent suffer from a diseased state of some other nature. In our observation, arteriosclerosis is a not uncommon cause of delay in the elimination. According to Gottstein, thirty per cent. of normal cases give test in fifteen to thirty-five minutes, while three to five per cent. of normal cases give no reaction.

In a fourth series observed by us during this year at the City Hospital, phloridzin was used on patients with apparently normal kidneys, and while the number of cases of this latter character was not sufficiently large to permit of positive inductions, our percentage was much higher in the normal cases that reacted to the phloridzin in thirty minutes than Gottstein's.

The phloridzin test, then, should be regarded as one of relative value. To some extent it is like the test for albumin, but of less diagnostic worth. Albumin in itself does not by its presence necessarily indicate a grave condition of the kidney, but is a strong indication for more extended observations of the state of that organ. So, after phloridzin, a delay of more than thirty minutes in showing sugar in the urine, is strongly indicative of a diseased kidney, and a quite positive indication of some disturbance of tissue metamorphosis, thus acting as a strong plea for farther investigation. It is also useful in connection with ureteral catheterization, and an increase, or delay in the appearance of sugar after its administration on repeated applications of the test, is of some prognostic aid.

An attempt has been made to us to simplify the administration of phloridzin with the hope that if oftener used, it will repay the comparatively little trouble involved. In the matter of expense and in the ease of its administration, this test compares very favorably with the phthalein test. Originally fifteen minims of sterile solution of phloridzin, one to 200, injected subcutaneously in the gluteal region, was used. At the present time thirty minims with the strength of one to 400 is employed, the result being the same, and this latter liquid forms a stable solution, while in the former the phloridzin tends to crystallize out. The urine should be tested for sugar thirty minutes after the phloridzin has been injected.

Patients with a large prostate and residual urine should be catheterized before the solution is injected. Ordinarily such a procedure is not necessary. To simplify its administration, we use ampoules, each containing thirty minims, one to 400 sterile solution

of phloridzin. The contents of the ampoules can be heated, if desired. Care should be taken that all the contents of the ampoules are injected. To facilitate the administration, we have had a box made containing the ampoules, test tube, and a solution for testing sugar for bedside use.

We have never noticed any harm follow its administration. In twenty to twenty-five minutes in a young and healthy person signs of sugar will be demonstrated in the urine, the exceptions being as mentioned above, but we consider the time of thirty minutes as a fairly practical one. If in urine passed thirty minutes after the injection of phloridzin, a fairly marked trace of sugar can be found, it is a strong indication that the kidneys are in a healthy condition; if sugar is not found in thirty minutes, another examination should be made, fifteen minutes later, and another still later, if desired.

**Conclusions.** First, it can be stated that if one kidney is diseased and the other sound, through ureteral catheterization phloridzin will demonstrate which of the two kidneys is in the best condition. Second, it is the most practical test for the general practitioner, without ureteral catheterization, at present at his command, being more accurate in its findings than the phthalein test and less complicated than the nitrogen test. Third, the delay of appearance of sugar in the urine following its administration will almost invariably indicate either a diseased condition of the kidney, or less frequently some abnormal condition of the system. Fourth, delayed appearance of sugar following the use of phloridzin, furnishes a marked indication of some diseased systemic condition and is a strong indication for farther investigation. This paper is an effort not only to repopularize the phloridzin test as far as we have found it available, but also to stimulate research along this line and thus aid the finding of the ideal practical method.

#### REFERENCES.

1. MORTON: *Genitourinary Diseases and Syphilis*.
2. VOELCKER and JOSEPH: *Diagnose der chirurgischen Nervenkrankheiten unter Verwertung des Chromocytoskopie*.
3. GREENE and BROOKS: *Genitourinary Diseases and Diseases of the Kidney*.
4. HAWKS: *Practical Physiological Chemistry*.
5. FOLIN: *Nitrogen in Blood*, *Jour. Biol. Chem.*, ii, 1912.
6. BRAECH and THOMAS: *Tests of Renal Function of Urinary Tract*, *Journal A. M. A.*, Jan. 9, 1915.
7. FITZ: *Value of Tests for Renal Function in Early and Advanced Bright's Disease*, *Am. Jour. Med. Sci.*, 1914.
7. GOTSTEIN: *Phloridzin*, *Ergebnisse der Orthopädie*, ii, 1912.

78 EAST FIFTY-SIXTH STREET.

## THE TREATMENT OF NERVOUS SYPHILIS.\*

BY CHARLES R. BALL, M. D.,  
St. Paul, Minn.

The therapy of nervous syphilis in recent years has formed one of the most interesting topics in medicine. Necessarily, it is intimately related to the treatment of syphilis in general, and in any discussion of the former, the latter comes in for important consideration. The great impetus which this subject has received is due to our wonderfully increased knowledge concerning syphilis itself. Our best and most scientific information has been acquired in the last decade. Starting with the discovery of the causative factor, the Wassermann reaction, Ehrlich's

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new spirillotrope salvarsan, one important discovery has followed another in quick succession. Salvarsan and the Wassermann reaction in the period of a very few years, have revolutionized our treatment. As with all advances in medicine, they have been praised by some and severely criticized by others. A thorough discussion of their good and bad points is quite essential to a clear understanding of their intelligent application in specific therapy.

The administration of salvarsan is not entirely devoid of danger, as the numerous reports of fatal cases within a few hours or days after its injection show. The causes of death do not appear to have always been the same. In some cases the post mortem examination has revealed an encephalitis hemorrhagica, in which is found a high degree of hyperemia and swelling of the brain and meninges. Such cases have been regarded as due to acute arsenic intoxication. In other cases, where the specific lesion has been in the neighborhood of vital centres, notably in the case of cervical meningomyelitis reported by A. Westphal and Stertz, where the salvarsan transformed a chronic condition into an acute one and caused the death of the patient, the cause may be attributed to the Herxheimer reaction occurring in the lesion. On account of the severity of this reaction at times, in cases of recent syphilis where much headache is complained of and where vital centres are affected, such as the medulla and upper cervical cord, salvarsan seems to be contraindicated.

The great disappointment in regard to salvarsan was in its failure, by one large dose, to make a complete sterilization of a syphilitic patient. When Ehrlich's idea of a *therapia sterilisans magna* was conclusively shown to be a failure, numerous debatable questions soon arose in regard to its use and value. The very fact that it was an arsenic preparation made many suspicious of it and interfered with its continued administration over long periods of time in the way we give mercury and potassium iodide. The appearance in numerous patients who had been treated with salvarsan of certain symptoms which we had not been accustomed under former methods of treatment to observe so often nor so early, helped to increase this suspicion. These symptoms are spoken of as relapses in nerve tissue (neurorecidive) and are often manifested as cranial nerve paralyses, although they may occur almost anywhere in the nervous system. These paralyses seem especially to have affected the seventh and eighth nerves. Finger, of Vienna, was one of the first to observe the greater frequency of these nerve paralyses and to attribute their cause to the toxic effect of the arsenic. Ehrlich, on the other hand, explained their occurrence in a different way. He said that they were not due to the toxic effect of the arsenic, but were caused by isolated foci of spirochetes. They occurred oftenest in the cranial nerves because these nerves ran a tortuous course through bony canals and foramina where the circulation was often congested, and, therefore, inaccessible to the action of salvarsan. The spirochetes in the body in general were destroyed by the action of the salvarsan, but here and there where the circulation was impeded and the salvarsan did not penetrate, isolated foci of the parasites were left. The escape of these isolated foci

from destruction, was not due to any fault of the salvarsan in failing to act as a spirillotrope, but should be considered rather as physical. In support of this view, attention was called to the fact that in most of the cases where nervous relapses were observed, the four reactions were found to be positive, and, also, the administration of either more salvarsan or some form of mercurial treatment caused them to disappear. As a further proof, it was stated in the later manifestations of syphilis, such as tabes and paresis, where the nervous system is regarded as less resistant and more easily affected by toxic substances, and in other diseases where salvarsan was administered, such as relapsing fever, anemia, etc., they were not observed. In regard to this view of Ehrlich's, H. Oppenheim says it may probably be considered as in part true, but further experience has caused him, with other observers (Nonne, Finger) to believe that these early cranial nerve paralyses are also due to the injurious effect on the nervous system of salvarsan, which renders it more susceptible to an invasion by the spirochetes. Both of these explanations sound plausible, but they cannot both be correct and neither one of them coincides at all points with the clinical observations. Ehrlich's theory assumes an invasion of the cranial nerves which have caused no symptoms before the giving of the salvarsan, and the theory of Finger and Oppenheim does not agree with the more frequent occurrence of these nervous relapses in the early stages of syphilis and their absence in the tertiary. Another factor which has not been taken into consideration in the theories just mentioned, and which seems to agree better with our clinical experience, relates to the question of immunity. Genenrich says there exists a very evident antagonism between an active secondary syphilis and monosyphilitic symptoms. A proof of this statement is shown in the healing of the initial lesion without treatment (when it has not healed before) at the beginning of the secondary stage. There is every reason to believe that during the secondary stage the immunity of the patient to react against the specific infection is developed. This existence of immunity explains latent syphilis. The great majority of our cases of tabes and paresis occur in patients who can prove no history of secondary symptoms. Their system, therefore, has not developed the hypersensitiveness necessary to react against the syphilitic virus, and tabes and paresis are the final result. Even in these conditions existence of immunity is shown by not infrequent spontaneous remissions. This theory of a feeble immunity, because of either mild, secondary or no secondary symptoms, as an explanation of later nervous involvement, has merit. It would appear more rational as an explanation for the absence of paresis in certain uncivilized countries where syphilis is prevalent and severe bone, mucous, and skin lesions frequent, than Krafft-Ebing's syphilis and civilization. Salvarsan administered in insufficient doses to complete sterilization in early syphilis either prevents or causes to disappear the secondary symptoms, and, therefore, takes away from the syphilitic his opportunity of building up a natural defense, which is very important in limiting the further encroachment of the disease. Considered from this point of view, the result ac-



complished by the insufficient salvarsan therapy, in early cases, is that the disease still exists in scattered foci throughout the system and the system is less able to resist its further extension because of its feeble degree of immunity. We see the same situation existing in other diseases where the excitation for the development of immunity is suddenly removed, for instance, in cancer. If the breast is removed for carcinoma, and cancer cells are left in the surrounding tissue, an extension by metastasis is much more rapid and, according to my observation, an involvement of the nervous system is more frequent than when the cancerous breast has been permitted to remain. In our endeavors to sterilize the system in syphilis by arduous and persistent administration of spirillotropic agents, too little attention has been paid to this exceedingly important subject of immunity. It applies, however, more especially to the early stages of syphilis than to the tertiary where some degree of immunity has had an opportunity to develop. In early syphilis then, where salvarsan has been administered once, a most serious obligation would seem to be laid upon the physician to follow it up in such a thorough and persistent manner that a complete eradication of the disease results—otherwise, our present experience would cause one to feel that we had rendered our patient much more susceptible to an early involvement of the nervous system. It is rather too soon to say from clinical experience whether a patient so treated will be more liable to develop tabes and paresis. Logically he would, and G. Steiner has been able to report two cases of paresis in patients who received an apparently sufficient salvarsan treatment within a comparatively short time after infection.

In the treatment of nervous syphilis, our recent progress has opened up still more interesting problems for solution. The Wassermann reaction in the blood and spinal fluid, and the globulin reaction and lymphocytosis in the spinal fluid are to be regarded as also of importance in the advancement of our therapy.

Much has been written recently concerning the behavior of the four reactions as a result of treatment. The aim of the therapist has been to render these reactions negative or at least to diminish their intensity and to measure the success of the therapy by the degree of attainment in this respect. While this standard of judging clinical progress may be reliable in many instances, there are certainly exceptions to the rule. I can report one case of cerebrospinal lues in which the serum Wassermann was strongly positive during treatment and when the patient clinically appeared to be improving—afterward, in a severe relapse, with rapid extension of the disease, the serum Wassermann remained negative. In one case of galloping paresis after two intravenous salvarsan injections, the serum reaction became negative without any change in the downward course of the affection. A negative Wassermann is often misleading after a positive, especially if it remains negative. I have occasionally seen patients with definite specific lesions whose treatment had been stopped because the serum Wassermann continued negative. In a recent case of advanced tabes all the reactions were negative. Only a

short time ago we were estimating the value of the various forms of treatment in tabes and paresis by their apparent ability to reduce the lymphocyte count in the spinal fluid. We are now beginning to have serious doubts whether this is any criterion in these affections. Nonne, in the third edition of his *Syphilis and the Nervous System*, says: "To treat tabes uninterruptedly or with only short pauses until the Wassermann reaction in the blood and spinal fluid is rendered negative, I regard as an aimless procedure. The same holds good with reference to paresis with increased emphasis." The four reactions are extremely valuable, both in diagnosis and treatment, but in treatment, as in diagnosis, if laboratory findings are contrary to definite clinical symptoms, it must still be considered wiser to give the clinical indications the preference.

The value of the Wassermann in therapy is well illustrated in the following case:

CASE I. Mr. M., aged forty-three years, married, syphilis ten years ago; treatment at the time of the infection consisted of mercury and potassium iodide, internally for about one year; no children; wife had never been pregnant; had been apparently perfectly well; in February, 1911, after a slight attack of influenza, the patient experienced some pain in region of right sciatic nerve; the pain and discomfort in limb gradually increased; the physician who treated him ten years before for his syphilis prescribed twenty-five drops of a saturated solution of potassium iodide three times a day, thinking his sciatic trouble might be associated in some way with his former syphilis. After three weeks medication and no improvement, this treatment was abandoned and the patient referred to me for the injection of the sciatic nerve. At the time of my examination patient was somewhat reduced in strength and weight because of the severe pain he suffered. He could neither sit nor lie down with comfort. The only somatic signs were some atrophy of the muscles of the right leg, slight sensory disturbances, chiefly limited to foot, loss of strength, and absence of the Achilles jerk. The Wassermann reaction in the blood was strongly positive. While the positive Wassermann did not necessarily mean that the disease in the sciatic nerve was a specific one, taking into consideration that the nerve trouble was of such a character as syphilis might cause, the two facts together formed very strong presumptive evidence that the nerve trouble was due to lues and that the former specific treatment had not been intense enough to cause it to yield. The patient was given four intravenous salvarsan injections, of five decigrams each, at intervals of two weeks, with injections of salicylate of mercury between the salvarsan treatments. In spite of this treatment, little improvement was shown, and the Wassermann was still positive, although not so strong as at first. After the sixth salvarsan injection, the patient was able definitely to announce that his pain was better. He had never been exactly certain of it before. The mercurial injections were carried on, the improvement continued, and about one month after the last salvarsan, the Wassermann became negative. The patient made a good recovery and remained well. In this case the Wassermann aided materially in making a doubtful diagnosis reasonably certain and encouraged the continuance of a treatment in spite of absence of improvement long after a period when it should have been expected to show itself if the trouble had been a specific one.

The following case shows the value of all four reactions:

CASE II. Mr. T., aged thirty-eight years, married, two children, living and well; no children dead; no history of miscarriages; denied syphilis and did not use alcohol; seven years ago had a hemiplegia on left side, accompanied by a nervous irritability and mental depression; spinal puncture at this time showed a positive globulin reaction and lymphocytosis; the diagnosis of a probable beginning paresis was made; patient, however, made a very good recovery and went back to work. About two years after this attack, had another hemiplegic attack on the same

side; this time received mercurial treatment and again made a good recovery; had at various times between last hemiplegic attack and present one, several slight attacks, accompanied by double vision. Present attack began in June, 1911, when he again became hemiplegic on left side; had double vision and was unable to control his bladder or rectum; could not sleep well; very much depressed in spirits, very irritable and memory poor. Status praesens: Patient was poorly nourished, right pupil was larger than left, both reacted sluggishly to light; movements of bulbi free, left side practically helpless; deep reflexes increased on both sides; Babinski on both sides; speech indistinct. The provisional diagnosis was paresis, before the making of the four reactions; Wassermann reaction in blood, negative; in spinal fluid only positive when one c. c. was used; globulin reaction; slightly positive; lymphocytes 60.1 c. mm. The result of the four reactions changed the diagnosis from paresis to cerebrospinal lues and encouraged the beginning of a vigorous specific treatment. The first injection of salvarsan made a marked improvement in the patient. He was given four intravenous injections of salvarsan of five decigrams each, at intervals of two weeks, together with mercurial inunctions. Except for a partial hemiplegia, and some slight weakness of the bladder, patient made a good recovery and remained well for three and one half years; during this time he had five more intravenous salvarsan injections and four courses of mercurial inunction. The Wassermann in the blood was always negative. The clinical picture was a typical one of a hopeless case of paresis, but the four reactions were so different from the reactions usually occurring in paresis that their result alone gave the encouragement for the vigorous specific therapy which was instituted, and the subsequent course of the case demonstrated the correctness of the findings.

In the case reported, an occasional examination of the spinal fluid would have saved this patient from his repeated relapses and his present hemiplegic condition, which is undoubtedly due to scar tissue at the seat of his old lesions. As a prophylactic measure against specific nervous involvement and later developing tabes and paresis, a knowledge of either the presence or absence of the three reactions in the spinal fluid in any case of syphilis, would seem to be of great value.

The whole question of the treatment of nervous syphilis and paresis may at present be regarded as simply one of discovering the best means of destroying the spirochetes wherever they may be in the nervous system, in the meninges or deeply imbedded in the nervous parenchyma.

Since our conception of what must be accomplished in the successful therapy of nervous syphilis has been made clearer, progress in the treatment has naturally followed. It is only within the past year that we have been able to speak confidently of definite clinical improvement in such diseases as tabes and paresis without the fear of being regarded as unreliable and boastful. At present, however, those who have used salvarsan and mercury in an intelligent manner in both conditions, know that their course may be materially improved and, for a time at least, often brought to quiescence by the skillful administration of these remedies. The keynote to success seems to lie in intensive and combined administration. The result obtained in the case of Mr. M., reported above, indicated this early in my experience with these agents. Later observation has thus far confirmed it. The intensive method of treatment, in its present sense, means the giving of moderate doses of salvarsan or neosalvarsan, beginning with 0.2 or 0.3 and gradually increasing at intervals of three or four days until three or four grams of the preparation have been adminis-

tered. During this period, mercury in some form should also be given, preferably by inunction or injection in the intervals between the salvarsan injections. Kaplan advises giving 0.45 salvarsan every two days until five injections are given and on the intervening days, two inunctions of mercury. This treatment may be repeated at varying intervals, depending on the condition of the patient. He says the intensive method has a distinct advantage over other methods of giving salvarsan, as it shows results, both clinical and serological, superior to any that have come to his knowledge up to the present time. Dreyfus says the total amount of the dose and the duration of the first treatment must depend upon the patient. No hard and fast rule can be laid down. He gives usually from four to five grams of salvarsan within a period of six to eight weeks, together with mercury on the days free from salvarsan administration. This constitutes one course of treatment, which may be repeated at intervals, as occasion requires, much in the same manner as we formerly were in the habit of repeating courses of mercury. Nonne, after a year's experience with this method, does not wish to express an opinion as to its value until he has had another year's observation. He is able to say, however, in the cases where he has followed this method, that thus far he has seen no progression of symptoms. Where it becomes necessary to give salvarsan or neosalvarsan so frequently and for so long a period, simplification in the technic is important. Recently, following a method of Wechselmann, who reported on 7,000 injections made according to it, I have administered the neosalvarsan in the following manner:

One half the full dose of neosalvarsan 0.45 is dissolved in 0.5 c. c. of a sterilized 0.7 salt solution. This is then injected as nearly as possible at the upper part of the nates, in the loose tissue between the subcutaneous fat and fascia. Care should be taken not to make the injection into the substance of the muscle. My experience with this method has proved it to be simple, effective, and absolutely devoid of any ill effects afterward such as sometimes follow the giving of salvarsan intravenously. The pain of the injection is rarely severe, and when induration occurs, which is not frequent, it is slight in character and soon disappears.

It has been shown by the reports of Wechselmann, Sicard and Block, Zaloziecki, Kaplan, and others, when salvarsan or neosalvarsan is given in an intensive manner, after the third or fourth injection, it can be readily detected in the spinal fluid, showing that it is possible to influence the entire nervous system by this manner of therapy. Kaplan says, "the presence of arsenic in the fluid puts all controversy as to the *modus operandi* of the negativing forces to an end. It simply attacks the microorganisms *in situ*."

The intraspinal or intralumbar administration of salvarsan is also recommended in the treatment of nervous lues. The principal reasons given for selecting this route for the introduction of salvarsan at present do not seem to be valid. First, it has been said that salvarsan introduced into the blood does not penetrate through the meninges and choroid plexus, and, therefore, the brain and spinal

cord cannot be influenced by its administration in this manner. If one stops to consider that the blood supplies all living tissues with nourishment, and any agent introduced into its current and dissolved, must, as a matter of course, go where it goes—the absurdity of this statement at once becomes apparent. Its inconsistency is further shown in the fatal cases of encephalitis hemorrhagica occurring occasionally soon after an intravenous salvarsan administration and due to an acute arsenical intoxication where swelling and inflammation of the entire brain cortex are found.

In an article recently published by B. Sachs, I. Strauss, and D. J. Kaliski, Professor Benedict gives an analysis of ten specimens of blood obtained from fifteen to forty-five minutes after an intravenous injection of 0.4 of salvarsan. In twenty c. c. of the whole blood, 0.0001 gram of salvarsan was found. A similar analysis of spinal fluid twenty-four hours after an intravenous injection, showed that the amount of arsenic in it was from one sixth to one tenth the concentration of the whole blood; thus proving, as a matter of fact, that the spinal fluid, twenty-four hours after an intravenous injection, contains more arsenic than the so called salvarsanized serum. The natural deduction from this analysis is that if salvarsanized serum introduced into the spinal canal is really valuable, its efficacy must depend upon some as yet unknown property.

The assertion has also been made that the intraspinal treatment exercises a greater influence on the serobiological reactions in the spinal fluid than any other method. According to Kaplan, who has had a large experience in the neurological institute in New York, this statement does not coincide with his observation.

In the *Journal of Mental and Nervous Disease* for November, 1914, H. W. Mitchell, Ira A. Darling, and Philip B. Newcomb present an article on Observations upon Spinal Fluid Cell Counts in Untreated Cases of Cerebrospinal Syphilis. As a result of their observations, they came to the following conclusions:

1. Great variations in cells counts may be found at short intervals in any stage of the disease.

2. The reduced cell count, accompanied with the persistence of a positive Wassermann in the fluid, cannot be regarded as having a valuable prognostic significance.

In regard to the cell count in cerebrospinal syphilis, tabes, and paresis, Nonne, in the third edition of his *Syphilis and the Nervous System*, says: "The degree of lymphocytosis does not stand in any relationship either to the acuteness or chronicity, the benignity or malignancy of the clinical course of the disease."

Personally, my experience with salvarsanized serum coincides with that of Nonne, who, after having used it in thirty cases of specific disease of the brain and spinal cord, says that he was not able to observe any difference in the course of the cases thus treated from what takes place after the usual methods.

My experience with direct intraspinal medication has been limited to the administration of neosalvarsan according to the method of Cimbald and Wile. From three to six mgm. of neosalvarsan are intro-

duced by gravity into the spinal canal, first using from twelve to fifteen c. c. of spinal fluid to dilute the neosalvarsan. In one case, after having given the patient five intraspinal treatments of three mgm., I decided to double the dose and give six. The next day after this injection, the patient developed a paralysis of the bladder and rectum, which persisted for two months.

In regard to this method, Nonne says that he regards it as the best means proposed up to the present time of introducing neosalvarsan into the spinal canal. He thinks three mgm. to the dose represents the limit of safety.

In regard to the superiority of intraspinal methods over the intravenous, either the indirect of Marinesco and Swift and Ellis, or the direct of Ravaut, Gennerich, and Cimbald, we quote from Nonne again. He says: "Observations of Escherchen, Weygandt, Cimbald, von Schubert, and my own experiences, are not as yet convincing. We must observe more cases and allow a longer period of time to elapse before making a final decision."

Kaplan says, in considering the ultimate prognosis as a result of therapy of both tabes and paresis, we should not forget that in these diseases we are dealing with two separate and distinct processes, one active and exudative in character, and the other degenerative. We may hope to limit the former, but can have little or no influence on the latter. In regard to the clinical improvement observed after such treatment, we may reasonably expect to relieve in tabes such symptoms as loss of weight and strength, lightning pains, gastric crisis, ataxia, disturbances of bladder function; in general, materially improve the comfort and well being of the patient, for a time at least. How long, is impossible to say at present; but if a relapse occurs there is a good prospect of again securing decided improvement by repetition of the treatment. In paresis we are not so sure of definite results, but we do know that formerly remissions occurred in only three to four per cent. of the cases, and that now, as a result of treatment, remissions are taking place in from twenty-five to thirty per cent. of the cases. In cases of paresis which do not respond to the intensive method, the so called fever and specific treatment is to be recommended.

It has been recognized for a long time that acute infections, in early cases of syphilis and in paresis, seem to exert a beneficial influence. Recently, Pilcz and Mattauschek have collected 241 cases of persons in whom some acute infection developed during the early years of their syphilis. None of these individuals showed any evidence of a nervous involvement. The literature abounds with reports of cases of paresis in which either a standstill or a very long remission has occurred after a severe infection, such as pneumonia, erysipelas, or a suppurative condition. This knowledge of the favorable effect of a high fever and marked leucocytosis caused by such acute conditions, has furnished a rational basis for the so called fever therapy in cases of paresis. Wagner, of Vienna, was one of the first who endeavored artificially to produce fever in his cases of paresis. He used Koch's old tuberculin in rapidly increasing doses, sufficient to cause at each injection a severe reaction. Other means have since



been used, such as the injection of dead staphylococci and streptococci cultures and sodium nucleate first suggested by Donath, of Buda Pest. This method of therapy has been further improved by combining with the fever producing agent, the administration of both salvarsan and mercury. The success of this combination therapy in paresis has led both Pilez and Matianschek to recommend it in every case of syphilis in which the spinal fluid shows nervous involvement. H. Oppenheim, in the sixth edition of his textbook on nervous diseases, in regard to the sodium nucleate injections, says he has had the opportunity of observing three cases of paresis in which a most striking result was obtained by this method. In one case, which was apparently that of a parietic in an advanced stage of dementia, he could not consider himself justified in recommending any kind of a therapeutic procedure, although the friends of the patient were particularly anxious to have him try something. The patient was then taken to another institution and given the sodium nucleate injections, which caused such a complete remission that he was able to take up his former occupation as an active officer.

In the past two and one half years I have had the opportunity of treating fifteen cases of paresis by this combination method, using either mercury and sodium nucleate alone, or mercury, sodium nucleate, and salvarsan. Some degree of improvement has been shown in all these cases, except one, and in three cases complete remissions, which still persist, were obtained. In one case, where a marked degree of dementia was present and where only mercurial inunctions and sodium nucleate were given, a large abscess developed in the gluteal muscles after a sodium nucleate injection. This abscess caused the patient to have a temperature varying from 101° to 103.6° F. for over two weeks; after the evacuation of the abscess and the subsidence of the temperature to normal, the patient showed wonderful improvement. He is now enjoying a complete remission and has returned to his former occupation as an operator of a typesetting machine, in which he has attained his former speed and accuracy.

Pilez, who has obtained remissions in twenty-five per cent. of the cases of paresis so treated by him, says that after the administration of the fever and leucocytosis producing agent, remissions of much greater frequency, longer duration, and more complete in character can be obtained than ever occur spontaneously. Even the simple demented forms, which according to experience show the least tendency to spontaneous remissions, sometimes improve under his therapy. Furthermore, in the same patient, repeated remissions may be produced by a repetition of the treatment.

The finding of the spirochetes in both tabes and paresis and the consequent change in our conception of these diseases has resulted in a perfect furore of treatment, as a result of which much confusion exists. A few things, however, seem to be clear.

In the beginning the individual doses of salvarsan were too large and the collective dose was too small.

Experience has shown it to be much safer and better to begin with small doses and frequently re-

It also seems to be quite generally accepted that mercury and salvarsan, in combination, are to be preferred to the use of either one alone. The number of syphilographers is increasing, who, if they were compelled to choose between one or the other, would select mercury.

In those cases which seem refractory to the usual specific treatment, the addition of some leucocyte producing agent, according to the teachings of von Wagner, Pilez, and Donath, often furnished the impulse for a surprising change for the better in the clinical course. My experience, extending over a period of four years with some one of these agents along with the specific remedies, has been extremely gratifying and I wish to emphasize their value.

Intraspinal treatment, in its present stage of development, should not be used indiscriminately in all cases of cerebrospinal lues, tabes, and paresis, as is done by many, but only in carefully selected cases which have failed to respond to other methods.

Our mad career in treatment began almost entirely with offensive measures by large doses of salvarsan; by large doses of salvarsan we endeavored to destroy, in a short time, all the spirochetes in any given case. The offensive, to a limited degree, is still logical, but we are gradually learning to devote more attention to defensive means, to arousing the leucocytes, the agglutinins, and all the protective forces of the system. We must endeavor in our therapy not to offend the immunizing factors of the body.

In conclusion, let us not forget that no matter how successful the apparent result is from any one course of treatment, that syphilis anywhere, and especially in the nervous system, is a disease of remissions and relapses. *Die Syphilis stirbt nicht, sie schläft nur*, still remains true, and any plan of treatment which aims at the most enduring success will have to be repeated at regular intervals over a long period of time.

1044 LOWRY BUILDING.

## THE BONE PIN GRAFT IN PAINFUL FLAT FOOT, PARALYTIC VALGUS, AND OTHER PAINFUL DEFORMITIES OF THE FOOT.

*A Preliminary Report,*

BY ROBERT E. SOULE, A. B., M. D.,  
New York,

Adjunct Professor, Orthopedic Surgery, Post Graduate Medical School and Hospital, Etc.

In addition to the technic for arthrodesing the astragaloscaphoid joint, as described in the writer's contribution to the *American Journal of Orthopedic Surgery* for January, 1915, the introduction of the bone graft pin has been made by him to provide greater accuracy in the correction of the deformity and added security in producing an ankylosis. The outline of the procedure is as follows:

Through an incision about two inches long on the dorsum of the foot, in line with the tendon of the anterior tibial muscle and just internal to it, the astragaloscaphoid joint is exposed through its entire width. The ligaments attached to the upper border of this joint are incised and freed. The articular



Fig. 1.—Dorsopoplitear view of corrected foot with bone pin graft in position.

cartilages of the head of the astragalus and corresponding concavity of the scaphoid are removed with the author's double curved gouge so as to preserve the ovoid head of

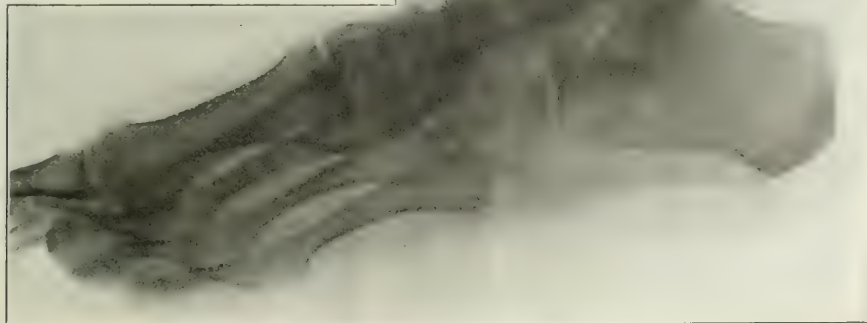


Fig. 2.—Lateral view of corrected flat foot showing bone pin graft in position, and the head of the astragalus.

the astragalus and the concavity of the scaphoid. The foot is adducted to a normal position, and with the electric motor drill a hole is drilled from before backward, through the inner extremity of the scaphoid bone and into the head of the astragalus, in a direction somewhat obliquely across the foot and upward toward the body of the astragalus. This hole is altogether from one and a half inch to two inches in depth, and in diameter according to the size and weight of the patient from one eighth to three sixteenths of an inch.

The drill is disengaged from the motor and left in position in the drilled hole, thus holding the foot in the desired corrected position until the bone pin is obtained and inserted in its place. This bone pin is removed from the crest of the tibia, preferably from the lower third where the cortex is sufficiently thick, in the usual way after Albee's method, and passed through the dowel shaper made to fit the size of drill used. Thus a bone pin or nail is produced exactly to fit the hole drilled through the scaphoid into the head of the astragalus. This bone pin is driven into position immediately after the drill is removed from its hole and while the foot is accurately held by an assistant. Should the pin be longer than needed and protrude at the point of entrance into the scaphoid bone, it is cut off flush with the bone surface by the motor saw.

The skin wound is closed with catgut without drainage, and dressings are applied. A smooth snug plaster of Paris splint is applied, reaching from the toes to above the flexed knee, which is not removed for four weeks, when that portion including the

knee is cut off and the remainder is allowed to remain for two to four weeks longer, when the entire splint is removed with the wound dressings, and the foot is strapped as for flat foot, which gives support and also permits some motion of the other joints of the ankle and foot. Passive and active exercises are then begun in order to develop the musculature of the leg and foot.

In adults after six weeks, slight weight bearing on the foot can be permitted and function and weight bearing are increased as time and freedom from discomfort indicate. I have two adult patients walking without crutches or cane in twelve weeks. These are the first two patients on whom I have performed this operation, the first having been done in March, 1915. Röntgenograms of the latter are here shown, taken eight weeks after the operation.

40 EAST FORTY-THIRD STREET.

## RONTGENOSCOPIC EVIDENCE IN APPENDICITIS.

By PAUL EISEN, M. D.,  
Chicago.

When we give a patient a meal, either of butter-milk or of potato starch, which contains large amounts of bismuth or barium sulphate, we can see, not only the lumen of the stomach and intestines, but also that of the appendix. How much or what part of the lumen of the appendix we can make visible in cases of appendicitis, is the subject of this paper, based on the findings in thirty-six consecutive cases operated in by Dr. Carl and Dr. Emil Beck at the North Chicago Hospital, from March 1 to August 1, 1914.

Opaque foreign bodies in the appendix have at times been a source of error in röntgenograms and were mistaken for ureteral stones, to which Albers-Schoenberg first called attention. How these foreign bodies ever got into the appendix, is still unexplained. The semiliquid food entering the cecum, as seen fluoroscopically, does not at once fill the appendix. In some cases I have been able to press the contents into the lumen. Generally, however, anastalsis is supposed to drive the cecal contents into the lumen. Pirie has suggested that the heavy bismuth salts might gravitate into an appendix hanging over the rim of the pelvis. A Russian, Grigorieff, has, according to a report of Max Cohn in Berlin, made quite a study of the filling and emptying, the peristalsis and movability of the appendix. I have shown surgeons the appendicular lumen, who had never before entered a fluoroscopic room. In stout patients this is difficult, and here I like to have my findings confirmed by plates. As we do practically all our work stereoscopically at the North Chicago Hospital, we need only two plates. These, viewed through a stereoscope, are understood even by a layman. Here I show (Fig. 2) a normal appendix lumen of a patient operated upon for a retroverted uterus. The appendix was found normal at the operation.

The first reports on the possibility of visualizing the appendix lumen came from French authors, among them Bécélère, and from English röntgenolo-

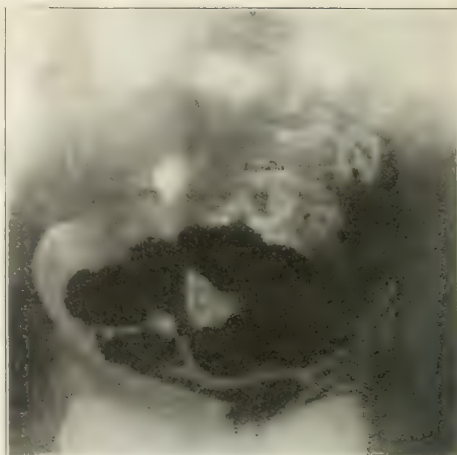


FIG. 1.—Appendix retrocecal, forty-eight hours after barium meal taken.

gists, Jordan, and others. The Germans, notably Koehler, Groedel, and Riedel, were at first less fortunate, but Riedel has since published reports substantiating the findings of others. The most convincing publication from abroad was that of Holzknecht and Singer (December, 1913).

However, it may be stated without fear of contradiction, that the value of the x ray examination in appendicitis was first appreciated a year previously by American röntgenologists, Case, Cole, George, Quimby, and many others. An exception to this opinion was expressed by Carman, who did not recognize the necessity of examining the appendix lumen. I must say, however, that even in the few cases which I have to report we have obtained information of considerable value from most of those which were suitable for examination. I do

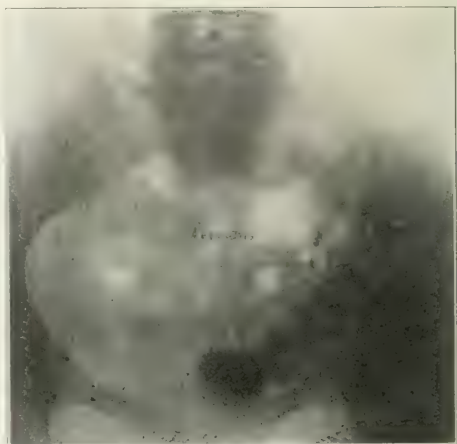


FIG. 2.—Appendix retrocecal seventy-six hours after barium meal taken.



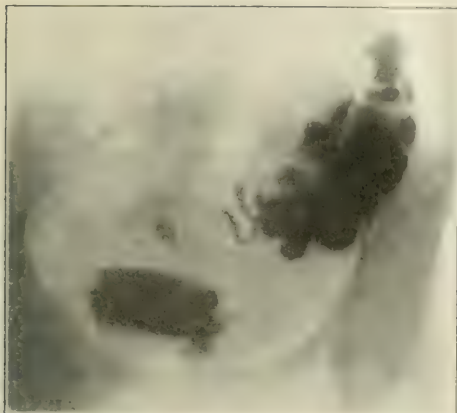


FIG. 3. Normal appendix, twenty-four hours after meal.

not mean to say that a diagnosis may be asserted from an x ray examination, but that such an examination most always gives valuable data, sufficient, in conjunction with other clinical findings, to warrant a laparotomy.

Here I wish to discard the statement that a normal appendix lumen rules out appendicitis, because it does not. In two such cases there was a stricture near the tip, and appendicitis distal to this stricture. In four other cases I gave a negative x ray report and still there was appendicitis at the tip. I call these cases drumstick appendicitis.

Having emphasized these points, I further wish to say that I have not only examined chronic and subacute cases, but also cases during an acute attack. These cases were operated in immediately after the examination. This is the advantage of being in a hospital. That many cases of appendicitis operated in at the hospital were not fit for x



FIG. 4. Proximal appendix, lumen visible, obstructed by adhesions upward; Lane's kink and Jackson membrane present twenty-four hours after meal.

ray examination, I need hardly state. Which cases are unsuited for examination, is left to the surgeon's judgment. To date I have had no experience in the examination of children, the ages of my patients ranging from sixteen to past sixty years.

A few patients had slight rises in temperature, none having high fever, and the pulse was good in every case. In no case was there rigidity of the wall of the abdomen, but one or two had pain on raising the right thigh. The clinical diagnosis was appendicitis in only a few; in most of the cases the diagnosis was doubtful, and in others ulcer of the stomach was the definite clinical diagnosis. In a number there was a suspicion of involvement of the gallbladder or duodenum; and in one the diagnosis was right movable kidney with some indefinite abdominal lesion. Here strawberry gallbladder and drumstick shaped appendicitis were found with a negative x ray report. This was one of the four cases mentioned above.

In thirty out of thirty-six cases, however, a defi-



FIG. 5. Same case as in Fig. 4, twenty-eight hours after meal.

nite x ray report was sent in of appendicular involvement and confirmed at operation. In four a negative report was sent in, but appendicitis was found, and in two cases a positive report was sent in and a healthy appendix removed in one, and a strawberry gallbladder removed in the other case. These patients were nervous, were frequently examined, and experienced pain on examination.

I shall not dwell further upon the usual clinical aspect of appendicitis, history, temperature, pulse, dyspeptic symptoms, etc., but will confine myself to the x ray findings, as these constitute a distinctive feature of the examination and are, to a certain degree, not so familiar to those not using this method. I will not tire my readers with unfamiliar terms nor minute data, and will try to acquaint them with the essentials, without going into minute details.

It is of the utmost importance to know that the vague stomach symptoms in appendicitis find their explanation in a so called "pylorospasm." We not only have clinical methods, but also x ray findings, which we believe are called forth by a spasm of the

pylorus. In no way can we estimate the motor activity of the stomach so well as by an x ray examination, and the effect of a pylorospasm can be read directly off the fluorescent screen. Of course this does not absolutely prove the presence of a pylorospasm, but as near as we can judge, it enables us to assume its existence with the greatest degree of certainty.

Only in cases where the stomach findings are negative is it of importance to lay stress on the presence of stasis through the ileocecal valve or regurgitation at the terminal ileum. Personally I lay very little stress on this sign, as it was present in just as many normal cases as the few of appendicitis.

Aside from the stomach symptoms suggestive of pylorospasm, the main x ray symptom of value in appendicitis is the direct location of pain on pressure, traction, or displacement of the appendix itself, or, if the lumen is invisible, of the point of its insertion at the cecum. This pain was elicited in all but four of the thirty-six cases, and in only two was a healthy appendix found. It is, therefore, in my opinion, the most reliable of all signs. In very few cases is this site of pain the same, varying practically in each case. In the four cases in which it was absent, appendicitis was at the tip of the appendix, thus explaining its absence.

In the literature great stress is laid upon the presence of an appendix lumen. I have been unable to visualize a lumen in fourteen cases, and in most of these cases there was no barium found in the lumen at operation. In a few the examination possibly was of too short duration, but in most of these cases the operation revealed sufficient explanation that no lumen was obtainable; either the lumen was obliterated totally, diseased at the base, totally inflamed and thickened, or filled with fecal beans and the like.

In the sixteen cases showing a lumen, or parts of one, there was a certain regularity of findings so far as the lumen corresponded to that part of the appendix from the base where the lumen showed no signs of inflammation. In other cases, however, where bits of lumen showed, there was inflammation proximal to the barium in the appendix. In the old adherent chronic cases, the lumen would be visible even beyond a stricture or kink. On the whole, according to my experience, there is no set rule to go by. Each case is a study in itself and must be taken as such.

It has been stated that membranes have been diagnosed before operation. In thirteen of my cases membranes were found at operation, of which there had been no x ray evidence, and of which I could find no evidence on the plates when examining them after operation. I believe, with many others, that one should be extremely careful in stating such a possibility without operative confirmation. In a few cases a band would constrict the middle of the appendix, and up to this kink a lumen would be shown, and from this point to the tip the mucosa would be acutely inflamed. In the two cases of retrocecal appendicitis there was no direct evidence of this location of the appendix, as in both cases the appendix and cecum were one mass and could not be separated. In one case, in which castor oil had

been given by mistake in the course of the examination, the cecum and appendix lumen were well filled with barium at the subsequent x ray examination and at operation half an hour later.

In five cases a pericholecystitis was found coincidentally, which was impossible to detect in the course of an examination. I mention this because the statement has also been made that a normally outlined stomach and duodenum precludes surgical conditions of these parts. The adhesive bands were veil-like, just like the Jackson membranes seen in three of my cases, which also had given no x ray evidence of their presence.

In all female cases a thorough gynecological examination preceded the x ray study, and lately we are also examining the ureters in cases which are the least suspicious. In this way, results are obtained by team work which one man could never achieve.

#### REFERENCES.

1. BASTEDO, W. A.: The Dilatation Test for Chronic Appendicitis, *Am. Jour. Med. Sc.*, July, 1911, p. 11.
2. CASE, JAMES T.: X Ray Studies of the Ileocecal Region and the Appendix, *Am. Quarterly of Röntgenology*, Nov., 1912.
3. COHN, MAX: Der Wurmfortsatz im Röntgenbilde, *Deut. med. Wochenschr.*, March, 1913, p. 606.
4. GEORGE, W., and GERBER, ISAAC: The Value of the Röntgen Method in the Study of Chronic Appendicitis and Inflammatory Conditions, both Congenital and Acquired, about the Cecum and Terminal Ileum, *Surg., Gyn., and Obstet.*, 418, Oct., 1913.
5. GROEDEL, FRANZ: Die Röntgenologische Darstellung des Proc. Vermiformis, *Munch. med. Wochenschr.*, 14, 1913.
6. HOLTZKNECHT-SINGER: Die Lokalisation der Druckempfindlichkeit in der Ileozökalgegend, *Deut. med. Wochenschr.*, Sept., Oct., 1913, p. 2668.
7. LIERTZ, RHABAN: Die radiographische Darstellung der Wurmfortsätze, *ibidem*, July, 1910, p. 1259-1376.
8. QUMBY, A. G.: Differential Diagnosis of the Appendix by Aid of the Röntgen Ray, *NEW YORK MEDICAL JOURNAL*, October, 1913, p. 697.
9. SINGER, C., and HOLTZKNECHT, G.: Radiographische Anhaltspunkte zur Diagnose der Chirurgischen Appendicitis, *Munch. med. Wochenschr.*, Dec., 1913, p. 2659.
10. RIEDEL: Zur Röntgenuntersuchung des Wurmfortsatzes besonders bei Appendicitis, *ibidem*, 1402, July, 1913.

2551 NORTH CLARK STREET.

## THE NEWER THERAPEUTICS IN OTOLOGY.

### *The Use of Mixed Vaccines.*

By S. MOSKOWITZ, M. D.,  
New York.

For the past few years, in my contact with ear cases, I have noticed that a great number of them had two ways of termination, i. e., either by operation, or that of being pronounced incurable; the former being many times successful, sometimes unsuccessful and even fatal, and the latter, continuing to travel around from one otologist or clinic to another.

The class of cases deserving most consideration in this communication are: 1. Otitis media purulenta, acuta and chronica, also mastoid infections; 2. sclerotic or retrogressive changes in the middle ear. In this report I will deal with those under classification 1.

In 1910, I began using the vaccines in otitis purulenta, acuta and chronica, and got very satisfactory results, even from stock vaccines. The diagnosis having been made and with the clinical history, I determined the type of vaccine to use and also the dose. For example: In an otitis following influenza, I would use a combination containing *Staphylococcus aureus*, *albus*, and *citreus*, *Streptococcus*, *influenza bacillus*; and sometimes if there were pulmonary

symptoms or pneumonia, I would add the pneumococcus, with bacteriological examination as an aid.

Of course, this method was not as ideal and accurate as the method now in use, but it gave very fair results, in fact very much better than previous methods employed. I was also surprised to find good results in treating a number of mastoid cases, in many of which it was the absolute treatment for aborting them, and also preventing otitis media.

At that time (1910) I had not the number of cases to make this very impressive, or to make the observations appear radical, but now with the cases I have on record, and the very able and thorough communication of Dr. W. H. Haskins in the *American Journal of Surgery* for July, 1914, I have established this treatment in my practice as absolutely "safe and sane" compared to operative procedures. It is a powerful prevention of indiscriminate and unnecessary operations, on the mastoid in particular, with its mortality, recurrences, and disfigurement.

Doctor Haskins has had his experience with the chronic cases, and I will add to his cases by showing the results of some of my own, and of many acute inflammatory conditions.

It is as he says, personal sentiment enters into the success of this treatment, because if we have had fair success with operative procedures and are surgically inclined, as many of us are, we shall look at such suggestions of cure askance, until such cases are brought to light as in the papers read at the otological section of the Academy of Medicine and published in the *American Journal of Surgery* for July, 1913, i. e. Doctor Haskin's paper, and that of Dr. James Garfield Dwyer on the bacteriology of chronic purulent otitis, and also Dr. H. Beattie Brown's paper on the treatment of furunculosis of the ear with vaccines. I hope that these three papers, read before the best of ear men, may set some of them to an earnest trial of this method of treatment before operation, wherever feasible, and that those who have tried it will report their successes and also their failures.

The failures are due in a majority of instances to faulty technic, such as would occur in the first trial of any new method until perfected. The clinical history of the case, and the knowledge of the organisms usually found in the particular case under observation, should determine what vaccine to use, if choosing from the stock vaccines. All through Doctor Haskin's paper one finds such reports as the following:

Case No. 3 of Table 2: Had four operations last four years ago. Discharge persistent. Vaccine used, ear dry after tenth injection. Cured. Case No. 7: Mastoiditis treated for nine weeks. Refused operation. Received four doses autogenous vaccine, ear dry after second dose and remained so. Cured. Case No. 13: Operation advised August 15, 1913. Discharge persistent until January 2, 1914. Ears became dry after five doses.

In my own cases I will show these statements to be absolutely accurate. In the above mentioned papers we have the clinical and laboratory theories put into actual use, and they are correct. It is to be noted that in chronic suppurative cases no influenza or pneumococcus microorganisms were found, showing that they do not persist long after acute suppuration becomes chronic. This fact I have also observed.

For the chronic infections, I refer the reader to these articles in the July number of the *American Journal of Surgery*. In the acute infections, the bacteria most frequently found were pneumococcus, influenza, streptococcus, and the three types of staphylococcus.

CASE I. E. C., boy, aged ten years, in previous good health, except for recurrent attacks of tonsillitis. Developed sudden acute pain in both ears, worse in the right. With the pain there was high temperature, shooting up and down. For a few days previous to this attack, complained of a slight cold from careless exposure. Examination of ears revealed both drums bulging, which were promptly incised, and got pus in quantities from both ears. The discharge continued for two days, and so did the high temperature to about 100° F. The left ear was almost well on the third day, and the right ear was still painful, and discharging.

Examination revealed in the right ear, discharge coming with pulsation, and with otoscopic suction, there was brought into view much more pus. Right mastoid very tender, especially around the tip. Left ear no symptoms. Diagnosis: Mastoiditis.

Used vaccine containing pneumococcus, influenza bacillus, streptococcus, and Staphylococcus albus, aureus, and citreus. After second injection there was no tenderness to speak of, and after the fourth no discharge. Discharged, cured, on the tenth day of the disease. Patient had no further trouble, except that later on I enucleated the tonsils and removed the adenoids present, as a prophylactic measure.

CASE II. In January, 1912, was called to see a woman suffering from a purulent discharge from the right ear, and very tender painful mastoid on the same side. Temperature 101° F. Patient looked extremely anemic and septic. She had an acute double otitis from coryza and heavy cold. Within the last two days her physician and a consulting otologist diagnosed her condition as mastoiditis and on the same day as my visit an eminent otologist also diagnosed it as mastoiditis, and strongly advised an immediate operation. On account of the severity of the case, the tenderness of the mastoid, and the septic look of the patient, I was most inclined to advise operation. This she absolutely refused, and for this reason I suggested the use of the vaccines for a twenty-four hours' trial, as the only alternative.

A first injection of stock vaccine was given immediately, the second being given on the evening of the second day, with marked improvement on the morning of the third day. The discharge was stopped, and the pain now became very much less and the tenderness of the mastoid was also very much better. After five injections the patient was cured, except for a certain amount of defective hearing. This was treated with the usual methods, and after a couple of months the patient was in excellent condition.

CASE III. Miss M., aged nineteen years, consulted me a second time for a discharging ear which she had since childhood. At her first call to my office, she asked for relief from vertigo, discharge, tinnitus, mastoid pain, and right sided cephalalgia. This was two years ago. At that time she was given bichloride douches one in 4,000, and argyrol drops, which were followed by boric acid in alcohol drops, at home. At the office she was given otoscopic suction (passive hyperemia and mechanical removal of discharge). She improved rapidly and after two weeks' treatment stopped coming, owing to the fact that she lived at a great distance and that she thought she felt "all well." The otoscopic picture at that time was a small perforation of the drum with hammer handle exposed and foul discharge. She returned to my office, September 22, 1914, with very severe symptoms; an acute exacerbation, with violent pains in the ear, over mastoid and right side of head. She also complained of vertigo, which was almost constant and worse on the slightest bodily exertion. There was an up and down temperature daily. Discharge was very profuse and foul smelling.

On examination of the ear, I found almost the whole drum membrane gone, much granulation tissue, and the discharge pulsating synchronously with the heart beat. Mastoid tender over cells and tip. The day previous to



her coming to my office, the patient had been to the Manhattan Eye and Ear Infirmary, where two prominent surgeons whose names were mentioned to me, had advised her to be operated on at once, for mastoiditis. She refused operation, despite the fact that she was told that her case was a very serious one.

At my office her ear was cleansed, and a culture taken for autogenous vaccine, and she received that day an injection of stock vaccine, containing thirty million each of staphylococci streptococci and influenza bacilli respectively. The streptococcus was used as the severity and high temperature and also the glandular enlargement suggested. The staphylococcus was used, as it is usually a complicating factor in chronic relapses. The influenza bacilli were added on account of a prevalent epidemic at the time, and her own clinical history. Report of culture came back "almost pure culture of streptococci."

In twenty-four hours, there was a suggestion of improvement after the first stock vaccine injection, and on the third day the patient was decidedly improved, and being that the patient responded so well to this vaccine, it was continued every second day. On October 1, 1914, the ear was dry, and all the symptoms she had were slight occasional pains and attacks of vertigo; the fact was noted by the patient that her hearing was much better than it had been. From that time on, injections were given about biweekly until all symptoms subsided, and she was discharged a month later feeling very well, and making no complaint. Heard of patient during the present writing, to the effect that she was well.

This shows the remarkable effect of the stock vaccine of a good manufacture, which I believe the one I used to be from repeated experiences in a great many instances. Furthermore, I have never seen any ill effects whatever, from its use.

CASE IV. Mrs. G., aged fifty odd years. Personal history: Had always been ailing more or less for a great many years. Several days before the onset of her present trouble, was in contact with a relative suffering from pneumonia. On December 30, 1914, was taken ill with a sudden severe cold and pain in the left ear, and a physician, said to be an otologist, was called in and made light of the case. Drops were prescribed, and after he left the patient kept getting worse, and had a very bad night. Pains spread to the back of the ear and top of the head. Patient also complained of very annoying tinnitus and throbbing in the ear. On the morning of the following day, I was called and found the patient suffering intensely and severely prostrated. Drum had spontaneously ruptured, giving but slight relief. I immediately enlarged opening by making a free incision.

On account of the history, diagnosis was made of acute otitis media purulenta, with beginning mastoiditis, and on the evening of my first visit it was a marked case of mastoiditis, with very severe symptoms and cerebral involvement. Patient had very severe pains, in ear and over mastoid, also very bad pains in the head on the same side, and slight stiffness of the muscles of the neck. After the incision, the ear began to discharge freely, but there was not much relief in the symptoms.

An injection of vaccine was given containing pneumococcus, streptococcus, and staphylococcus, and this was continued daily, during which time the discharge continued for a week without lessening, although the symptoms subsided. At the end of the second week, patient was very much better, temperature was normal and remained so, and all that the patient complained of was the tinnitus and small amount of discharge. At the end of the fourth week the patient was discharged, feeling very well, the hearing fair and improving.

The usual treatment was given in this case, such as the bichloride douches, antiseptic drops, argyrol for the first few days, later the boric acid in alcohol. The ice bag was also used a great deal of the time and seemed to give very much relief.

#### CONCLUSIONS.

1. The stock vaccine can be used while waiting for the autogenous vaccine.
2. The kind of vaccine used (bacteria) is determined by the clinical history.
3. Vaccines should be used in every case of ear

infection from furunculosis to mastoiditis as early as possible.

4. If a case has been treated by a stock vaccine, and no change has been observed for the better, the autogenous should be used at once.

5. All other modes of recognized aural treatment should be instituted, and kept up during the vaccine therapeutics.

6. In very severe cases where there is no improvement and the disease is progressive, and it is not advisable to wait, the appropriate operation should be performed.

Errors in vaccine therapy may occur from two sources:

1. Using the wrong vaccine, or poor and faulty smear taken for the production of the autogenous vaccine.

2. Using too little vaccine, and not persisting for a few injections, with such regularity as the case may need.

In very severe cases I have used daily injections until signs of improvement were manifest, and then every other day, continuing twice weekly until discharge of case. My results have been excellent, even in some very neglected cases, where anatomical destruction was not too great. The results have been fairly good in postoperative mastoids, for slight recurrences or complications.

ONYX COURT, 193 SECOND AVENUE.

### THE NEED OF THE URETHROSCOPE IN THE DIAGNOSIS OF PATHOLOGICAL CONDITIONS IN THE ANTERIOR URETHRA.

By JOSEPH BROADMAN, M.D.,  
New York.

In a previous communication (NEW YORK MEDICAL JOURNAL, July 5, 1913) the writer discussed the need of the microscope in the treatment of gonorrheal conditions of the urethra. The microscope clears up the diagnosis only so far as the discharge is concerned. It informs us whether gonorrheal or some other germs are present, shows the various kinds of epithelia and other pus constituents. It does not, however, give the pathological anatomical changes or their location, a knowledge of which is of great importance. The examination of the urine may assist us in clearing up the diagnosis, but this neither informs us whether the process is in the bulbous or cavernous divisions of the canal, nor in which part of these divisions. These being some of the difficulties confronting us, the urethroscope affords the quickest and the most reliable means for the correct scientific diagnosis.

For the anterior urethra, the dry urethroscopic systems come into question mostly, because pathological conditions that might require the use of irrigating urethroscopy but seldom occur here. For this reason the writer refers to the dry systems only.

Of the dry systems we have those in which illumination is carried to the distal end of the tube upon a light carrier, such as the Valentine urethroscopes, and those in which the light is thrown into the tube from without, such as Luys's system of urethroscopes. Each of these systems has its advo-

cates, but as Frisch and Oberlaender always asserted, one works best with the instruments he is most familiar with.

*Acute conditions.* In acute conditions, as long as the process extends over the entire canal, the use of the urethroscope would be superfluous and dangerous, owing to the irritation and damage it might cause. Yet there are exceptions. Where we find a profuse purulent discharge, or in fact any kind of a discharge, and upon microscopic examination we are unable to demonstrate the presence of gonococci, we have reason to suspect some other condition than gonorrhea, and it becomes necessary to introduce the urethroscope in order to ascertain the cause of the trouble. Upon such examinations we often find the trouble to be due to either a circumscribed gonorrheal process, soft or hard chancre, ulceration, erosion, foreign body, etc., or we may find that the acuteness of the infection is kept up by a few inflamed glands of Littre or crypts of Morgagni. In employing urethroscopy in such acute infections, it is advisable, in many instances, to work from the front to the rear.

Very often we come across an acute exacerbation upon a chronic condition, due to a rupture of one or more of the above mentioned glands or crypts. These acute exacerbations recur at short intervals, and were they treated as soon as detected with the urethroscope, as there is no other way to detect them, the duration of such exacerbations would be markedly shortened and their recurrence forever prevented.

*Subacute conditions.* Urethroscopy finds its widest field of usefulness in subacute and chronic conditions. If we examine such cases with a sound or palpation over the sound, we may not find the presence of any pathological condition, while the examination with the urethroscope may disprove this. If a sound or similar instrument locates a lesion, we do not know whether it is an inflamed gland or crypt, ulceration, erosion, granulation, tuberculous ulcer, a new growth, foreign body, etc., or a combination of these, and since the treatment in these conditions varies widely the necessity for a correct diagnosis becomes very evident. The treatment of a large majority of these conditions must be entirely local and under the guidance of the eye, hence it becomes essential to use the urethroscope.

In some cases we may find moisture at the meatus and though the examination with a sound discloses nothing wrong, urethrosopic examination may show the reason for its presence. So we may find that even though any other than a urethrosopic examination has not disclosed anything, that there are a number of inflamed glands in the canal, in which gonococci have been repeatedly demonstrated, or some other process in its beginning stages, when it could easily be eradicated, is found. This possibility indicates the necessity of ascertaining their presence or absence before discharging a patient as cured, rather than wait until the process is much further advanced. Were we to neglect the examination of a patient in the subacute stage, and wait until this had advanced to a degree of being ascertainable by means of a cruder and less reliable method, it would be permitting such a process to grow worse without proper interference.

*Chronic cases.* We owe to the works of Fuertensteinheim, Greenfeld, Oberlaender, and his school the knowledge of differentiating soft and hard infiltrations and their various stages, as well as those of the follicular and deep glandular type, which differ materially as to therapy. Oberlaender, Kollman, Wossidlo, and Luys have taught us to follow the result of the treatment urethroscopically and to institute and modify the treatment accordingly. Though marked strictures, very hardened processes, or deep seated conditions can be recognized without the urethroscope, there are many others that cannot, and it is just such conditions that should be recognized early, which might otherwise escape detection. If a bougie-à-boule shows the presence of individual infiltrations, we must not forget that these are the narrowest, while the existence in the same instance of infiltrations that are not quite narrow enough, may be overlooked. Where the degree of narrowing is to be determined, the urethrometer will help us, but the urethroscope alone gives us information about the exact nature of the malady.

A hard infiltration may be masked by a superimposed soft one, and since the treatment would differ as soon as the real condition was unmasked, information leading to a correct conclusion is important. The difference between the merits of the sound and the urethrometer on the one hand, and the urethroscope on the other, is equal to the difference between the senses of touch and sight. Other methods have merit in certain cases and should be used in their places.

In conclusion, I wish to state that, unless one is very careful, errors are apt to occur. In order to avoid these, it sometimes becomes necessary to repeat the examination. In some instances, where difficulty exists, different sized tubes should be used, beginning with the smallest and finishing with the largest size possible of introduction. In order to avoid misinterpretations, we must also bear in mind that the introduction of urethrosopic tubes into the anterior urethra gives rise to deviations in color, lustre, striations, etc., owing to pressure. The reflex spasmodic action of the muscles causes local changes in the circulation, which may cause an artificial anemia or hyperemia. In these instances, when repeating the examination, it is best to wait until the irritation of the previous examination has subsided. The use of the microscope in conjunction with urethrosopic work will help very materially in forming correct conclusions.

1482 BROADWAY.

**Astringent and Antiseptic Tablets for Oropharyngeal Inflammations.**—Coakley, in the fifth edition of his *Manual of Diseases of the Nose and Throat*, recommends to replace the iron and potassium chlorate gargle:

R Tincture ferri chloridi . . . . .  
Hydrargyri chloridi corrosivi . . . . .  
gr. 1/100 (0.0006 gram);  
Tinctura aceniti . . . . .  
Sacchari lactis . . . . .  
M. ft. tab. i.

Sig.: One tablet to be dissolved in the mouth every hour for four hours, and after this every three hours.

## Our Prize Discussions.

Contributors to discussions in this department are entitled to the most interesting. No prize has been awarded in the past for discussions in this series.

CLIX—How do you treat flatulence? (Closed.)

Answers due not later than August 15th.)

CLX—How do you treat the effects of excessive smoking? (Answers due not later than September 15th.)

CLXI—How do you treat the effects of excessive drinking? (Answers due not later than October 15th.)

Contributors to these questions in the manner most satisfactory to the editors will receive a prize of \$25. No importance whatever will be attached to literary style, but the award will be based solely on the value of the substance of the answer. It is requested (but not required) that the answers be short, if practicable no answer to contain more than six hundred words; and our friends are urged to write on one side of the paper only.

All persons will be entitled to compete for the prize whether subscribers or not. This prize will not be awarded to any one person more than once within one year. Every answer must be accompanied by the writer's full name and address, both of which we must be at liberty to publish. All papers contributed become the property of the JOURNAL. OUR READERS ARE ASKED TO SUGGEST TOPICS FOR DISCUSSION.

The Prize of \$25 for the best paper submitted in answer to Question CLIX was awarded to Dr. R. S. Robertson, of New York, whose article appeared on page 305.

## PRIZE QUESTION CLIX.

### THE ROLE OF THE DENTIST IN THE THERAPEUTICS OF INTERNAL DISEASES.

(Continued from page 306.)

Alonzo Milton Nodine, D. D. S., observes:

Convincing evidence gathers which reinforces the conviction that proper mastication with efficient teeth is necessary for the thorough digestion of a mixed diet. The psychological effect on digestion of thorough chewing is well known. When inefficient teeth have been removed or repaired and proper artificial substitutes inserted, when the feces have been examined before and after, it has been determined, after repeated and numerous experiments, that molar teeth are necessary for proper digestion of starch, and bicuspid teeth for the proper digestion of meat. The removal and replacement of such artificial or natural teeth may be detected from evidence in the feces and further, it may be determined which group of teeth has been removed or replaced.

This establishes the role of the dentist in that large number of cases in which there exists a disorganization of the digestive apparatus in whole or in part; the digestive processes having broken down, because they were unable to cope with the ingestion of improperly digested food.

Failure and repeated failure confronts the internist in the treatment of such conditions because the patients' masticatory apparatus is so inefficient and so disorganized as to defeat his best efforts. In hardly any field is the cooperation of the dentist and the internist productive of results so gratifying, so immediate, and so permanent. The internist then

has at least the chance of establishing proper organization in the alimentary tract and proper dietary conditions. The importance of this is so well known in the treatment of tuberculosis as to need no further comment.

Malnutrition and intestinal stasis, in children and adults, are due quite as much to the inability properly to masticate food to extract the contained nutriment as to a diet which is insufficient or unwholesome.

That patients have the required number of teeth is not sufficient. The teeth must be in good repair and so arranged that they can chew food in a thorough manner.

Children and adults with contracted and warped dental arches also have, either as a cause or a result, deflected nasal septums and contracted chests. Chronic bronchitis, nasal catarrh, hypertrophied tonsils, or adenoids also may be present. Most of these patients so handicapped are mouth breathers. They fail to use or are unable to use one of the body's best defences—the most ciliated epithelium of the nose and turbinated bones which filters the germ laden air.

When these contracted arches—either in children or adults—are expanded and straightened, this widens the nose and straightens the septum. This alone frequently corrects the conditions before mentioned. But in cooperation with the physician the dentist may insure the permanency of his own efforts and assist in and make possible the correction of the conditions which are the special work of the physician.

Frequently dentists and physicians fail to accomplish and maintain what they set out to do because either one has neglected to secure the cooperation of the other.

In this special field the cooperation of the dentist and the physician is productive of the most permanent and happy results. Consider the part that mechanical irritation set up by diseased teeth and their faulty artificial substitutes.

Malignant growths are found with a peculiar and alarming frequency in the mouth, the jaws, the tongue, and the lips. Leaving out of consideration cancers of female genital organs, the mortality from such malignant growths in New York State last year was a little more than four per cent. of the total number. Whatever the cause of cancer may be, it is almost always found at some point of irritation. How easily and frequently dental irritation may be set up by the sharp edge of a decayed, broken or abraded tooth or root on either the tongue, gum, or lips or cheek! Again, the sharp edges of broken or ill fitting plates, crowns, bridges, and fillings projecting into the gum or irritating the cheek, lips, or tongue!

More than fifty per cent. of all cancerous growths are found in the stomach or intestines. How frequently these occur coincidentally with a disorganized masticatory apparatus! A masticatory apparatus which prepares imperfectly for digestion, food—particularly meat and starchy food. Impaction occurs at the pyloric end of the stomach and this perverted digestion, imperfect digestion, and the irritant and poisons that arise therefrom result in disorganization and breaking down.



How frequently cancer occurs on the site of a gastric ulcer, and how frequently dentists and physicians have noted the clearing up of gastric ulcer after the correction of a faulty masticatory apparatus and the institution of proper hygienic conditions in the mouth!

The dentist occupies a preeminent position in preventing and detecting many of these precancerous conditions, and the physician may well seek and benefit by the hearty cooperation of the dentist. Whether the teeth contribute to this malady or not, the patient has an infinitely better chance to have at least comfort with a clean and efficient chewing apparatus.

Septic gastritis, appendicitis, colitis, arthritis, rheumatic fever, endocarditis, toxic neuritis, nephritis, tuberculosis, measles, scarlet fever, diphtheria, and other diseases due to an infection or intoxication, are commonly found associated with a septic oral cavity.

The microorganisms and their toxins found in the discharges of diseased teeth, diseased gums, and the pathological processes set up by unhygienic artificial substitutes, crowns, and fillings, may be absorbed from the oral cavity, taken into the stomach, or drawn into the lungs.

While the activity of these microorganisms is kept within normal bounds by the defenses of the body, yet their resistance may be overcome when the doses become sufficiently large, or the virulence of these microorganisms is increased, or when other more dangerous microorganisms are introduced, or when from other causes the resistance is sufficiently lowered to allow them to gain a foothold.

When absorption of these microorganisms from a septic mouth extends over a long period, they may produce their effect by subinfection. In this way may be explained many forms of chronic fibrous degeneration, which occur so insidiously in the various organs of the body as suggested by Adams.

On the other hand, the menace of septic teeth is strikingly dangerous when it is realized that frequently *Streptococcus viridans* is found in, around, or on the ends of these septic teeth or in their infected sockets. It is well known that when the defenses of the body are so lowered as to allow these microorganisms to gain entrance to the blood, the result is fatal within a year! The dentist may render a great service in discovering and doing away with foci of infection which baffle the skill of the internist.

While the eradication of these foci of infection and the reorganization of the mouth may not cure the systemic or organic disturbances as frequently as the dentist anticipates, the cooperation of the dentist in these cases is sufficiently valuable at least to make possible the efforts of the internist.

Take into consideration the obscure yet numerous neuralgias and tics, about the head and jaws, the reflected pains, twitches, spasms in the ears, eyes, nose, and other parts of the body, the insomnias, melancholias, and seizures simulating epilepsy and insanity which have been relieved and frequently cured when the dentist has discovered persistent irritation in or about the teeth and jaws or removed impacted teeth and hidden roots and unhygienic and irritating crowns, bridgework, plates, and fillings, and corrected warped and contracted dental arches.

All of these conditions and those previously mentioned are found so frequently associated with a septic or disorganized dental apparatus and have been relieved or cured by the correction of them, that it should be the proper order of things for the physician to insist, when called for treatment or consultation, that the teeth and mouth be put in a thoroughly sanitary condition and kept so, and that a search be made with the x ray by the dentist for hidden sources of infection or irritation, and then their eradication insisted upon.

*Dr. Louis Neuwelt, of New York, observes:*

One of the fundamental modern conceptions of disease is that bacteria may exist in the body, and, though they may not be sufficiently powerful to overcome the bodily resistance, nevertheless, they produce toxins. The mouth always contains a luxuriant growth of microorganisms, especially when teeth are unclean and decayed. From the mouth, the bacteria pass by way of the blood and lymphatic streams to distant parts of the body.

The importance of recognizing the diseases of the gums and teeth as an etiological factor in a large number of internal diseases becomes evident. Often, the periodontal infection remains a local process, causing no disturbance elsewhere; but when the individual's resistance is overpowered, a general intoxication results, and the infecting organism may establish new centres of growth in another part of the body. Just as metastases are developed from infections of the tonsil, urethra, vagina, etc., just so may the infection spread from infections around the teeth. Especially may the secondary process be ascribed to a primary periodontal infection, when no other source of infection can be found, and when the cure of the primary alveolar infection is accompanied by the improvement or cure of the general systemic disease. This marked improvement after clearing up the dental condition is certainly most convincing.

All mouth infections may be divided into two classes: 1. Infections from the mouth; 2, infections from blind abscesses of the alveolar processes of the maxillæ.

1. The mouth always harbors pyogenic bacteria, which are normally inactive, but as soon as the local or general resistance becomes impaired, flare up into activity. Free pus in the mouth may be due to a discharging alveolar abscess; also a pyorrhæa alveolaris, which later develops into pockets of pus along the roots. Traumatism from improper dental operations, bridge work, improper fillings, etc., may cause pus pockets to form, also caries in the maxillæ and teeth. It can readily be seen that from any one of these sources, large amounts of pus are swallowed into the intestinal canal, whence they may spread to the rest of the body. The possibilities of localization are legion. The following have been reported: Stomatitis, osteomyelitis, periostitis, tonsillitis, pharyngitis, otitis media, mastoiditis, lymphadenitis, acne, eczema, erythema, erysipelas, gastritis, enteritis, gastric and duodenal ulcers (Rosenow), colitis, appendicitis, cholecystitis, anemia, pyemia, septicæmia, pleurisy, empyema, hematogenous nephritis, pyelitis, and perinephritic abscess (Lilienthal) osteomye-

litis, arthritis, endocarditis (formerly these infections were called "cryptogenetic"), arteriosclerosis (hillings), brain abscess, pachymeningitis, neuritis, ties. Rosenow demonstrated the transmutation forms of the streptococci, and also its different grades of toxicity and virulence.

2. Infections from blind abscesses at the ends of the roots of the teeth have been studied mostly since the application of the x ray to the teeth. With the skiagram, the dentist can readily diagnose the condition. These abscesses burrow their way into the oral cavity along the alveolar plates. The cause may be a periodontal abscess or a decayed pulp, which usually is the result of faulty dentistry.

In this class of cases, it is absolutely necessary for the dentist to follow the principles of aseptic and antiseptic surgery, avoid every form of infection, and leave no foci of suppuration in any part of the mouth. As the tooth pulp is easily infected as soon as the latter is exposed, every bit of the pulp in the root canal should be removed, and the canal effectually plugged with a noninfectible material. If such a procedure for any reason is impracticable, the tooth should be removed.

To sum up the subject of the duty of the dentist in the presence of dental infection, it might be said that unhygienic conditions of the mouth, often intensified by ill advised dentistry, such as the crowning of infected teeth, bridge work, and improper fillings, cause infections and abscesses of the gums. It is the duty of the dentist to cure all such infections by observing the rules of surgical cleanliness. Frequent prophylactic treatment of the mouth is a necessity, particularly with children.

At the time of the eruption of the first permanent teeth, the mouths of children should be placed in a good condition, the children should be taught the principles of oral hygiene, and report to the dentist every six months. With clean mouths, future repair work is reduced to a minimum. Bacterial cultures help in the way of diagnosis and treatment. All foci of suppuration should be removed, even to the extent of extraction of the teeth.

Another branch of the subject which is beginning to receive attention, is the subject of orthodontia. Marked improvement in the general health of patients after rapid spreading of the teeth has been seen by the resultant cure of mouth breathing. It is not painful, and for the orthodontist quite easy. The results are very gratifying.

*Dr. James Frederick Rogers, of New Haven, Conn., remarks:*

It is fine to have such an easily get-at-able scapegoat for disease as the teeth, and so efficient a goat-herd as the twentieth century dentist. We are, however, doomed to disappointment if we imagine that the aligning, cleaning, plugging, withdrawing, or replacing of the teeth is going to cure all internal disorders, nor will it help many of them as much as we at present imagine.

There can be no doubt as to the menace to internal bodily harmony from the presence of *carious teeth*. Anyone who has palpated the neck of a child suffering from this state of dental affairs has been made painfully conscious of the immense amount of absorption which goes on from these admirable incubators of bacteria. Even if no infection, in the

ordinary sense of the word, follows from invasion of the body through this channel, there must at least be a constant lowering of the vitality from the entrance of small numbers of bacteria or from absorption of their toxins. The plugging of cavities by the dentist (even if it comes late, after the manner of locking the stable when the horse has been stolen) will be a preventive of at least depression of vitality, but not too much general improvement is to be expected from such repairs, for it must be remembered that carious teeth are not in themselves normal, and the person who has them was not up to the highest standard of health or he would never have needed the aid of a dentist. His food or his feeding was not what it should have been, or his metabolism was faulty from far back.

The correction of *badly placed teeth* and of *deformities* of the jaws, bringing about thereby better apposition of the teeth and perhaps improving the nasal passages, must aid the general health, and the replacing, in adults, of lost teeth, must aid digestion and general nutrition. But, again, the loss of teeth in adults is due to some metabolic defect, and it is of no use to have good grinders, natural or artificial, if they are not used, and used upon the right sort of provender. The dentist may help, but the physician must do his part toward the cure.

When it comes to *pyorrhea*, of which we hear so much at present, such a condition must, like the presence of cavities, be accompanied by general poisoning of the body, which may display itself in any locality, in a variety of ways, and also aggravate evils which originated from other causes; but, again, *pyorrhea* is a result before it is a cause. No really healthy individual suffers from *pyorrhea*. The cleaning up of this garden for microbes must bring about improvement in the general or local ailment, but it is too much to expect, unless the disorder which brought on the *pyorrhea* has disappeared, that the patient will become a new person. The physician still has his work cut out for him.

The dentist is proving a great therapeutic adjunct, but we should not overlook the fact that he is but an adjunct and that there is usually something more to be done for the patient after the teeth are put in good condition.

*Dr. A. E. Fossier, of New Orleans, writes:*

Osler said, "If I were asked whether more physical deterioration was produced by alcohol or by defective teeth, I would unhesitatingly say defective teeth." Many constitutional disturbances with resulting dire consequences would be averted were our dental confrères as strongly impressed with the necessity of a healthy mouth and teeth.

Imperfect articulation and defective teeth are the causes of many digestive troubles by preventing proper mastication.

A fetid mouth, carious teeth, and purulent gums are as frequently the cause of serious constitutional disturbances, as are oral infections the result of an impaired, deranged, and diseased system.

Many and varied are the diseases resulting from a fetid mouth: Intestinal and gastric disorders, colitis, prostatitis, appendicitis, cholecystitis, sepsis, anemia, malnutrition, persistent headaches, hematogenous infections, such as streptococcal and

staphylococcal pleurisies, empyemata, nephritis, pyelitis and not infrequently a persistent and severe arthritis which resists treatment as long as the oral septic condition is not corrected.

The dentist should be aware that his work may not be devoid of dangerous result. Literature abounds with the reports of death following teeth extraction, alveolar abscess, Riggs's disease, and even improperly capped and filled teeth.

The proper role of the dentist in the therapeutics of internal diseases is chiefly one of prophylaxis, to treat and cure local conditions, and as an aid to the physician in the diagnosis and treatment of constitutional diseases.

The treatment of internal diseases demands the greatest skill, which is to be acquired by constant study and vast experience. It is as ridiculous for the dentist as any other specialist who devotes his whole time, studies, and attention to any one organ, to attempt to usurp the responsibility of the internist. The proper teaching of the dental profession of oral hygiene and their instruction of their patient in the use of proper prophylactic methods are the means of preventing serious constitutional disturbances, and of prolonging life.

Our dental confrère who does not limit his responsibility to the mechanical end of his profession, but recognizes the frequency with which the first indications of diseases may appear in the mouth, is of the greatest help to his client. He knows that very frequently, impaired organs and serious chronic diseases may often first manifest themselves in diseases of the buccal orifice. Diseases of the mouth should readily respond to local treatment, and be improved and cured in a reasonable length of time. Any obstinacy and resistance of these oral conditions to the efforts of the dentist are indications of underlying constitutional derangements. His counsel to seek a physician's advice is invaluable, as it may be a means of preventing suffering and perhaps organic disease.

The physician should procure the aid of a dentist in unknown and obscure cases of sepsis, in ulcerative endocarditis, and in arthritis which resists treatment. Frequently these consultations will save a great deal of worry and vexation, and result in the saving of life. The author does not doubt that a large number of deaths might have been avoided had the mouth been properly examined. In all these cases the dentist should feel his responsibility, for the correctness of his diagnosis is often vital. He should be aware that many cases of incipient Riggs's disease, any improperly capped teeth containing fetid matter, and any root abscess may be sufficient to cause serious trouble.

To sum up, the dentist is of inestimable help in the therapy of internal diseases. The addition of teeth when missing, the correction of defective articulation, and any done to facilitate the proper mastication of food is frequently essential to the prevention, relief, and cure of many gastric and intestinal disturbances. The extraction of decayed teeth and roots, the sterilization of pus sockets and abscesses, the care of gingivitis and the treatment of Riggs's disease will not infrequently be the means of arresting systemic disease, and will at least contribute to the comfort of clients.

## Therapeutic Notes.

### A Treatment for Old Contracted Cicatrices.—

E. G. Alexander, in the *Annals of Surgery* for October, 1914, reports: An old severe burn of the left side of the body, arm, forearm, and hand, was treated by a combination of operative, medicinal, and mechanical means. Numerous incisions, some superficial and others deep enough to penetrate the cicatrices, were made along the contracting bands of scar tissue. After oozing from the wounds had stopped, a compound of thiosinamine and sodium salicylate was rubbed well into each incision and also injected into the fibrous tissue. Rubber tissue and a dry dressing were applied, and a straight splint, padded to fit the flexed elbow, bandaged firmly on, so as to extend the forearm as much as possible. For two days after the operation, there was complaint of pain at the elbow, but in a week the forearm could be extended at least fifty per cent. further than before the intervention, and the scar tissue was soft and pliable. About two weeks after this the procedure described was repeated. But little discomfort followed, and ten days later the arm was nearly straight. Aftertreatment consisted in the occasional injection of the thiosinamine compound into the site of the old scars, together with massage and passive movements. The author finds it difficult to attribute the results obtained to any one of the three distinct measures—operative, medicinal, and mechanical—employed, and is inclined to ascribe the result to their conjoint use.

**Salvarsan in the Treatment of Pellagra.**—M. M. Morrison, in the *Texas Medical News* for December, 1914, reports his experiences with salvarsan in thirty-one cases of pellagra, and states his belief that the drug is one of great value in this disease. Small doses were found sufficient. Cases in the first year, it was observed, require but little of the remedy; second year cases required more. The intramuscular method of administration is recommended as preferable to the intravenous owing to the undesirability of multiple venous punctures and because no immediately alarming symptoms are produced. The author's method, in preparing the drug for intramuscular use, consists in triturating it well, adding to it sterile olive oil in the proportion given below, and mixing the two with a stirring rod in a glass mortar.

R Salvarsan, ..... gr. iss (0.1 grams);  
Sterile olive oil, ..... ℥i (4 c. c.).

Stir well.

The amount to be used is placed in a vial, which is sealed with shellac. At the time of injection the puncture site is painted with tincture of iodine, a syringe fitted with a No. 18 or 20 needle two to four inches long sterilized by boiling, the vial placed in the hot water for one minute, the syringe and needle dried by working the piston, the vial shaken, and the syringe then filled. The injection is made deeply, the needle being introduced downward into the muscle tissue, avoiding the region of the sciatic nerve. Long standing cases of pellagra were found to require prolonged treatment and careful feeding. The reaction to salvarsan took place as rapidly in extreme cases, however, as in mild ones.



**Treatment of Itching Skin Diseases.**—J. Meyer, in *Urmittelblätter* (Centralblatt for June, 1914, advises the use of a modified Ringer's solution in the treatment of pruritus. The solution is made up as follows:

Sodium chlorid, . . . . . gr. xlv (15.0 grams);  
Potassi chlorid, . . . . . gr. viiss (0.42 gram);  
Calcii chlorid, . . . . . gr. iv (0.24 gram);  
Sodii bicarbonatis, . . . . . gr. iss to ixxx (0.1 to 0.3 gram);  
Aqua destillata q. s. ad . . . . . ℥i (1000 c. c.).

The amount administered was in all instances six and two third ounces (200 c. c.) at a dose. Subcutaneous injection was found preferable to intravenous. The conditions treated with the saline injections included pruritus senilis, acute and chronic urticaria, lichen chronicus disseminatus, strophulus infantum, and dermatitis herpetiformis. Marked relief and persistent improvement were noted in all instances, the treatment acting best of all in senile pruritus.

**Diet in the Treatment of Nephritis and Urinary Calculi.** N. R. Blatherwick, in the *Archives of Internal Medicine* for September, 1914, reports dietetic experiments in human subjects which showed clearly that urinary acidity, as well as the solvent power of urine for uric acid, can be materially changed by variations in diet. These changes, it was found, are referable to the character of the ash yielded by the various foods. The possible presence of organic substances, such as benzoic acid, which are excreted as acids, must also be taken into account. In general, foods yielding an alkaline ash were found to decrease urinary acidity, while those yielding an acid residue increased it. According to Fischer, the cause of the pathological condition in nephritis is an abnormal production or accumulation of acid in the kidneys. The acid favors the solution of the kidney colloids; hence the albuminuria. The treatment indicated, therefore, is the introduction of bases, and for this purpose Blatherwick's research showed the marked suitability of most fruits and vegetables. Conspicuous exceptions, however, were found, prunes, plums, and cranberries causing increased acid production instead of the expected decrease. On the other hand, dietaries made up largely of potatoes, with smaller amounts of apples, bananas, raisins, and oranges, proved an excellent means of introducing the desired bases into the body. Very suitable also, but obtainable only in the summer months, was the cantaloupe. Tomatoes proved of some, though less value. Care is enjoined not to allow too much of the cereals, including rice and whole wheat bread, and of meats, which have a predominance of acid forming elements. A high urinary acidity favors the formation of uric acid calculi, which comprise from sixty to eighty-one per cent. of all urinary concretions. The author's results showed that acid urines are always supersaturated with uric acid and will show precipitation when opportunity for the establishment of an equilibrium is given; on the other hand, alkaline urines are always capable of dissolving added uric acid, showing that as excreted they are not saturated with this acid. Where a tendency to the formation of uric acid calculi is to

be overcome, the urine must thus be of low acidity. This condition can be fulfilled either by ingestion of alkalis or by eating some of the many suitable fruits and vegetables. These have a further advantage in that their purin content is negligible. In persons actually harboring uric acid calculi the form of diet mentioned is, of course, of value.

**Enterocolysis by the Drop Method in the Treatment of Typhoid Fever.**—Paul Emile Weil, in *Bulletins et mémoires de la société médicale des hôpitaux de Paris*, February 25, 1915, strongly recommends the daily intrarectal administration to typhoid patients of one quart (one litre) of boiled water to which one and two thirds ounce (50 grams) of glucose or cane sugar have been added. The method is advised not only as an easily employed substitute for the customary cold bath treatment, but as being actually superior to it in the results obtained. The solution to be introduced is placed in the receptacle at a temperature of 104 to 122° F. (40 to 50° C.) and the flow so regulated that about sixty drops enter the bowel a minute. The receptacle should be placed at an elevation of about sixteen inches (40 cm.) above the patient. Each administration should take about three hours, or possibly, four hours. Epinephrine was sometimes added to the solution in cases with heart weakness, chloral hydrate in the delirious, and hexamethylenamine in those with gallbladder complications. The sugar solution, thus administered in hundreds of cases, uniformly caused rapid improvement in the general condition and diminution of the signs of infection. In patients admitted with a dry, parched tongue this organ became thoroughly moist after one or two treatments. Prostration was greatly reduced, ataxic symptoms were quickly overcome, and delirium was subdued. A characteristic effect on the temperature was noted, the range forming at first a plateau of about 102.2° F. (39° C.), then fluctuating and dropping, often abruptly, down to normal, sometimes in the space of two days. The treatment was continued until the patient had been afebrile two days, earlier discontinuance being followed by return of fever. The pulse rate, even in complicated cases, was brought down to 100° F., and remained there throughout the course of the disease. Even where diffuse capillary bronchitis had become superadded to the typhoid fever, the temperature and pulse remained relatively low, and dyspnea was prevented. The urinary output was markedly increased and albuminuria caused to disappear by the treatment. The number of stools was apparently diminished. No contraindication to the method is recognized save intestinal hemorrhage; as soon as the bleeding ceases, enterocolysis should be practised as usual. The duration of the disease was much shortened by the treatment and the complications were rendered less frequent, milder, and less persistent. The patients entered upon convalescence less prostrated and emaciated than is usual in the disease referred to. The few patients who succumbed among the hundreds of cases treated had been admitted in a desperate condition and remained under observation but four or five days.

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## EDITORS

CHARLES E. DE M. SAJOUS, M.D., LL.D., ScD.

CLAUDE L. WHEELER, A.B., M.D.

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## THE EFFECTS OF ASPHYXIATING GASES.

R. Dujarric de la Rivière and J. Leclercq, owing to their favorable situation at Calais, were able recently to examine 112 soldiers injured by asphyxiating bombs at Langemarck. In *Presse médicale* for July 15, 1915, they present a paper on this subject, which may be summarized as follows: The gases used were mainly bromides and chlorides and the principal phenomena noted were bronchial or pneumonic, although hepatic or renal symptoms were not infrequent and occasionally dominated the clinical picture. A few cases were of slight importance, but the majority presented pulmonary symptoms of great gravity, bronchopneumonia, pneumonia, and pulmonary gangrene, which the observers were able to follow in its entire evolution. Two patients presented cases of hemolytic jaundice and a third had for several days hemoglobin in the urine. The urine of the majority of patients was highly colored and contained abundant biliary pigment. Albuminuria of a persistent nature characterized a few cases. Histochemical and bacteriological study of the expectoration showed the pulmonary manifestations to begin with a discharge of desquamative debris and a few polynuclears, a picture soon modified into one of congestion and occasionally necrosis of the lung. At first the bacterial

flora was insignificant, but the sputum sometimes contained anaerobes, particularly *Bacillus perfringens*. When gangrene supervened, anaerobes became abundant. An autopsy on a subject dead of pneumonia corroborated the findings of both clinical and laboratory.

In the same issue of *Presse médicale*, Lévy writes of the respiratory syndrome which follows inspiration of the asphyxiating gases. The first victim he examined, twenty-four hours after exposure, had been obliged to retire after an attack of burning in the throat, lachrymation, headache, apnea, and vomiting. He could hardly stand erect, the face was cyanosed, the lips were violet, and he coughed constantly, emitting a sputum streaked slightly with blood. From time to time he vomited; the axillary temperature was 101.3° F., the pulse weak and almost imperceptible at 145. Examination of the thorax disclosed an intense tachypnea; percussion showed no diminution of resonance, but auscultation revealed all over the lungs subcrepitant sounds, well nigh drowned in bronchial sibilance and sonorous rales. This man, who was lost sight of, is supposed to have succumbed within twenty-four hours. Other patients showed, beside the symptoms already given, a heavily coated tongue, a dyspnea closely resembling that of uremia, a pulse of about 100, slight hemoptysis, vomiting, constipation, subicteroid symptoms, anuria, sometimes hematuria, and transient albuminuria. In autopsies on two Canadian soldiers, dead from asphyxia, the lesions were those of acute bronchitis and pulmonary edema; spectroscopic examination of the blood showed absence of all pigment. In Lévy's opinion the gas used was undoubtedly chlorine. Within forty-eight hours the French soldiers were provided with a mask of several layers of gauze impregnated with a glycerinated solution of sodium hypophosphite; at the first sign of an attack they were to wet this mask with water and adjust it over the face.

## THE GENERAL COMPLICATIONS IN SURGICAL TUBERCULOSIS OF THE SMALL INTESTINE.

As in all tuberculous manifestations, any point of the body may be invaded by secondary tuberculous infection, such as the bones or testicle, or the patient may die from an attack of acute military tuberculosis. As to the less advanced lesions, such as we are considering, they are not so frequent, the most important organ to keep under observation being the lungs. The relationship of the intestinal lesions with pulmonary lesions is of the greatest in-

test, because it is upon the presence and extent of the latter that depend the operative indications and technique to be applied to the intestinal process.

Single tuberculous strictures of the small intestine are more common than multiple in pulmonary cases, and for some time this was thought to be exclusive, but since surgical interference has become more common the question has changed. It was first known that multiple intestinal strictures were infrequent in pulmonary tuberculosis, and out of a total of 1,000 autopsies on tuberculous subjects, 566 times there were intestinal lesions, and in only nine instances was there stenosis (Eisenhardt). But in order to solve this question, it was incumbent to discover intestinal lesions without pulmonary involvement in the subject.

Erdheim has stated that it is practically certain that a pulmonary tuberculosis has a most unfavorable influence on intestinal tuberculosis, but that we can be sure that an advanced pulmonary tuberculosis does not accompany the stenosing intestinal type. In the majority of cases only minute pulmonary lesions are found.

Strehl found an extensive tuberculous focus in the lung, however, in a case of intestinal stenosis, but he was of the opinion that the lung lesion was the result of the anesthesia, because, before operation, no cavities were present. Orth believes that the cure of intestinal tuberculosis may come about in cases which have a chronic tendency and in which the number of tumors is small. In cases of advanced pulmonary tuberculosis an intestinal stenosis does not have time to develop.

These opinions are referred to because they are typical, and the internists have considered intestinal tuberculosis as synonymous with ulceration, that is to say, as advanced lesions far beyond surgical relief. But this is far from the facts. The fibrous type indicates a lesion undergoing regression and not an evolution of the process. It is a localized tuberculosis, the most advanced expression of which is the hypertrophic type. To say that intestinal tuberculosis always exists alone is an exaggeration, but to uphold the contrary would be just as great an error. As Darier points out, a fibrous tuberculosis of the intestine may very well take on the same form in the lung. It is certain that a visceral lesion becomes generalized more rapidly than a bone lesion, its extension being favored by the defective nutrition of the patient and the numerous blood and lymphatic vessels. Clearly, when the lymph nodes are involved, generalization becomes more rapid, but is not of necessity fatal. Surgical treatment should benefit from this fact within the limits of reason and sound judgment.

## HYDROTHERAPY AND WOUNDS IN WAR.

From the early ages of medicine down to the present day of scientific investigation and enlightenment, natural mineral waters have been heralded and exploited as possessing great therapeutic value. Nutritional disturbances; constitutional diseases such as diabetes, nephritis, and obesity; and the host of arthritic affections, including acute articular rheumatism, are the conditions for which the spas have been specially advocated. In recent years, many attempts have been made to discover the ultimate factors in spa treatment upon which the remedial actions depended. The temperature of the waters, their mineral contents, the presence in many of dissolved carbon dioxide, and the discovery in some of radioactivity have been brought forward to account for their beneficial effects. Some, to whom these explanations appeared inadequate, have thought that the purely accessory elements of change of scene, climate, exercise, and strict regimen were of more importance. They have found support for their views in the insignificant results obtained by the use of artificial waters; but this admission has been used by their advocates as evidence of some genuine, though mysterious virtues inherent in natural mineral waters. The controversy that has waged between those who saw virtues in native springs and those who did not, could not be finally settled so long as the diseases and conditions commonly treated were of so speculative a nature.

Now, however, some light can be seen by reading between the lines of an article by Dr. Léon Blanc (*Lancet*, July 24, 1915). He makes an appeal for the use of the thermal and sulphur waters of Aix-les-Bains in the treatment of wounded soldiers. We quote the following as to their properties and virtues:

1. The waters cleanse wounds and hasten the healing process.
2. They relieve pain.
3. They counteract the development of paralysis by stimulating nervous energy and by raising the tone and nutrition of the muscles.
4. They relieve muscular contracture and restore the free movement of tendons and articular surfaces in pseudoarthroses and pseudoankyloses.
5. They facilitate the resolution of traumatic engorgement.
6. They promote the restoration of sensation in certain cases of paresthesia.
7. They reduce connective tissue hypertrophy.
8. They disclose and favor the elimination of splinters and other foreign bodies which the surgeon may have overlooked.
9. Lastly, they have always proved of great value in the treatment of all rheumatic and gouty conditions, and their associates, neuritis, sciatica, phlebitis, etc.

So far as stated, the only properties of these waters are two—heat and some dissolved hydrogen sulphide. It makes an excessive strain on credulity to attribute all the effects to these two agencies. But we are not called upon to make that effort, for Blanc says that the institute is equipped with appa-



ratus for the application of all forms of mechanical and electrical therapeutics as well as all types of massage. He also adds the statement that its location is one of the most ideal in Europe.

One is tempted to ask whether a nonradioactive water has anything to do with the recovery of surgical cases other than contributing to the psychic effect which is so potent a factor. A review of the records of some patients recently treated leaves little doubt that at Aix-les-Bains the massage, the mechanical, and electrotherapeutic treatment in a restful and exhilarating mountain resort account almost wholly for the excellent results. It would do no harm frankly to admit in this instance the importance of the artificial aids to recovery, which should never be neglected even when the waters of a spring have unimpeachable therapeutical virtues.

#### WAR BREAD AND DYSPEPSIA.

The efforts of the German nation to solve the problems presented by the limitations of their dietary almost exclusively to their natural products has aroused worldwide interest. In their necessity for husbanding and enhancing their own resources to the utmost the most important expedient at present is some substitute for wheat bread. Experiments along these lines will be watched intently by American medical men, although it is hardly probable that the United States, with its great wheat bearing potentialities, would ever find itself in this dilemma, even should it become involved in war. The point in question is nevertheless fascinating from a dietetic and metabolic standpoint.

A form of bread is now being manufactured in Germany to which the name of war bread is commonly given; it is made of rye flour and potatoes, the latter being the preponderant ingredient, and on this account it is frequently referred to as "potato bread." It is highly recommended by the German authorities as a satisfactory substitute in every way for real bread, and because it can be manufactured entirely from German products and does not draw upon the limited amount of wheat in that country, it is considered a point of patriotism to eat and to profess to enjoy it. It seems, however, from the reports which reach us, that the German taste is not easily reconciled to such makeshift fare, and we find numerous complaints that the constant consumption of this bread is attended by many untoward symptoms. Chief among these are diarrhea, hyperacidity, flatulence, and constipation.

Because of its unpalatability the German war bread is often not masticated enough, and to this are probably due a great many of the symptoms.

Constipation is a rare complaint, but diarrhea seems to be fairly common. Flatulence also is frequent, and this is thought to be due to the swallowing of large, tough lumps of bread which pass into the small intestine and are hardly affected by the pancreatic secretion, thus affording an ideal medium for gas producing organisms.

These dietetic discomforts are, as a rule, amenable to treatment, in fact, thorough mastication of the bread will often relieve them entirely. In the hyperacidity small doses of sodium bicarbonate are effective. The flatulence yields to large doses of charcoal.

#### THE DEATH OF DR. P. BRYNBERG PORTER.

In the death of P. Brynberg Porter, A. M., M. D., which occurred at St. Mark's Hospital, 177 Second Avenue, on August 6th, of acute dilatation of the heart, the *NEW YORK MEDICAL JOURNAL* suffered a painful loss. Doctor Porter was born in 1845, graduated at Yale University as A. M. in 1864, and from the University of Pennsylvania as M. D. in 1868; at Yale he was a member of Wolf's Head. He began the practice of medicine in Wilmington, Del., but had been in New York for over forty years. He had that taste for literary work which is often noted in physicians with academic degrees, and which impelled him often to neglect the more remunerative exercise of his profession. Of late years, what time he gave up to practice was devoted to pediatrics. He was much occupied with his work as recording secretary of the Medical Association of the Greater City of New York, of which he was one of the founders, and his interest and personal magnetism were of great value in arranging programs and in bringing together the right men to read papers and to discuss them. He was a power in the old New York County Medical Association, of which he was recording secretary until its dissolution. For many years he was attending physician at Demilt Dispensary; he also edited for some time the *Transactions of the American Therapeutic Society*. Doctor Porter was said to have been a man of deep religious convictions, and he was certainly one of broad charity and sympathy with the unfortunate. He was a highly valued contributor to this *JOURNAL*, several departments, including the editorial, enjoying the benefit of his experienced and ready pen, while more than once he saved much trouble in an emergency. He will be greatly missed, not only by the members of the *JOURNAL* staff, but by the officers and members of the many societies he helped to success. Doctor Porter was unmarried.

# TURPENTINE AS A HEMOSTATIC

A. Gray Turner, of Newcastle-upon-Tyne, contributes to the *Lancet* for July 31, 1915, his high opinion of turpentine as a hemostatic in wounds. Administered internally, it does not seem to have any particular value, and when used locally, it is necessary to cleanse the wound thoroughly first and to make firm compression over the strips of lint soaked in the fluid which are applied directly to the bleeding area. Properly used it will control hemorrhage even in hemophiliacs, and it is particularly useful in secondary bleeding, where there is much oozing of pus. Turpentine is antiseptic, and gauze soaked with it keeps wonderfully sweet.

# MOSQUITOES SUSPECTED IN 1774.

Nicolle, of Tunis, remarked to the Société de pathologie exotique, on May 12, 1915, according to *Presse médicale* for July 22d, that he had read in a book by a priest named Fortis, *Voyage en Dalmatie*, published in 1774, the following passage: "An ecclesiastic of lively wit told me that he suspected that the fevers from which the inhabitants of this country suffered, came from the bite of these insects (mosquitoes), which, after sucking at an infected cadaver or a poisonous flower, attacked human beings."

## News Items.

**The Southern Minnesota Medical Association** held its annual meeting at Red Wing on August 3d and 4th. Among the speakers were Dr. James S. Gillilan, Dr. J. T. Christison, Dr. W. R. Ramsey, Dr. Arthur Sweeney, and Dr. Arthur J. Gillette, all of St. Paul.

**American Aid for the Belgian Profession.**—A contribution of \$10 from Dr. E. W. Smith, of Meriden, Conn., was received by the treasurer of the Committee of American physicians for the Aid of the Belgian Profession during the week ending August 7th, making a total of \$7,775.84 received by the committee since its organization. The total disbursements amount to \$7,310.04, leaving a balance on hand of \$469.80.

**A New Hospital for Greenwich, Conn.**—Through the generosity of Commodore E. C. Benedict, Greenwich is to have one of the best equipped hospitals in the country. The building is to cost more than \$250,000. The new hospital is to be built on the property of Percival A. Rockefeller and William G. Rockefeller, known as the Perry lots and situated close to the village. Already the excavation work has commenced. The architects' plans show that the building will be of brick and steel and will have accommodations for about eighty patients.

**New Buildings for the Long Island State Hospital.**—Plans are being prepared for the construction of two new buildings for the Long Island State Hospital for the Insane, in Clarkson Street, Brooklyn. They will be erected on land adjoining the present building of the institution, but their exact site has not been determined. The new buildings will relieve very materially the pressure on the building now in use, which accommodates 880 patients and 177 attendants, and is much overcrowded. The State Legislature has appropriated \$400,000 for the buildings.

**The General Medical Council, London,** will vacate its present building, 209 Oxford Street, toward the end of November, 1915. As the new premises in Hallam Street will not be completely prepared for occupation by that date, it has been arranged that the autumn session of the council shall begin on November 2d in the old building. The executive committee will meet on Monday, November 1st. It is expected that the business of the Registration Office will be transferred to 44, 46, and 48 Hallam Street by November 25th.

**Personal.**—Dr. Otto V. Huffman, formerly secretary of the New York State Board of Medical Examiners and secretary-treasurer of the Federation of State Medical Boards, has moved from Albany to 89 Joralemon Street, Brooklyn, New York. Dr. Huffman assumes the lectureship on physical diagnosis at the Long Island College Hospital. He is also the secretary and executive head of the college faculty. No successor to the position left vacant at Albany has been appointed. Dr. Walter L. Bierring, president of the Iowa board, succeeds Doctor Huffman in the federation and will be the editor of the federation's *Monthly Bulletin*.

**American Red Cross Sends More Aid to Europe.**—The American Red Cross shipped on the French liner *Espagne* twenty-seven cases of hospital garments and supplies to Doctor De Page, surgeon general of the Belgian army, at La Panne, Belgium. In the consignment was included 400 pounds of chloroform, part of a donation of 10,000 pounds recently made to the Red Cross by the Burgess Sulphite Fibre Company of Berlin, N. H.

The Red Cross European War Fund in New York received last week additional contributions that brought the total to \$516,454.31. Subscriptions should be sent to Jacob H. Schiff, treasurer, 130 East Twenty-second Street.

**College of Physicians and Surgeons, San Francisco.**—Dr. Frederick C. Keck, of San Francisco, has been elected president of the Alumni Association of the College of Physicians and Surgeons, of San Francisco; other officers were elected as follows: Dr. Stefan Wassilko and Dr. Richard H. Dunn, vice-presidents; Dr. Charles H. Toppmann, reelected secretary, and Dr. Philip S. Haley, treasurer. The executive committee is composed of the following members: Dr. Francis B. Williams, Dr. J. H. Smith, Dr. H. A. Mager, Dr. Julius L. Waller, Dr. Arthur H. White, Dr. B. Rosen, and Dr. William A. A. Naylor. The next monthly meeting of the association will be held on August 16th.

**American Electrotherapeutic Association.**—The twenty-fifth annual meeting of this association will be held in Atlantic City, September 14th, 15th, and 16th, with headquarters at the Hotel Chalfonte. All physicians who are interested in physical therapeutics are invited to attend. The officers of the association are: President, Dr. John W. Torbett, of Marlin, Texas; vice-presidents, Dr. A. B. Hirsch, of Philadelphia, Dr. Curran Pope, of Louisville, Dr. William Martin, of Atlantic City, Dr. A. J. Hopkins, of Pittsburgh, and Dr. John S. Yates, of Paterson, N. J.; treasurer, Dr. Emil Heuel, 151 West Eighty-seventh Street, New York; secretary, Dr. J. Willard Travell, 27 East Eleventh Street, New York; registrar, Dr. Frederick M. Law, 576 Fifth Avenue, New York.

**Southern Medical Association.**—Arrangements are being made for the ninth annual meeting of this association, which will be held in Dallas, Tex., on November 8th, 9th, and 10th, under the presidency of Dr. Oscar Dowling, of Shreveport, La. Among the plans for the entertainment of the visiting physicians is a series of clinics, to be divided into three sets, one by out of Texas doctors, one by leading Texas surgeons outside of Dallas, and the third by Dallas surgeons. A committee has been appointed with Dr. Elbert Dunlap as chairman, to make the necessary arrangements for these clinics. The local committee in charge of general arrangements is composed of Dr. E. H. Cary, chairman, Dr. H. Leslie Moore, Dr. C. R. Hannah, Dr. O. M. Marchman, Dr. J. M. Martin, Dr. W. E. Howard, Dr. S. E. Milliken, Dr. Elbert Dunlap, Dr. J. W. Bouldard, Dr. R. S. Loving, and Dr. W. C. Swain.

**What Is Tuberculosis Work?**—At a conference of Red Cross Seal agents held in Washington, D. C., recently, the definition of the term "antituberculosis work" was considered and it was voted to retain it as last year, as follows: 1. The construction of hospitals or sanatoriums for the care of the tuberculous. 2. The maintenance of the tuberculous. 3. The provision of day or night camps for the tuberculous; for the provision and maintenance of dispensaries, visiting nurses, open air schools, fresh air classes, or preventoriums for the care or treatment of tuberculous cases or for the prevention of the spread of tuberculosis. 4. The maintenance of educational or legislative activities which have for their object the prevention of infection with tuberculosis. The design of the seal for 1916 has already been made up and approved both by the National Association and the American Red Cross.

**Washington State Medical Association.**—The following officers were elected at the annual meeting of this association, held in Tacoma, July 28th and 29th. President, Dr. J. R. Brown, Tacoma, president-elect, Dr. J. M. Semple, Spokane; first vice-president, Dr. A. E. Burns, Seattle; second vice-president, Dr. C. Stuart Wilson, Tacoma; secretary-treasurer, Dr. C. H. Thomson, Seattle; assistant secretary, Dr. J. H. O'Shea, Spokane; delegate to American Medical Association convention, Dr. Don Palmer, Seattle; alternate, Dr. C. F. Eikenbary, Spokane; trustees, Dr. W. N. Hunt, Dr. L. M. Sims, Dr. H. H. McCarthy, Dr. C. J. Lynch, journal trustees, Dr. Wilson Johnston, Dr. E. W. Jones, Dr. D. P. McCormick. The office of assistant secretary is new, having been created by the house of delegates in order to give the eastern part of the State a secretary. Next year's meeting will be held in Seattle.

**The Fight against Opium in China.**—The report of the American Consul General at Shanghai on the status of the traffic in opium in the Chinese republic shows that there has been a sharp reduction in the importation of the drug since 1910. The half century annual receipts of from about 6,000,000 to 10,660,000 pounds had dropped in that year to about 4,714,400. In 1914 importations were only 997,066 pounds compared with 2,418,400 pounds the previous year. An interesting fact is that while the amount of opium imported has decreased, the value has increased. The receipts in 1914, valued at \$20,913,006, were higher than for any year since the curtailing of receipts began, except in 1903, when 7,797,066 pounds were imported valued at \$24,545,300. The statistics show that since 1863 a total of 403,886,933 pounds of opium, valued at \$919,979,011 have been received. There are still 585 opium shops in the Shanghai international settlement, although it is estimated that all of them will be closed within two years.

**The Philadelphia Dispensary.**—This institution, which was founded 128 years ago and is said to be one of the oldest charitable institutions in America, cared for 36,410 patients in 1914, according to the annual report just issued. Since the opening of the dispensary, which is at 127 South Fifth Street, the reports show that 1,673,541 sick persons have received treatment. The old dispensary is one of the purely charitable organizations in the city which administers to the sick solely for the purpose of relieving distress. The treatments given are both medical and surgical, and administered by prominent men of the two professions. Two district doctors are permanently engaged to look after the sick who are unable to apply at the dispensary itself for treatment. A nurse also makes visits. The district work is carried on below Market Street to South, east from Broad Street to Delaware Avenue and north to Vine Street, between Broad Street and the river. A maternity department is conducted for mothers who are cared for as long as necessary. The institution is supported entirely by private donations and an income from endowments. It receives no support from the city or State.

**To Enforce Vital Statistics Law.**—Active steps are being taken by the State Department of Health to enforce the law requiring the report of births by physicians within five days after they occur. Dr. Hermann M. Biggs, State Commissioner of Health, has sent to district attorneys throughout the State lists of physicians who have been persistently negligent in this matter, and the county prosecutors have been asked to warn the offending physicians that further infractions of the law will be promptly prosecuted. Still more definite action was taken in the counties near Albany. The prosecuting attorneys of the counties in the Capitol district were called into conference by the department. A large number of failures to obey the law were laid before them by Dr. Cressy L. Willbur, director of the Division of Vital Statistics. The county prosecutors present were practically unanimous in the belief that the offending physicians should be brought to trial and the department was assured of complete cooperation in any proceedings that might be brought. Upon conviction a physician or other violator of the Vital Statistics article of the Health Law "shall for the first offense be fined not less than five dollars nor more than fifty dollars and for each subsequent offense not less than ten dollars or more than one hundred dollars or be imprisoned in the county jail not more than sixty days, or be both fined and imprisoned, in the discretion of the court."

**Pellagra.**—Reports received by the United States Public Health Service show that during the month of June, 1915, 3 cases of pellagra were reported in the District of Columbia, 7 in the State of Kansas, 338 in Louisiana, 1 in Maryland, 5 in Massachusetts, 3,195 in Mississippi, and 234 in South Carolina. During the week ending July 10, 1915, 4 cases were reported in New Orleans, 1 in Worcester, Mass., and 1 in Los Angeles; during the preceding week there were reported 2 cases in New Orleans, 1 in Richmond, Va., 4 in Wilmington, N. C., 2 in Lynchburg, Va., 2 in Lowell, Mass., and 1 in Boston.

**Despite the Hot Weather of Last Week, Death Rate Was Low.**—During last week ending August 7, 1915, there were 1,451 deaths compared with 1,314 for the corresponding week of last year. The respective rates were 13.04 and 12.28. Making allowance for increase in population of 1915 over 1914, there was still an increase of 85 deaths. While there were no deaths directly from insolation, the deaths from diarrheal diseases were more numerous during the past week than during the corresponding week of last year. Heart disease, pulmonary tuberculosis, and violence showed an increase. Considering, however, the fact that the temperature during the past week was the most unbearable that the city has experienced in a great many years, it is a source of gratification that the number of deaths was kept within the foregoing figures. The rate for the first thirty-two weeks of 1915 was 13.78 compared with 14.57 for the corresponding period of 1914.

**Public Health Associations to Meet in Rochester Next Month.**—The forty-third annual meeting of the American Public Health Association, the fifteenth annual conference of the Sanitary Officers of the State of New York, and the annual meeting of the New York State Sanitary Officers' Association, will be held in Rochester, N. Y., September 6th to 10th, with headquarters at the Mechanics' Institute. While the American Public Health Association does not meet until Tuesday, September 7th, there will be an open meeting of the Fifteenth Annual Conference of Health Officers of New York State under the direction of the State Department of Health, Monday evening, September 6th. Members of the American Public Health Association are cordially invited to attend this meeting. The speakers upon this occasion will include Dr. Hermann M. Biggs, New York State Commissioner of Health; Dr. G. W. Goler, Health Officer, Rochester, N. Y., and Dr. W. C. Gorgas, Surgeon General United States Army, Washington, D. C. The members of the American Public Health Association are also cordially invited to attend the meeting of the New York State Sanitary Officers' Association on Wednesday evening, September 8th. The speakers at this meeting will include Dr. Montgomery E. Leary, of Rochester, president; the Mayor of Rochester, and the Hon. William C. Redfield, Secretary of Commerce, Washington, D. C. The health officers of New York State are cordially invited to attend any of the general sessions of the American Public Health Association and any of the meetings of its several sections, in addition to the general sessions and sessions of the Public Health Officials' Section which they are required by the State Department of Health to attend. The first open meeting of the American Public Health Association will be held on Tuesday evening, September 7th. The presidential address will be delivered by Professor William T. Sedgwick, of the Massachusetts Institute of Technology, president of the association, his subject being Achievements and Failures in Public Health Work. This address will be followed by an address of welcome by Governor Whitman. The scientific program includes discussions of the following topics: Public health education, milk, death rate of the higher age groups, the administrative control of infectious diseases, and habit-forming drugs. On Friday morning, September 10th, there will be a tuberculosis conference, held under the auspices of the Tuberculosis Committee of the New York State Charities' Aid Association and a number of local tuberculosis committees. All are invited to attend. The officers of the American Public Health Association are: President, Professor William T. Sedgwick, Boston, Mass.; first vice-president, Dr. C. J. Hastings, Toronto, Canada; second vice-president, Dr. Juan Guiteras, Havana, Cuba; third vice-president, Dr. C. E. Terry, Jacksonville, Fla.; secretary, Professor S. M. Gunn, 755 Boylston Street, Boston, Mass.; treasurer, Dr. Lee K. Frankel, New York, N. Y.



## Pith of Current Literature.

### BULLETIN DE L'ACADÉMIE DE MÉDECINE

June 14, 1915.

**Treatment of Pseudoarthroses of the Radius and Ulna.** by Edmond Delorme.—A report of results obtained in the surgical treatment of five cases of false joint in the forearm in military practice is given. In one case a metallic clamp was used, without success. In another, an extensive gap in the ulna was successfully filled with a piece of the eighth rib twelve cm. long. An easier, less dangerous, and equally effective procedure, however, is recommended on the basis of the author's experience in the remaining three cases, grafting by means of a strip of bone detached from one segment of the injured bone itself. The ulna was the bone concerned in each of Delorme's three cases. A double, longitudinal incision over the posterior aspect of the bone was first made, to permit of the removal of a generally thick and adherent mass of cicatricial tissue. The bony fragments were then well exposed, as usual, with the gouge or scalpel and a segment of the upper fragment of the ulna five to seven mm. in thickness and of appropriate length was removed with a Larrey saw and adapted to the upper and lower fragments by introduction into recesses made for its reception in the ends of these fragments or by simple firm contact. Metallic loops were then passed around the apposed sections of bone, the superficial wound was sutured, and the limb placed in a metallic splint.

### REVUE MEDICALE DE LA SUISSE ROMANDE.

May, 1915.

**Late Results of Artificial Pneumothorax,** by R. Burnand.—The ultimate value of the effects obtained in pulmonary tuberculosis through artificial pneumothorax is discussed. In a hundred cases a few had immediate benefit; in some a permanent cure resulted. In one case, for example, that of a young man suffering from rapidly advancing tuberculosis with caseation, not benefited by two months' careful treatment in a sanatorium, nitrogen insufflations were followed in three weeks by a return of the temperature to normal. In ten months the patient was able to leave the sanatorium and resume his customary occupation. Nitrogen insufflations were continued for fourteen months longer. Five months after the interruption of treatment the affected lung showed normal expansion and breath sounds except at the apex. The patient soon after began active military service and has since remained well in spite of arduous duties performed in a mountainous country. Burnand enumerates the following as the three chief causes of failure in artificial pneumothorax: 1. Independent progression of foci existing in the other lung before the treatment; 2. tuberculosis coexisting in organs other than the lungs; 3. firm pleural adhesions preventing complete collapse of the lung under treatment. Excluding these three particular difficulties, no important obstacles in the successful practice of the method remain, and the chief requisites in obtaining permanently good results are: 1. Improved technic; 2. an ability to discern the precise moment at which,

while a case is doomed to a fatal ending under ordinary treatment, secondary tuberculous foci in other structures, as possible sources of subsequent grave relapse, have not yet developed.

**Effect of the Sitting Posture on the Course of Pneumonia,** by E. Cottin.—A trial of the measure recently recommended by Widmer, viz., removal of pneumonic patients from the bed to an armchair for four to six hours each day, was made in about twenty cases, selected among those most gravely affected. These patients were taken from bed either on the day following their admission to the hospital or within a few days after, with their temperatures still close to 40° C. Their ages ranged from twenty to eighty years. Generally from 2 to 6 p. m., the patients were kept seated in armchairs near their beds. All stated they were more comfortable out of bed than in and found breathing easier. Expectoration was facilitated and increased, and sweating ceased. Objectively, cyanosis was reduced; breathing became slower and deeper; the pulse was fuller and often diminished in rate by ten or twenty beats. In an obese, delirious, alcoholic patient fifty-five years old, with marked cardiac irregularity, the heart beats became regular each time the patient sat up. The temperature was reduced in the majority of instances. The measure is especially recommended in cases with dyspnea, arrhythmia, and cardiac enfeeblement. The benefit witnessed in such cases is ascribed to the passage of a larger amount of blood into the lower extremities and to greater amplitude of diaphragmatic respiration. Results in pneumonia of the lower pulmonary lobe were distinctly better than in upper lobe involvement. The use of the measure in acute respiratory diseases other than pneumonia is suggested.

### REVISTA DE MEDICINA Y CIRUGIA PRACTICAS.

July 14, 1915.

**Etiology of Adenoids,** by S. G. Vicente.—General causes are bad hygienic conditions, impure air, sudden changes in temperature, and humid climate. Local causes are nasal obstruction and chronic rhinitis. All children in a series of 101 cases showed pathological stigmata. In 34 cases there were no symptoms whatever from the adenoids. It is probable that adenoid vegetations exist as a defensive feature in prolonged exposure to pathogenic agents.

**Tropical Dysentery in Granada,** by F. F. Martinez.—In the investigation of the prevalence of kala azar and oriental sore in Andalusia many cases of dysentery were discovered which proved to be due to *Entamoeba histolytica*. These three diseases were proved to be endemic on the coast of Granada.

### SEMANA MEDICA.

June 17, 1915.

**Injections of Hypertonic Glucose Serum,** by J. F. Merlo Gomez.—Intravenous injections of thirty per cent. glucose in serum are given in quantities of 500 c. c., the quantity of glucose administered being 150 grams. The injection is made slowly, lasting one hour, and the results are elevation of arterial pressure with consequent cardiotonic action; immediate and certain diuresis; nutritive action by fixation of the glucose in the cells of the organism.

Its therapeutic action is great in all cases of oliguria; in nephritis and dropsy, and in uremia, diuresis, which is so much needed, may be obtained with certainty. It is of service in intoxications or infections as pneumonia, typhoid, rheumatism; in vomiting of pregnancy, in appendicitis and other conditions where absolute rest of the gastrointestinal tract is demanded. Furthermore, it serves as a test of hepatic sufficiency, inasmuch as, under normal liver action, at least one tenth of the injected glucose should appear in the urine.

**Rare Form of Latent Peritonitis**, by E. P. Siri.—A man of fifty years had slight abdominal pain without a rise in temperature and also without either localization tenderness or muscular rigidity. This cleared up for two days, only to return with obstinate hiccough which lasted two days more, the temperature remaining normal and the pulse 85. On the eighth day the abdomen suddenly distended and fecal vomiting occurred, followed by death. The primary focus of the peritoneal infection could not be ascertained.

**Galvanic Cauterization in Laryngeal Tuberculosis**, by D. A. Vagni.—This treatment frequently cures and invariably arrests the course of the disease, constantly relieving pain, dyspnea, and difficulty in swallowing.

**Horse Serum and Adrenaline in Vomiting of Pregnancy**, by G. B. Cavazzutti.—Subcutaneous injection of ten c. c. of normal horse serum with .005 gram of adrenaline chloride gave relief, and after four or five daily doses the vomiting stopped in several cases. Urticaria may result, in which case the serum should be omitted and the adrenaline given alone. The explanation of the action of horse serum in these cases is not quite clear unless it be that the immunity of the horse species to intoxications of pregnancy confers such immunity on woman.

#### BRITISH MEDICAL JOURNAL.

July 24, 1918.

**Composition and Pharmacological Action of Spiritus ætheris nitrosi**, by C. R. Marshall and Elizabeth Gilchrist.—Analyses of various samples of sweet spirit of nitre showed the presence of acetaldehyde, ethyl nitrate, and paraldehyde in addition to ethyl nitrite. The presence of these three other substances was found to depend in part upon the process of manufacture, but more particularly upon the age of the specimen. Perfectly fresh samples were often free from both aldehydes. Even old samples were found to contain only relatively small proportions of either aldehyde. Pharmacological tests were made, mainly upon the authors themselves, and showed that the actions of sweet spirit of nitre were mainly dependent upon the ethyl nitrite. Both of the aldehydes were found to exert no material actions in the amounts present in a full dose of the spirit. The ethyl nitrate, which was found to be a constant constituent, was present in sufficient amount to exert some nitrite action which merely served slightly to prolong that of the ethyl nitrite. The effects of dilution for the administration of sweet spirit of nitre were also studied, and it was found that the addition of water caused considerable and progressive liberation of ethyl nitrite when the mixture was allowed to stand

open. Similar, though less rapid liberation took place when the diluted preparation was bottled unless the bottles were completely filled before stoppering. In the latter event the loss of activity was much delayed. Slow loss of ethyl nitrite was also found to occur when the spirit, undiluted, was kept in well stoppered bottles under ordinary conditions. Standing also gave rise to the formation of small amounts of nitrous, nitric, and acetic acids which might interfere with the prescription of the preparation in combination with other substances.

**Copaiba Oil and Resin**, by Ralph Stockman.—Samples of the separated and purified oil and resin which are combined in the oleoresin of copaiba were tested on man. The resin was found to be without effect, but the oil produced the usual results in fifteen cases of gonorrhoea. Both substances were found to be excreted in the urine, but the oil alone had effect in delaying putrefaction or the growth in it of certain microorganisms.

**Antiseptic Action of Hypochlorous Acid and Its Application to Wound Treatment**, by J. Lorrain Smith and associates.—Experimental observations confirmed the general opinion that the hypochlorites are among the most powerful germicides known and further showed that free hypochlorous acid was more potent than its salts. Experiments were undertaken to devise means whereby this acid could be made available for surgical use. It was found that hypochlorous acid gas could be most conveniently prepared by the interaction of equal parts of finely ground bleaching powder and powdered boric acid in the presence of a small amount of moisture. To the mixture of equal parts of these powders in dry form the authors have given the name eupad for convenience. If twenty-five grams be added to one litre of water, vigorously shaken, allowed to stand for at least twelve hours, and then filtered, the resulting solution will contain one half of one per cent. of hypochlorous acid gas. To such a solution the name eusol was given. Both of these preparations were subjected to the most rigid and exhaustive bacteriological tests and were also given extensive clinical study. Both the gas (yielded by use of eupad as a dressing) and eusol were found very potent against organisms and spores in wounds and at the same time did not damage the tissues. Their effects were purely local and their decomposition products—HCl, NaCl, and CaCl<sub>2</sub>—were not toxic; hence absorption was not to be feared. Their use induced a flow of lymph from the tissues which was beneficial. Fætor was rapidly overcome. The modes of application of powder or solution are almost unlimited and are essentially those of antiseptics in general. A great advantage of these preparations is found also to lie in their cheapness and ease of preparation.

**Diagnosis of Typhoid Fever in Inoculated Subjects**, by George D. Dawson.—It was found that a certain strain of *Bacillus enteritidis* isolated by Delépine gave an agglutination reaction quite constantly—in forty-nine out of fifty cases—with the serum of typhoid patients. It was also discovered that the serum of persons who had been inoculated against typhoid fever always failed—fifty cases—to give such agglutination, although most of these serums gave a typical Widal reaction against *Bacil-*

lus typhosus. These observations led Dawson to try the agglutination of this enteritidis strain in fourteen cases of suspected typhoid fever in inoculated men. Seven gave strong clinical evidences of typhoid fever and the agglutination was positive in all. *Bacillus typhosus* was isolated from the blood in twelve of them of these cases, the remaining seven were merely more doubtful clinically and in none did the serum give an agglutination of the enteritidis. From these results Dawson concludes that the agglutination of the particular strain of *Bacillus enteritidis* was strong evidence of the presence of typhoid fever. The test was of value in determining or excluding the presence of typhoid fever in inoculated subjects, and a single negative test did not exclude typhoid fever, although if this occurred late, the evidence against typhoid was strong.

LANCET.

**Functional Diseases of the Arteries**, by Lauder Brunton.—It is pointed out that, while functional diseases of the heart form a large chapter in medicine, those of the arteries have been but little studied, although they are commoner and productive of quite as much distress. One of the less common of the functional arterial diseases is that of abnormal pulsation of the abdominal aorta. The cause of this condition is obscure, but there is reason to ascribe it to some form of nervous irritation which reflexly inhibits the vasoconstrictors in the abdominal aorta. A similar explanation is also invoked to account for the not uncommon instances of pulsation in other large vessels. In both types some systemic intoxication is thought also to be an underlying factor. Of the functional disorders due to arterial contraction migraine, Raynaud's disease, angina pectoris, certain epileptiform and apoplectiform attacks and some visual disturbances are the most frequent and most important. In migraine certainly, and probably often in the others, the arterial spasm rests largely upon a toxic basis. But in addition some local condition must be present to account for the focal character of the attacks. In the treatment of either class of cases—dilatation or contraction—evacuant measures, such as mercurial purge, should be prescribed to aid in overcoming the toxemia. The diet should also be regulated with the same object. In the cases due to arterial dilatation bromides, jaborandi, and ovarian extract at the menopause sometimes give relief. Iron should be used when anemia is present. Migraine is usually relieved by phenacetin or antipyrin, or by large doses of salicylate of sodium. The nitrites are especially indicated in cases with arterial spasm, but here the salicylate of sodium, the bromides, and potassium iodide often prove of great value.

**A New Antiseptic for the Treatment of Wounds**, by A. M. HOLLAND, I. W. KACHMAN, and G. L. CHEATLE.—Using improved methods of testing the antiseptic power of chemicals in such a way as to indicate their relative effectiveness in actual clinical use, the authors found that, while both the bichloride and biniodide of mercury were greatly reduced in activity in the presence of albuminous matter and formed elements, they were still the most active of all common germicides used as antiseptics.

This was explained by the discovery that the mercury-albumin compound has very decided antiseptic power when it is dissolved in an excess of serum. The use of the bichloride is to be preferred, as it forms a solid albuminate which acts as a depot from which some of the antiseptic albuminate continually passes into solution. It was further found that the value of the bichloride could be materially enhanced by combining it with pure malachite green, which is, itself, a powerful antiseptic. Laboratory and clinical tests showed that the most effective way of using this combination was by preparing two stock solutions in eighty per cent. alcohol, the one containing one per cent. of bichloride of mercury, the other a similar preparation of malachite green. For use upon wounds the two solutions are mixed and applied thoroughly by means of a spray. Aside from the slight burning caused by the alcohol, the use of this strong solution of bichloride of mercury has proved harmless, unirritating, and nontoxic. It should be applied daily and the alcohol allowed to evaporate before the dry dressing is put on. The clinical use of this preparation has given most satisfactory results.

CANADIAN MEDICAL ASSOCIATION JOURNAL.

July, 1915.

**Parenteral Digestion and Immunity**, by J. G. ADAMI.—Whatever the nature of enzymes, the organism has the power of elaborating new orders of these bodies in and from its cells in response to the entrance into the tissues of foreign proteins, and potential foodstuffs in general. The development of antibacterial immunity in an animal is essentially the development of the power of parenteral digestion of the constituents, mainly protein, of the pathogenic microorganisms by the tissues. This is rendered possible by the elaboration of a succession of mainly proteoclastic enzymes. Three stages are to be recognized in this process; the development of indifferent proteoclastic enzymes, the development of specific proteoclastic enzymes, that split the bacterial proteins into highly poisonous and nonpoisonous moieties, and the development of toxoclastic enzymes which render the disintegration products innocuous. Ectotoxins are to the microorganism what discharged enzymes are to the animal. They have all the properties of enzymes, are not themselves toxic, but proteoclastic, and the products of their activity upon the proteins of the organism are the essential toxic substances. Antitoxic immunity is wholly distinct from antibacterial immunity. It is a process not primarily of digestion and disintegration, but rather of combination and fixation of enzymes, so that this is no longer capable of attacking and disintegrating successive complex protein molecules, or perhaps of development of toxoclastic enzymes by the tissues, which disintegrate the toxic proteins as they are produced, rendering them innocuous.

**Anaphylaxis and Allergy and Their Relationship to Immunity**, by FRASER B. GURD.—In the employment of vaccines or bacterioproducts for clinical purposes we are dealing with a two edged sword. Various results may be obtained, depending on the state of the individual, the dose injected, and the interval between doses. Hypersensitiveness may



be induced, or increased. Hypersensitive individuals may be desensitized. Both hypersensitivity and immunity may be developed by repeated injections. Immunity may mask hypersensitivity, or both sensitizing and immunizing bodies may be depressed to such a degree that all cellular and vascular reactions cease.

**Fat Metabolism and Its Relation to Acidosis**, by V. H. Mottran.—Excessive fat metabolism is related with fat infiltration of the liver and with acidosis. The former is physiological, not pathological, and is an expression of the function of the liver in fat metabolism—desaturation. The latter, acidosis, is the result of the fatty acid pursuing an abnormal path of metabolism, possibly as a result of overwork of the liver. In both cases increase of carbohydrate in the diet is advisable, and, if these cannot be tolerated, fish oils, but not ordinary fats, are indicated.

#### BOSTON MEDICAL AND SURGICAL JOURNAL

July 22, 1913.

**The Cerebrospinal Fluid in Diagnosis and in Treatment**, by W. H. Watters.—Lumbar puncture is a relatively simple and safe procedure when properly performed. Examination of the fluid removed should include chemical, microscopical, and serological tests. By examination of the fluid it is possible usually to recognize with certainty and to differentiate the various forms of infectious meningitis. Repeated lumbar puncture is not infrequently of definite therapeutic value in such cases. The cerebrospinal fluid should be carefully studied prior to discharging as cured any case of syphilis, irrespective of the stage in which it has been treated. Examination of the fluid is an essential in properly following the treatment of cases of syphilitic involvement of the nervous system.

July 29, 1913.

**Lobar Pneumonia**, by Frederick T. Lord.—The measures which may be expected to diminish the incidence of pneumonia may be briefly outlined: Education of the public concerning the manner in which respiratory infections take place and the means of avoiding them. Closer supervision of the acute respiratory affections, such as ordinary colds, so called influenza, bronchitis and sore throats, and isolation of the severer types of these simple infections when possible. Closer supervision of patients with pneumonia, by making it a reportable disease and isolation of patients. Avoidance of overcrowding and the regulation of housing conditions. Diminution of dust in cities. Immunization of those exposed in times of epidemics.

**Control of Typhoid Fever**, by Mark W. Richardson.—Typhoid fever is with us because typhoid bacilli get into our food and drink. The problem of control therefore resolves itself into two parts, a more strict control of typhoid excretions, and an increase in the resistance of the community through typhoid inoculation. The control of water supplies has reduced the amount of typhoid greatly, and another very important factor lies in an increasingly strict supervision of food handlers. All cases of undetermined continued fever should be reported to the local board of health as possible cases of typhoid, for otherwise the health department may not be able

to take early and effective steps to control an epidemic. Gaseous disinfection of the premises is neither necessary nor advisable. The most important factor in the whole problem seems to be that of unclean hands, and the best preventive that of washing the hands before handling food, whether it be for our own or for other people's consumption.

**Preventable Heart Disease**, by Roger I. Lee.—Most heart disease is due to an antecedent infection, the prevention of which guards against the former. While certain infections like the tonsillitis-rheumatic fever syndrome group and syphilis are particularly associated with cardiac disease, yet every infection may be regarded as a possible carrier of damage to the heart. Continued supervision after infections is important that an early endocarditis may be recognized and the resulting damage made as little as possible. The prevention of infections is an enormous problem, but must be faced. It is possible to control better scarlet fever and syphilis, to make the milk supply reasonably safe, and to remove diseased tonsils. It is still an open question whether it is desirable to remove moderately large tonsils in the absence of history or evidence of disease processes in or connected with the tonsils, but the avoidance of infection and the prevention of its spread are largely matters of personal hygiene.

**Syphilis**, by Abner Post.—From the standpoint of protective medicine and public health it would appear that syphilis should be recognized as a communicable disease; that it presents problems for the physician which should not be given over entirely to the eugenicist and moralist; that hospital care should be provided, as well as the best means available for the treatment and cure of early cases, for such individuals as are unable or unwilling to provide it for themselves; and that it should be regarded as a subject worthy of the most careful study of physicians and students.

**Contagious Diseases**, by Eugene R. Kelley.—To reduce the prevalence of contagious diseases the following things are necessary: 1. Education of parents and educators in particular as to the real nature of contagious disease transmission. 2. More efficient diagnoses. 3. Prompt reporting of cases to the authorities. 4. Efficient isolation. Other means are hygienic supervision of schools, the use of specific serums for cure, detection, and prevention, protection of food supplies, and venereal prophylaxis.

#### JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

July 27, 1914.

**Prognosis of Congenital Clubfoot**, by Eben W. Fiske.—Three factors in the prognosis of congenital clubfoot are age and rigidity of the foot, neglect, and the method of treatment; the last is the only one that is controllable. Other things being equal, favorable prognosis is proportionate to the flexibility of the foot, which is usually in indirect proportion to the age of the child. Absolute overcorrection of the foot, and unremitting attention to the maintenance of this position until the structures have become permanently readjusted, are essential. As the deformity is shared by all of the structures of the foot, that treatment only which is not localized in its application is productive of uniformly satis-



**Fulguration in Gonorrheal Folliculitis,** by George Knowles Swinburne.—Swinburne finds the method of fulguration to be of great value in those chronic cases of folliculitis in which a beaded condition of the urethral canal is found. This beaded condition disappears after fulguration and the cases clear up very satisfactorily.

**Fetid Bronchitis,** by Beverley Robinson.—In fetid bronchitis we have a rare, very obstinate, and distressing affection. The treatment indicated is the best air, the most nutritious food, and freedom from exhausting work. A specially dry climate with rare atmospheric changes, like that of some parts of California and upper Egypt, is to be recommended. Parts of the Adirondacks and Sullivan county are desirable in the summer. An ordinary tonic treatment with hypophosphites of lime and soda is about as useful as anything. Of all drugs none is so useful locally as beechwood creosote in small doses, not over half a minim with a little glycerin and whisky every two or three hours. The use of beechwood creosote with the perforated zinc inhaler is the best means to correct fetor of the breath and sputum and to modify the diseased bronchial membrane. The inhaler must be worn many hours in the day to be of real utility; the ability to do this comes to many only after the lapse of a few days or weeks. A good formula is equal parts of beechwood creosote, alcohol, and spirits of chloroform, ten to twenty drops of which are poured on the sponge of the inhaler and repeated as required. A sojourn at sulphur springs is beneficial. It may take many months to effect a notable result, but life ultimately becomes bearable, even if an absolute cure is not produced.

### Proceedings of Societies.

#### THE NEW YORK ACADEMY OF MEDICINE.

*Regular Meeting of the Section in Genitourinary Surgery, Held April 21, 1915.*

Dr. LEO BUEGER in the Chair.

**Rapid Repeated Recurrences of Vesical Calculi after Prostatectomy.**—Dr. MARTIN W. WARE, of New York, brought forward an elderly man who had come under observation suffering from prostatic hypertrophy and calculi, the latter readily ascertained by the cystoscope, notwithstanding the fact that the prostate was quite large, half the lobe being involved. The patient was first operated upon in November, 1913. When the bladder was opened a large number of calculi were found corresponding to what had been demonstrated with the cystoscope. The usual prostatectomy was done; the bleeding was not excessive. The patient was well on in years, was troubled with emphysema and bronchitis, and had an unusually large hernia. He made a rather stormy convalescence, including a pneumonia, followed by a long tedious course before the fistula was closed, but finally was sent home a few days before the beginning of 1914. The fistula did not close, though it was repeatedly washed out. Doctor Ware could not understand why the

fistula did not close, and again cystoscoped the patient, but could see no reason for its continuance. That was some time in February, and the matter was allowed to rest for a while. The fistula was cauterized and treated in various ways. Fortunately the patient developed no epididymitis. In May, he was again cystoscoped, and this time a large calculus was found in the bladder. With the desire to spare the patient another operation, an attempt was made to crush the stone, but this failed, as it was an encysted calculus, imbedded in the granulations from which the prostate was removed. It was so covered over that it could not be displaced, even after it had been grasped with the instrument, so the effort was abandoned. The next day, under local anesthesia, the bladder was opened and the calculus was removed. The patient went on after this to an apparent healing, and when after an interval he was again cystoscoped, nothing could be seen but the fistula, which had diminished to a very small size. The only explanation that seemed feasible was that the large hernia came out and prevented the coaptation of the wound edges.

Shortly after this the patient began to complain of very painful terminal symptoms after urination. He was examined by the x ray, and nothing was seen in the kidneys to account for the condition. The condition was very annoying to him. In September, 1914, with the hope of sparing the patient another cystoscopy, he was again x rayed, and shadows were found, which it was thought might be from the kidney; and then four stones were found. He was then cystoscoped to confirm the x ray; and four stones were removed from bladder. After this the patient was cystoscoped every month or every two or three weeks, so as to be sure to find the stones while they were very small. While he was under observation, two or three weeks after the last operation, a calculus was seen which was extracted by merely washing it out. It was slightly imbedded in a piece of granulation tissue. After that, he began to clear up. The last stone was therefore removed in October, 1914. After that he was repeatedly cystoscoped, but nothing abnormal was seen.

Possibly an error had been made in leaving the catheter in too long after the largest stone was removed. That might be a mistake where the urine had a tendency to form calculi; the catheter became incrustated with salts on the outside and these might become deposited in the bladder, and form the nuclei of the calculi. For that reason, Doctor Ware did not put in any catheter above or per urethram. There was still a small aperture in the middle line (of the fistula), going all the way down to the end of the tract. Apparently there was a slight leakage and a small abscess had formed. The man had no residual urine; his stream was perfect; and there was no stricture. The interior of the bladder could be readily seen and there was no infiltration near the rectum. He had gained in weight, notwithstanding that he was afflicted with this infirmity. As for wearing a truss, he had not been able to get one to fit him. A large suspensory bag had been advised, but he did not wish to use it.

Doctor MCCARTHY said that a hernia which for any reason was inoperable, was sufficient indication



the removal of prostatectomy, and told of a case similar to that of Doctor Ware's, in which there was no recovery from the fistula. The hernia was not operated upon, because the patient developed an intermittent pulse, and was regarded as a poor risk. This probably was the reason the fistulous tract did not close.

Dr. ALFRED C. THORSEN had at home a bottle containing thirty or forty prostatic calculi received from an outpatient in the New York Hospital. He was a sailor and an inmate of Sailors' Snug Harbor, who said that the box contained about one third of what he had passed. He refused to be cystoscoped, but the crepitating masses could be felt in the prostate by rectal examination. If the patient's account was correct, he must have passed over a hundred of these stones.

Doctor WARE said that the essential point seemed to have been missing, viz., the recurrence of stone after the prostatectomy, because at the time of the operation it was held that until the prostate was removed it was not possible to promise anything like a nonrecurrence of the calculi. An absolute elimination of the prostate was therefore done to prevent the reproduction of the stones, and yet they recurred; and recurred too while the man was under treatment, following operation. The second stone was a solitary calculus; first seven or eight, and then a very large one which was imbedded.

**Hypernephroma.**—Dr. CHARLES H. GOODMAN, of New York, presented a man, forty-two years of age, who was admitted to Beth Israel Hospital on June 20, 1912, with a diagnosis of calculus of the right ureter. At that time he gave a history of having had typhoid fever twenty-two years before and of trouble with constipation for a number of years. He denied having had venereal trouble. Six weeks previous to admission, he had had frequent micturition, with bloody urine for three days. Five weeks later, he had a similar attack, accompanied with pain in the right side. The day before admission he again began to suffer pain in the right flank, was nauseated, vomited several times, felt chilly, and again passed some blood tinged urine. He had also had some discomfort in the right testicle for about two weeks. Physical examination, with the exception of some tenderness over the right flank, an enlarged spleen, and a slightly enlarged left epididymis, was negative. Temperature, 99.4° F.; pulse, 80 to 100. The urine showed a slight trace of albumin, some red and white blood cells, but no tuberculous corpuscles. Blood examination gave a white count of 9,800 leucocytosis, with 77 polynuclear. On June 25th, cystoscopy revealed nothing abnormal about the bladder. The ureters were catheterized, and 0.0006 mg. phenolsulphonphthalein was injected into the muscles of the loin, with the following result: First appearance in four minutes; during the first hour, several c. c. of urine were obtained from the right catheter, which microscopically showed a few red blood cells; positive guaiac test. From the left catheter, only a few drops of clear fluid was obtained, which showed nothing microscopically and was also negative to the guaiac test. The fluid obtained from the right catheter showed a colorimetric estimation of fifty-five per cent. of phenolsulphonphthalein, almost equal to the normal

output in the one hour of two kidneys. The fluid from the left catheter showed no such reaction. Subsequently, the ureters were again catheterized and phthalein injected, with practically the same results as upon the previous examination, with the exception of a slight diminution of the dye output from the right kidney. Several radiographic plates failed to show the presence of calculus in the urinary tract, and although the patient by rest in bed was relieved of his pain, and chemical and microscopical examination showed that his urine had become negative, it was thought best, on account of the cystoscopic and phthalein findings, to explore the left kidney in spite of the fact that his subjective symptoms were referable to the right side.

On July 3d, the left kidney was explored through a left lumbar incision, and the kidney (exhibited) was found to be very much enlarged, hardened throughout the greater part of its consistence, and firmly adherent to the vault of the diaphragm and spleen. In attempting to separate the tumor from the surrounding structures, some very large tortuous veins were injured, producing a profuse hemorrhage. In order to facilitate the delivery of the tumor, the incision was converted into a T incision, and a portion of the twelfth rib was rapidly resected. The pedicle was found to be very short. This was ligated, and the kidney and tumor were removed. The wound was then closed, leaving sufficient space for drainage. The tumor showed the function of the kidney to be almost completely destroyed by hypernephroma.

Subsequent to operation, the patient showed a tendency to make a rapid convalescence for three weeks, when he suddenly began to have an irregular temperature, from 102° to 104° F., in the evening. He complained of pain and tenderness in the right upper quarter of the abdomen. The blood culture was negative; Widal was negative; and his urine showed microscopically only a few red and white blood cells. Under local anesthesia, an incision was made through the upper portion of the right rectus muscle, and with the aid of nitrous oxide an exploration was made. The right kidney on palpation appeared to be enlarged; otherwise, nothing abnormal was found, and the wound was immediately closed. Strange to say, the day subsequent to this operation the temperature dropped to normal; and two weeks later the patient was discharged from the hospital.

This case emphasized the value of ureteral catheterization, and particularly the value of phenolsulphonphthalein in determining the advisability of operative procedure. The results showed that the right kidney was performing the functions of two kidneys, while the left had no functional activity at all. Had the speaker been guided entirely by the history in this case, and the subjective findings, he would have been led to operate upon the right side rather than on the left. The man recovered.

**Syphilitic Reinfection; Immunity and Treatment.**—Dr. FREDERICK W. SMITH, of New York, had a patient, a man now fifty-two years of age. From all the history obtained he gathered no facts of previous illness or inherited taint relevant to the conditions. He was a man of considerable education and refinement. Upon the latter qualifications

the speaker had to depend somewhat for the intelligence and truthfulness of the history of his previous syphilitic infection, which occurred in 1886. The patient recalled an indurated persistent genital lesion, followed several weeks later by skin manifestation, which were sufficient to convince the late Dr. Charles K. Briddon, then attending surgeon at the Presbyterian Hospital, New York, a man of unquestionable skill, that the patient was infected with syphilis. He was given the usual sugar coated granules containing one fifth grain of protiodide, so popular at that time, and instructed to increase the dose until free catharsis and salivation ensued, then to gradually decrease the dose and again repeat the course. This treatment was continued for two years. Four years later, in 1900, he developed disease of the middle turbinated bones with caries and necrosis, involving, and causing perforation of the hard palate, for which he now wore a plate and obturator. The condition was diagnosed as uncured syphilis and treatment was resumed, this time by deep intramuscular injections of mercury, and was continued for some time. From then until the onset of the second infection, he enjoyed good health. On October 29, 1912, he reported with a genital lesion on the left side of the penis, above the corona glandis, which he said appeared ten days before, and, as was learned later, two weeks after an exposure. It was not an ulcer, but an erosion on the same level as the adjacent tissues, and was hard and indurated. The inguinal glands on both sides were palpable, each gland separate and distinct, insensitive, hard, and indolent. The picture was not one of persisting virus activity, but of a new infection. However, the patient was not so easily convinced. Smears were then made from serum obtained by curetting the untreated lesion, and *Treponema pallidum* was demonstrated. A Wassermann test was made, and found negative, which further convinced the speaker that the patient had recovered from the former infection. As the lesion was of only ten days' duration, and the time required was usually over two weeks after the first appearance of the chancre, he concluded that sufficient time had not elapsed to produce a positive test from the latter infection, as it was necessary for the disease to have been in existence for a certain time to allow antibodies to develop.

Treatment was immediately begun with an intravenous injection of neosalvarsan, dose No. 3, with the first intention of quickly relieving the patient of his symptoms, and the second of testing the effect on his former infection of this provocative measure. Five days later the Wassermann test was still negative. Ten days later, or twenty-seven days after the first appearance of the initial lesion, a positive test was obtained, thus proving to a high degree of certainty that the former infection had been cured. The evidence of a previous attack seemed quite positive, and convincing also of a second infection.

And even so today, as soon as the diagnosis was established, intensive treatment should be instituted. When the infection was regional and not markedly systemic, or when the parasites were widely disseminated throughout the body, but accessible, the cura-

tive drugs asserted their curative power with far less difficulty and far more certainty than when the germs were hidden away within an organ, or when encapsulated, or in the interior of a cavity. Salvarsan, or neosalvarsan, should be given intravenously every week or ten days for at least six injections, and between the treatments mercury in some form should be given, preferably by deep intramuscular injection. Inunctions could not well be employed outside of a suitable institution, and the speaker had seen patients who had been treated with mercury pills for as long as six years show positive Wassermann tests, and even active lesions of the skin and mucous membrane. Salvarsan and mercury were synergistic drugs, and together were most effective in treating syphilis. If the disease was malignant in form and particularly virulent, or if the patient was unusually asthenic, it was sometimes well to administer a few injections of mercury before beginning a course of salvarsan, and by so doing prevent a cerebrospinal toxemia due to lysis of the many protozoa destroyed by the assault of the more powerful drug, salvarsan. After this course of medication in the case reported, the speaker suspended treatment for a month, and then found the Wassermann test negative. However, desiring to give the patient the benefit of any doubt, he repeated the entire course of treatment; and since then, with treatment suspended, he had found with him, as with a series of similar cases where treatment had covered a period of less than six months' duration, that the Wassermann tests had remained negative until the present, or from one and a half to two years, and he found no clinical manifestations of the disease. It would be quite useless to draw any inference from a negative Wassermann test had it not previously been positive, as it sometimes spontaneously became negative in the tertiary stages. At the end of a year, having had several negative tests during that time, he gave a provocative injection of dose 3 neosalvarsan, and ten days later the blood was again tested and the Wassermann reaction found negative, as in several tests since. In the light of their present knowledge, he must conclude that the patient was cured; but time alone would determine the permanency of the cure.

Doctor BARRINGER said that this was the nearest case of syphilitic reinfection that he had ever heard of. He saw one case with Doctor Keyes last summer, which was at first thought to be syphilitic reinfection, but there was not sufficient proof.

Doctor STEVENS said that it should be remembered that secondary lesions might be very much like chancre. Two years ago he saw a patient who gave a history which would lead one to think of a recurrence. He had been treated in the Rockefeller hospital, where they were interested in syphilis, and had had a year's treatment, and had given a negative Wassermann reaction on two or three different occasions. When Doctor Stevens first saw the lesion, it looked superficial, very much like a chancre, and he advised the patient to go back to the hospital. He afterward learned that they concluded it was not a reinfection, because the blood gave a strongly positive Wassermann, and in two or three examinations of serum from the ulcer they found no spirochetes. The lesion was not very hard, and while

tion, had the microscope observation it broke down again.

Doctor McCLELLY did not know much of this phase of the subject, but the pathologist at Bellevue had ascertained the fact that a number of market specimens of India ink showed a spirillum indistinguishable from *Spirillum pallidum*.

Doctor SAMPSON said that he was not a bacteriologist himself, but that specimens were sent to the Higgins laboratory and also to Doctor Sondern, and they both sent in positive reports on the presence of spirochetes. The point he wished to emphasize was that the Wassermann was not only negative now, but also after the former infection, and each time after a provocative injection of salvarsan which showed a serological cure; and the latter infection was apparently cured with the aid of the newer treatment in less than six months.

#### The Value of Some Tests of Renal Permeability.

—This paper, by Dr. ROBERT H. GREENE, of New York, appears in this issue of the JOURNAL, page 343.

Doctor GOODMAN said that the method of secretion of the kidney was still a matter of speculation and any attempt to establish an index of secretion was very difficult. Doctor Greene had reviewed the various methods, but it was too late to discuss them all. A method which he had used for five years had been found very valuable—a method of determining the operative procedure and the preparation of patients; for instance, for the removal of the prostate and in cases where there were calculi in both kidneys and the question arose as to which one should be operated upon first. In several instances phenolsulphonophthalein had aided him materially in determining which course to pursue. The points in phenolsulphonophthalein which gave it value were its simplicity; the hypodermic injection was absolutely painless and never followed by irritation; it was eliminated entirely by the kidneys. In ten minutes they got the first appearance of the drainage. It permitted of accurate colorimetric estimation, something which none of the other coloring methods lent themselves to. All the tests which had been enumerated had their difficulties. Some of them had a very elaborate technic. In that respect phenolsulphonophthalein had the advantage of extreme simplicity.

Doctor WARE had already stated his objection to the use of phenolsulphonophthalein. Some time ago the chairman himself had reported a case where it did not prove satisfactory. That was one aspect of it. The others he had presented in a paper. Only a few weeks ago an article appeared in the *Medical Record*, in which the editor called attention to the fatalities following a reliance on phenolsulphonophthalein. The cases were very numerous to show that the promise was not carried out. It had not proved to be the philosopher's stone for finding the index of the kidney secretion. At all events, he had not found it so. Operation in these cases could be determined just as well by the other factors. It was just a sort of kindergarten procedure which was amusing in that certain color reactions could be observed. He had been enlightened by the attempts of Doctor Greene, who had been working so largely along this line, and much as he had been impressed with what the doctor had said, he wished to direct

attention to the fact that Doctor Richter, who started these measures, had reported that phloridzin was not worth what he thought it was. They had to take all the factors together. So far as he was concerned, he still felt that they had to take all the other usual clinical factors and the history into consideration. When they had anuria and x ray, they did not allow themselves to be influenced by the phenolsulphonophthalein. They judged largely by the other things what they were going to do.

Doctor SCHAPIRA had taken up the study of this subject in 1904, and after four years incorporated his conclusions in a paper which he read before the American Urological Association, June 7, 1909, and which was printed in the *Journal A. M. A.*, January 15, 1909. He had experimented with methylene blue, indigo carmin, carmin, eosin, and phloridzin, but the phloridzin seemed to give the best results. He had tried it on animals and found that not only the kidneys got some of the dye, but that other organs and glands would also take it up, according to their pathological condition at the time of injection; and came to the conclusion that the quantity of dye excreted by the kidneys depended, not on the condition of the kidney parenchyma, but on the pathological condition of the different organs and glands of the body, and that all the dyes behaved the same. A few years ago, when the phenolsulphonophthalein test was brought to the attention of the profession—at the instance of Doctor Greene and in his presence, he tried the phthalein test in a number of cases in the City Hospital, and found that the worst kidneys excreted the most and one normal case excreted only twelve per cent. He had stated then that any substance introduced into animal economy was taken up, not only by the kidneys, but by other organs and glands in the body, and that being so, the condition of the kidneys could not be established by the quantity of dye excreted. Also there was no reason why the phenolsulphonophthalein dye should be different from the other dyes; but he has been using phloridzin since 1905 and it had never yet failed.

Doctor BARRINGER said that the paper of Doctor Greene was excellent, but impossible to discuss. He totally disagreed with Doctor Ware, and believed that the phthalein test was the most valuable test of kidney function that they had. He agreed with Doctor Ware, however, that the clinical signs and symptoms and cystoscopy were more valuable than the phthalein test. One interesting point about the phthalein test was that it had stimulated interest in finding the condition of the kidneys before prostatectomy.

Doctor PEDERSEN did not see why the phenolsulphonophthalein test should be condemned because in some instances it failed, any more than the x ray should be condemned. There were some cases of pus in the urine accompanied by strong alkaline reaction in which they did not get a satisfactory reading. They got a color that we then could not make out—a dirty brick red. The chemists who marketed the dye had said that if one acidified first with a little hydrochloric acid and removed the less stable ammonium compound, and then used the alkali, one would get a proper reading. Again, phenolsulphonophthalein was unsatisfactory in some cases of intestinal toxemia. In one instance he had employed it



in a woman who had normal kidneys, and yet in half an hour the patient excreted only 2.5 per cent., but she had a profound case of intestinal toxemia. On the other hand, compared with other clinical and laboratory tests, he disagreed with Doctor Ware in his strictures upon phenolsulphonaphthalein. The only danger, in Doctor Greene's paper, was that it might lead the general practitioner along the wrong road and cause him to pin his faith upon some single and solitary test. They should use, not only the dye tests, but also the clinical and the laboratory tests to the last degree. He asked if Doctor Greene had used urease in his urea work.

Doctor WARE said that if Doctor Pedersen had asked him, he would have sent a copy of why, in the alkaline urine, they did not get the color reaction. That was exactly his contention—that it was not at all an estimate of the function of the kidney, only a reading of the acidity. It was an acidometric test; that was the whole point.

Doctor PEDERSEN, replying to Doctor Ware, said the point was that in those alkaline urines there was a large amount of loose ammoniacal compounds. It was certainly bad chemistry to say that the phenolsulphonaphthalein was a measure of the acidity of the urine. They did not get the pure color until they alkalinized the urine after having acidified it with hydrochloric acid in order to remove and neutralize those loose ammonium products.

Doctor GREENE thanked the members who had taken part in the discussion. His paper was based upon the study of a large number of cases. He had read Doctor Ware's paper with a great deal of interest, and thought that he had a great deal of courage in going against popular opinion at the time he wrote it. At the same time, they had tried a very large number of cases with these methods, which included the phthalein, and in all they were found to be good. Phloridzin seemed to be the most practical one. Doctor Barringer had asked about the nitrogen test. That had been employed in a large series of cases, giving accurate information. The nitrogen in the blood and that in the urine must be compared. It was a process which required an expert chemist. Doctor Pedersen had spoken of the brown color which the phthalein test yielded. If there was pus or blood, there was trouble with the phthalein test. Two cases which he had seen recently would give an idea of how much information might be obtained from those tests. One patient had an acute cystitis with more or less clinical evidence of nephritis, including some edema in his feet. The medical men examined him and made a diagnosis of various forms of kidney and heart disease. Doctor Greene himself could only make out that there was an acute cystitis, but could not understand why it did not get better. Cystoscopy was very painful to the man. Three of these tests, the nitrogen, phthalein, and phloridzin, all showed the kidneys to be in good condition. The clinical evidence, though, was that he had some kidney or heart disease. The man died, and at autopsy it was found that he had two diverticula of the bladder, and he had died of sepsis from the cystitis with healthy kidneys. The other case, in a private patient, was even more important in relation to what

had been said during the evening about nephroma. This patient came complaining of pain in his hip. There was nothing wrong with the heart, no albumin or casts in the urine, nothing in the lungs, nothing in the hip joint. An x ray picture showed dead bone in the ilium. Then the nitrogen in the urine was examined, and compared with the nitrogen in the blood it showed diminished nitrogen in the urine, increased nitrogen in the blood, and a diagnosis was made of some kidney disease. In a few days the man died, and the autopsy revealed no enlargement nor stone, but a nephroma which took in half of the kidney, and had metastases into the ilium. Two or three days before he died, the patient had another metastasis into the sternum. The diagnosis of kidney disease was made through the aid of the nitrogen test. These nephroma cases were either becoming more common or they were learning to diagnose them better than they used to.

## Letters to the Editors.

### LATE CONGENITAL SYPHILIS.

NEW YORK, August 3, 1917.

#### To the Editors:

In the July 31st issue of the NEW YORK MEDICAL JOURNAL, Doctor Palier criticizes portions of the pathological report of the case of late congenital syphilis discussed by Dr. S. Berkowitz in your issue for July 17th. Inasmuch as I am responsible for that report, I take it upon myself to reply. I shall discuss each of Doctor Palier's points seriatim.

1. He says, "In discussing the nodules of the lungs of the case in question, it is stated in the article that those nodules contained 'firm fibrous tissue' and 'a few giant cells.'" He then quotes a sentence from a book by Alquier and Lefas to prove that gummata are distinguished by the absence of giant cells. He quotes the sentence entire: *elles se distinguent des tubercules par l'absence des cellules géantes dans leurs centres*. It is amusing to note that in Doctor Palier's translation of this sentence he naively omits the last three words, namely, "in their centres." These three words obviously lend an entirely different interpretation to the sentence, and offer no grounds for his presuming that his authorities, Alquier and Lefas, deny the presence of giant cells in gummata at all. As a matter of fact, Alquier and Lefas, or anyone claiming the least knowledge of pathology, would open themselves to prompt ridicule by saying any such thing. The presence of giant cells in the wall and periphery of gummata is so extraordinarily common as to make it difficult for me to take this criticism of Doctor Palier's seriously. Even if he is unwilling to take my word for it, I am sure that any book on pathology will enlighten him vastly.

2. "The article in question fails to mention the histological structure of the nodules of the liver." What Doctor Palier means by this sentence, I do not know. If he reads pages 132 and 133, he will find a rather detailed histological report of the liver, which consisted of nothing but nodules. If, by the term "nodules," Doctor Palier means gummata, his criticism of the absence of such description is justified. There were no gummata in the liver to report.

3. Doctor Palier then criticizes the diagnosis because no spirochetes were demonstrable. He may not know that the demonstration of spirochetes in syphilis by the Levaditi method is more often the exception than the rule. I have used this method many dozens of times, strictly in accordance with Levaditi's directions, and in unquestioned cases of syphilis, and have found spirochetes in but very few instances. My experience accords with that of most pathologists with whom I have discussed the procedure. The absence of spirochetes, therefore, does not exclude syphilis by any means.

4. Doctor Palier then says, "the presence of fibrous tissue in gummata is something new in pathology." Rather, we should say, the absence of fibrous tissue in gummata

is something new in pathology. If Doctor Palier can demonstrate a *gumma* that has not a fibrous tissue wall, he will upset our knowledge of the histology of *gummas* in the future.

5. Further, he says, "the heart again was normal post mortem, though there was a murmur during life." Since *gumma* is a *cardiac* lesion, it must be accompanied by a *cardiac* lesion? Did Doctor Palier never hear of functional or *hemic* murmurs?

6. Then follows the most remarkable statement of all: "The Wassermann and von Pirquet reactions were positive. The patient then had both syphilis and tuberculosis?" Why not? If Doctor Palier will attend any medical clinic in the city, he will find such cases almost every day.

The rambling and discursive ending of Doctor Palier's letter, reflecting on the present and future state of the pathological work of our hospitals, hardly deserves serious reply. Certainly if the criteria upon the pathological histology of syphilis offered by him were the rule, the status of pathology in our hospitals would be pitiful indeed.

It seems to me that before Doctor Palier undertakes to criticize the pathology of syphilis again, it would be wise for him to gain a more intimate acquaintance with the subject.

ELI MOSCHCOWITZ, M.D.

NEW YORK.

## GAS AND PAIN.

BROOKLYN, N. Y., August 9, 1915.

In reply to the letter of William Brady, M.D., of Elmira, N. Y., on Gas and Pain, I wish to state my opinion. Gas in the stomach or in the bowel, in my experience, always causes pain. In the stomach gas is due to fermentation produced by hyperchlorhydria or putrefactive fermentation of the bacteria. In either case the pain is only a symptom.

Gas in the bowel is also a result of putrefactive bacteria, causing a distention of the bowel and stretching of the peritoneum, resulting in colicky pain as the muscles relax and contract.

While the therapeutic effect of drugs releases the gas and relieves the pain, it is palliative and not curative. The cause must be removed in order to correct the condition.

McW. B. E. SUTTON, B.Sc., M.D.

## UNEXPECTED TRIBUTE TO CALIFORNIA.

SAN FRANCISCO, August 3, 1915.

After more than five years' continuous residence without missing one complete day, please permit me to enunciate my opinion of San Francisco's weather: Eternal spring is the climate here—not the spring of the spring poet, but moderate heat and cold with need of medium underwear.

Beware of light ballriggans. L. M. YOUNG, M.D.

## LESSER SERIOUS RESULTS FROM A MISPRINT.

NEW YORK, August 9, 1915.

To the Editors:

The case of the man who died of a typographical error who was addicted to the encyclopedic treatment of disease is a classical one.

In these days of the card index, the efficiency expert, and the official treatment of disease by circularizing the sick, a secretarial error like the one subjoined may be most devastating because more widely diffused, like the error of the wholesale pill maker who turns out his batches by the million compared to the mistake of the local apothecary who fills a single prescription. In form No. 322 V issued by the department of health and officially signed by the lay secretary whose name is given in full beneath that of the department physician, there is the following statement on cards sent to the homes of patients who are reported as suffering from measles: "Children or teachers suffering from measles may return to school five days after the appearance of rash if they are otherwise well (i. e., red-

ness of eyes, discharge from nose, cough, and rash have all disappeared)."

Unless the results of municipal treatment of diseases as above outlined are vastly more effective than those of the private practitioner, it is hard to imagine a case of measles that could be sufficiently recovered five days after the appearance of the rash to return to school. I have never yet seen one that could safely do so in a great many years of the now much despised "private" practice.

JOHN P. DAVIN, M.D.

DEPARTMENT OF HEALTH,  
THE CITY OF NEW YORK

July 31, 1915.

Dear Madam

On July 31, 1915, A ——— of ——— W. ——— Street, was reported to the Department of Health as ill with Measles.

Do not allow this patient to give this disease to other children. You are therefore requested to keep her in the house and away from others until fully recovered.

No visit will be made by the Department Doctor or Nurse unless you ask it.

Children or teachers suffering from Measles may return to school five days after the appearance of rash if they are otherwise well (i. e., redness of eyes, discharges from nose, cough and rash have all disappeared). Those who have had Measles may return at once to school; those who have not had Measles cannot return to school until fourteen days after the date of exposure to the last case, or of removal to another address.

When it is desired to have the children in the family re-enter school, obtain the necessary certificates from your physician.

W. A. DUNCKEL, M.D.

EUGENE W. SCHEFFER, Secretary.

Form No. 322 V

## Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*War Surgery.* By EDMOND DELORME, Médecin Inspecteur Général de l'Armée, Ancien Président du Comité consultatif de Santé de l'Armée, etc. Translated by H. DE MÉRIC, Surgeon to In Patients, French Hospital, London. With Illustrations. New York: Paul B. Hoeber, 1915. Pp. viii-248. (Price, \$1.50.)

The English reading portion of the surgical profession are fortunate in having a translation of Delorme's short treatise on war surgery. It gives the latest views of the distinguished expert in this branch of surgery and makes possible for the beginner and general surgeon familiarity with the special pathology and therapy of military surgery. It begins with general considerations of projectiles and their local effects upon the various tissues, including wound complications, and ends with a more detailed description and treatment of wounds of the various regions, from the head to the extremities. The compactness of the volume is of advantage to the beginner and busy surgeon, and this has been obtained without sacrifice of clearness and accuracy of statement. The personal touch of the author is felt throughout, and one feels the great value of the practical suggestions with which the volume is filled. Its timely appearance should warrant a warm reception among those interested in this most humane and hopeful branch of surgery.

*The Localization of Bullets and Shell Fragments.* A Record of Personal Experience. By FRANCIS HERNAMAN-JOHNSON, M.D., Medical Officer at Present in Charge of X Ray and Electrical Department, and Lecturer on Military Radiology, Cambridge Hospital, Aldershot; Fellow Royal Society of Medicine (Member of Council, Electro-Therapeutical Section); Member Röntgen Society, etc. London: H. K. Lewis, 1915. Pp. 23.

This short article of twenty-three pages represents in a somewhat altered form two articles by the author published in the *British Medical Journal*. It gives personal experi-

ences gained chiefly in the present war in connection with a military hospital in England. It will be of interest and value to specialists in x ray work and aims to present a more simplified form of technic which the author has found valuable in his own work.

*Die Arthritis deformans als Allgemeinerkrankung.* Von G. LEDDERHOSE. Strassburg: Karl J. Trübner, 1915. Schriften der Wissenschaftlichen Gesellschaft in Strassburg 24. Heft. Pp. 40.

This short monograph of forty pages is the twenty-fourth of a series of articles which have appeared from time to time since 1906 with the imprint of the Scientific Society of Strassburg and contributed by the members who represent all branches of science. It gives the results of a critical study of arthritis deformans, particularly from a clinical viewpoint, amplified by pathological investigations. The main object is to present proof of the thesis that this disease is a constitutional affection with local manifestations. Which particular joint or joints are affected depends on local predisposing factors, or some exciting cause, such as traumatism. It is an attempt to classify this disease in the same way as acute and chronic rheumatism, gout, or Charcot's joint, viz., as a systemic affection depending upon some element such as infection, uric acid, trophic disturbances, etc. The actual etiologic factor according to author is still unknown, although the first change seems to be a degeneration of the cartilage from a primary condition of the blood.

*Beiträge zur praktischen Chirurgie.* Bericht über die Jahre 1910, 1911, 1912. Aus der Chirurgischen Privatklinik von Dr. KRECKE in München. Mit 60 Abbildungen. Band I. München: J. F. Lehmann's Verlag, 1914. Pp. vii-740.

The author has made use of the surgical material of his clinic over a period of three years to give a true picture of the successes and failures of surgical procedure and to offer the profession an opportunity to judge of the real value of surgery, especially in doubtful cases. By this method he hopes to aid in the establishment of the art of surgery upon a firmer foundation. A book of this kind is of immense value in that it gives the results of actual experience of a busy surgeon and gives in a true light the actual results obtained, as well as an accurate description of methods employed. By limiting the number of histories of patients and other unnecessary details, the two volumes have been kept down to a moderate size. A goodly number of illustrations, many of them colored, aid in making the text more intelligible. The x ray findings in a large number of cases of carcinoma of the stomach are interestingly portrayed in conjunction with the conditions found at operation. The work is essentially practical and will be found of great interest and profit to practitioners of general surgery.

### Interclinical Notes.

Dr. Franklin W. Barrows writes on Saranac Lake for the August *Nurse*, Dr. James S. Brotherwood on the estimation of renal function. Dr. Thomas Grant Allen on care of the infant, and Dr. C. Sumner Witherstone continues his article on dangerous drugs, showing his close study of the works of Sajous. Numerous and handsomely illustrated special articles make up an interesting issue of this original journal. A new viewpoint, neither that of the physician nor that of the patient, on the practice of medicine, is extremely instructive, and we have it admirably handled in the *Nurse*.

\* \* \*

That clever writer, Max Nordau, has not been heard of much in America since his work, *Degeneration*, was translated into excellent English late in the nineties of the nineteenth century. We hear of him now in the *Review of Reviews* for July, 1915, which has learned from the *Revue, Temps, and Figaro*, of Paris, that Nordau has established himself at Madrid, whence he has addressed letters to the French people to the effect that throughout his thirty-seven years' residence in Paris he never published anything against France and her people, despite his severe criticism of symbolism and other decadent movements. *Degeneration*, by the way, is as good reading as

ever, and among as the public was at its attitude toward several idols when it was published, popular opinion has, in the main, swung around to Nordau's position a half-dozen years later.

### Official News.

#### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending August 7, 1915.*

**Carmelia, F. A.**, Assistant Surgeon. Relieved from duty at Galveston, Texas, effective July 31st, and continued on duty in plague eradication measures in New Orleans, La. **Corput, G. M.**, Surgeon. Directed to proceed to New Orleans for conference with representatives of the supervising architect relative to repairs at station. **Creel, R. H.**, Surgeon. Granted one month's leave of absence from July 31, 1915. **Currie, Donald H.**, Surgeon. Directed to take charge of the plague laboratory, San Francisco, Cal., about August 1, 1915. **Foster, M. H.**, Surgeon. Leave of absence for one month from July 5, 1915, amended to read "twenty days' leave of absence from July 5th." **Freeman, A. W.**, Epidemiologist. Authorized when necessary to stop en route at St. Louis, Mo., for conference and necessary laboratory work relating to investigations of rural sanitation. **Frost, W. H.**, Passed Assistant Surgeon. Directed while en route to station to stop at the Bureau for conference relative to investigations of the pollution of navigable streams. **Kalloch, P. C.**, Senior Surgeon. Granted seven days' leave of absence from July 21st. **Kearny, R. A.**, Passed Assistant Surgeon. Relieved from duty in the Bureau, effective July 31, 1915, and continued on duty in plague eradication measures, New Orleans, La.; granted one month's leave of absence from August 19, 1915. **Krulich, E.**, Surgeon. Granted ten days' leave of absence from July 24, 1915, on account of sickness. **Lloyd, B. J.**, Surgeon. Detailed to attend the conference of health officers at Seattle, Wash., August 17th and 18th. **Ramus, Carl**, Surgeon. Granted one month's leave of absence from August 13, 1915. **Robertson, H. McG.**, Surgeon. Granted one month's leave of absence from August 6, 1915. **Robinson, D. E.**, Surgeon. Relieved from duty at Cincinnati, Ohio, and ordered to proceed to Ellis Island, N. Y., for duty. **Rucker, William C.**, Assistant Surgeon General. Granted seven days' extension of leave of absence en route to Bureau. **Smith, F. C.**, Passed Assistant Surgeon. Directed, while en route to station, to stop at Webb City, Mo., for conference relative to investigations of tuberculosis in the mining industry. **Stimpson, W. G.**, Assistant Surgeon General. Granted one month's leave of absence from July 31, 1915. **Trask, J. W.**, Assistant Surgeon General. Granted one day's leave of absence, July 27th. **White, H. F.**, Assistant Surgeon. Relieved from duty at Ellis Island, N. Y., effective July 31, 1915, and continued on duty in plague eradication measures in New Orleans.

*Board Continued.*

Board of commissioned medical officers convened to meet at the Marine Hospital, Stapleton, N. Y., August 4, 1915, for the physical examination of certain cadet engineers of the Coast Guard for promotion. Detail for the board: Senior Surgeon George W. Stoner, chairman; Passed Assistant Surgeon C. P. Knight, recorder.

#### United States Army Intelligence:

*Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the week ending August 7, 1915:*

**Arthur, William H.**, Colonel, Medical Corps. Relieved from duty as surgeon, Western Department, and will repair to Washington, D. C., and assume the duties of commandant, Army Medical School, prior to October 1st, relieving Colonel Charles Richard. **Austin, Thomas C.**, Captain, Medical Corps. Relieved from temporary duty at Fort Hancock, New Jersey, and from further duty at Fort Jay, New York, to take effect upon the arrival of Captain Nelson Capen at Fort Hancock,



and will proceed to Fort Monroe, Virginia, and report in person to the commanding officer of that post for duty and by letter to the commanding general, Eastern Department, relieving Captain Henry C. Pillsbury.

**Culler, R. M.**, Captain, Medical Corps. Reported for duty at Fort Robinson, Nebraska, on July 20th.

**Edwards, D. B.**, First Lieutenant, Medical Reserve Corps. Relieved from duty at Fort Screven, Georgia, on July 31st, and from active duty in the Medical Reserve Corps.

**Geddings, Edward F.**, Major, Medical Corps. Relieved from temporary duty with the Second Division and from further duty at Fort Snelling, Minnesota, to take effect upon the arrival of Major Kirkpatrick at Texas City, and will then proceed to Fort Adams, Rhode Island, for duty.

**Griffs, Frank C.**, First Lieutenant, Medical Reserve Corps. Relieved from temporary duty at Fort Du Pont and from further duty at Fort Mott, on the arrival of Captain John S. Coulter at Fort Du Pont, and then to proceed to Fort Morgan, Alabama, for duty, relieving First Lieutenant Thomas H. Scott, Medical Reserve Corps.

**Harden, Robert Du R.**, First Lieutenant, Medical Corps. Relieved from temporary duty at the Walter Reed General Hospital, D. C., and will proceed to the Presidio of San Francisco, Cal., and report to the commanding officer, Ambulance Company No. 2, for duty.

**Hathaway, Levy M.**, Captain, Medical Corps. Upon the arrival at Fort Baker, California, of Captain Frederick C. A. Kellam, Jr., Medical Corps, will proceed to Douglas, Ariz., for duty.

**Humphreys, Harry G.**, Captain, Medical Corps. Relieved from temporary duty at Fort Oglethorpe, Georgia, to take effect upon the arrival of Major Thornburgh at that post, and then to proceed to Texas City for duty with the Second Division.

**Johnson, Howard H.**, Captain, Medical Corps. Relieved from duty at the Walter Reed General Hospital, Washington, D. C., upon the arrival at that hospital of Major Percy M. Ashburn, and upon the expiration of the leave of absence granted him, will proceed to Fort Bliss, Texas, for duty.

**Kirkpatrick, Thomas J.**, Major, Medical Corps. Relieved from duty at Fort Adams, Rhode Island, and will proceed to Texas City, Texas, and report to the commanding general, Second Division, for duty, with station at Fort Snelling, Minnesota.

**McAllister, John A.**, Jr., First Lieutenant, Medical Corps. Relieved from duty at Jefferson Barracks, Missouri, and will proceed to West Point, N. Y., and report to the superintendent, United States Military Academy, for duty.

**McClellan, George H.**, Captain, Medical Corps. Relieved from duty at Fort McDowell, California, on the arrival at that post of Captain E. D. Kremers, and then to proceed to Texas City, Texas, for duty with the Second Division.

**Magee, James T.**, Captain, Medical Corps. On the arrival at Fort Leavenworth, Kansas, of Captain L. H. Hanson, will proceed to Texas City, Texas, for duty with the Second Division.

**Metcalfe, Raymond F.**, Major, Medical Corps. Upon the arrival of Major Robert E. Winn at Fort Porter, New York, will proceed to Texas City, Texas, for temporary duty with the Second Division.

**Pillsbury, Henry C.**, Captain, Medical Corps. Upon being relieved from duty in the Eastern Department, will report to the commanding officer of the Walter Reed General Hospital, D. C., for duty.

**Pinkston, Omar W.**, Captain, Medical Corps. Relieved from temporary duty at Fort Oglethorpe, Georgia, and from further duty at Columbus Barracks, Ohio, to take effect upon the arrival at Fort Oglethorpe of Captain George B. Lake, Medical Corps, and will then proceed to Fort Sam Houston, Texas, for duty.

**Richard, Charles**, Colonel, Medical Corps. After being relieved as commandant, Army Medical School, Washington, D. C., will proceed on or about October 15th to San Francisco, Cal., and report to the commanding general, Western Department, for duty as surgeon of that department.

**Scott, Thomas H.**, First Lieutenant, Medical Reserve Corps. Upon being relieved from duty at Fort Morgan, Alabama, will proceed to Texas City and report for duty with the Second Division.

**Talbott, Edward M.**, Captain, Medical Corps. Relieved from duty in the office of attending surgeon, Washington, D. C., on the arrival of an officer to relieve him, and will then proceed to Philadelphia for duty as attending surgeon.

**Tefft, Lloyd E.**, First Lieutenant, Medical Corps. Relieved from temporary duty at the Walter

Reed General Hospital as soon as his services can be spared, and will proceed to Tobyhanna, Pa., and report to the commanding officer of Ambulance Company No. 6 for duty.

**Tenney, Elmer S.**, First Lieutenant, Medical Reserve Corps. Relieved from duty at Fort Baker, California, upon the arrival of Captain Frederick C. A. Kellam, Jr., Medical Corps, at that post, and will then proceed to Fort Barry, California, for duty.

**Wilson, James A.**, Captain, Medical Corps. Relieved from duty at Fort Slocum, New York, on the arrival of Captain Gibson, and will then proceed to Fort Clark, Texas, for duty.

**Winn, Robert N.**, Major, Medical Corps. Relieved from duty with the Second Division and from further duty at Fort Des Moines, Iowa, on the expiration of present leave of absence, and will then proceed to Fort Porter, New York, for duty.

**Worthington, C. B.**, First Lieutenant, Medical Reserve Corps. Relieved from active duty at San Diego, Cal., on July 27th.

## Births, Marriages, and Deaths.

### Married.

**Boyle-Shean.**—In Arlington, Mass., on Wednesday, July 21st, Dr. J. J. Boyle, of Cambridge, and Miss Julia Theresa Shean.

**Downs-Seiling.**—In Spokane, Wash., on Saturday, July 24th, Dr. George A. Downs and Miss Marie Seiling.

**Ferguson-Gray.**—In Longwood, Mass., on Wednesday, August 4th, Dr. Luther Mitchell Ferguson, of Newton, and Miss Edith Gray.

**Taylor-Snyder.**—In Wyoming, Ohio, on Tuesday, July 20th, Dr. Walter C. Taylor, of Springfield, and Miss Rena Louise Snyder.

### Died.

**Bacon.**—In Philadelphia, on Monday, August 2d, Dr. John Bacon, aged forty-nine years.

**Bonner.**—In Columbus, Ohio, on Saturday, July 24th, Dr. C. D. Bonner, of Waldo, aged fifty-eight years.

**Bradley.**—In Minneapolis, Minn., on Sunday, August 1st, Dr. Charles Herbert Bradley, aged fifty years.

**Bragg.**—In Bridgeport, Conn., on Friday, July 23d, Dr. James D. Bragg.

**Crediford.**—In Rialto, Cal., on Monday, July 19th, Dr. David B. Crediford, formerly of Kennebunk, Me.

**Cyrus.**—In Palatka, Fla., on Monday, July 19th, Dr. William H. Cyrus, aged seventy-eight years.

**Dorsett.**—In St. Louis, Mo., on Tuesday, July 27th, Dr. Walter Blackburn Dorsett, aged sixty-three years.

**Elgin.**—In New Orleans, La., on Monday, July 26th, Dr. William Roy Elgin, of Ruleville, Miss., aged thirty-three years.

**Ewing.**—In East Bridgewater, Mass., on Friday, July 30th, Dr. Henry K. Ewing, aged forty-six years.

**Hand.**—In Mount Vernon, N. Y., on Saturday, July 31st, Dr. Cortland K. Hand, aged twenty-two years.

**Harvey.**—In Harvey's Lake, Pa., on Monday, July 26th, Dr. Olin Frisbie Harvey, of Wilkes Barre, aged sixty-nine years.

**Hazzard.**—In Northside, Pa., on Thursday, July 29th, Dr. Thomas L. Hazzard, aged sixty years.

**Hills.**—In Nashua, N. H., on Saturday, August 7th, Dr. Arthur T. Hills, of New York, aged sixty-five years.

**Howell.**—In Spokane, Wash., on Monday, July 26th, Dr. Richard Lewis Howell, aged fifty-seven years.

**Maloney.**—In Dundee, N. Y., on Sunday, August 1st, Dr. John Charles Maloney, aged twenty-nine years.

**Neales.**—In Edgewood, R. I., on Thursday, July 29th, Dr. James Neales, aged thirty-seven years.

**Painter.**—In Muncie, Ind., on Sunday, August 1st, Dr. Lester H. Painter, aged forty-four years.

**Porter.**—In New York, on Friday, August 6th, Dr. P. Brynberg Porter, aged sixty-nine years.

**Reichard.**—In Springfield, Ohio, on Tuesday, July 27th, Dr. George W. Reichard, aged sixty years.

**Smith.**—In Pittsburgh, Pa., on Wednesday, July 21st, Dr. Bascom Benson Smith, aged seventy-five years.

**Sternberg.**—In Gloversville, N. Y., on Wednesday, July 28th, Dr. Charles A. Sternberg, aged fifty-four years.

**Street.**—In Baltimore, Md., on Friday, July 30th, Dr. David Street, aged sixty years.

**Strong.**—In Colden, N. Y., on Thursday, July 29th, Dr. Orville C. Strong, aged eighty-one years.

**Styles.**—In Newington, Conn., on Tuesday, August 3d, Dr. Elmer L. Styles, of New Britain, aged sixty-eight years.

**Watson.**—In Brooklyn, N. Y., on Saturday, July 31st, Dr. Clara Emma Watson, aged fifty-four years.

# New York Medical Journal

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### Original Communications.

#### ADOLESCENT INSANITY AND NATIONAL HEALTH.\*

BY CHARLES W. BURR, M. D.,  
Philadelphia,

Professor of Mental Diseases, University of Pennsylvania.

I desire to arouse active and permanent interest in a subject somewhat apart from technical medical science, something that has nothing to do with the test tube, the microscope, the bedside, or the surgeon's scalpel, yet is of vital interest to the commonwealth and can be dealt with wisely only by physicians; I mean the importance of adolescent insanity as a factor in increasing the number of the degenerate population and what can be done to make it less prevalent. It is axiomatic that the existence of a people, its ability to survive in the war constantly going on in the world, a war which will continue even if the dream of pacifists comes true and warfare in its narrower meaning disappears from the face of the earth, depends upon mental health. The physical weakness in decadent races has always psychic causes. Mental decay, softening of the intellectual fibre, emotionalism, and neuroticism affecting large numbers, mean extinction or subjection of a race. Throughout the universe life means struggle, and cessation of struggle means death. Only dead worlds are at peace. The moon enjoys perfect and perpetual peace. The nations which made history and then fell, decayed, not from external causes, not from pressure from without, but on account of internal weakness; and this weakness showed itself in mental and moral degeneration which gave opportunity for fresher, stronger, healthier, less refined races to conquer. Mental and moral degeneration are closely associated: each causes and is caused by the other. Progress hangs on sanity. A nation's breakdown is foreshadowed by increasing degeneration in its citizens. Frequently the degenerates themselves, overrefined, overcultured, oversensitive, mistake disease for health and interpret as signs of progress things which really prognosticate racial death. The more intelligent and softer bred among them mistake running around in a circle, making a great noise, and preaching altruism for progress, and are as happy as a puppy chasing its tail and thinking it is going to get something when it gets it. They mistake unrest for scientific inquisitiveness and worship the god of newness. They believe history has no value

as a teacher (some of them have seriously proposed the abolition of its teaching in the schools), and that they can settle all questions because of the infallibility of their opinions based on their ignorance. There is more social and mental unrest today in America than there has ever been before in its history and as much as there has ever been anywhere at any time in the world's history. This unrest is interpreted to indicate robust national mental health, progress, great independence of mind, and superior intelligence, or neuroticism and hysteria, according to the point of view of the observer. Whatever it may indicate, it is a psychological thing, dependent on the mental makeup of the participants and, since it seems to be widespread, though some of us hope not very deep, worthy of study from the medical, the psychiatric point of view.

My readers are probably wondering what connection there can be between what I have been saying and adolescent insanity. How does the insanity of youth affect the welfare of the commonwealth? What difference does it make to the State if some of its citizens become insane? Has that not always happened? Adolescent insanity is of importance because it destroys a great many young citizens and because it is not an accidental disease, a thing that comes by chance, but a disorder the causative roots of which are seated deep in national character and the occurrence of which is inevitable if the soil is suitable. The phrase connotes an insanity of a particular kind, arising from congenital causes, having its origin in heredity, and being in very truth a developmental result, ending in permanent degeneration. Its occurrence means that there is some defect in the original protoplasm of the victim; that because he is of a certain type his cortical cerebral cells react to stimuli in an abnormal way and decay much sooner than normal. Now if the number of the adolescent insane in any country is large or increases, there is some inherent defect in the people; they are losing their stamina and it is the first step in national breakdown. Therefore, it behooves physicians to watch, and when possible improve the mental state of the young. The insanities occurring in the aged are negligible, so far as the future national health is concerned, because they arise from external causes, from things which bring about arteriorenocardiac lesions, and not from inherent weakness and hence do not indicate family taint and because they occur at an age when, as a rule, fruitfulness has ceased. The insanities following trauma, the infectious, fevers, and childbirth are so infrequent as to have no influence on national character. The insanity of adolescence on the contrary arises from internal causes, is developmental, is very fre-

\*Read at the meeting of the Luzerne County, Pennsylvania, Medical Society, June 10, 1915.

ment, the most frequent of all mental diseases, and, though this is not proved, to be increasing. Hence the vital importance of its study.

Before taking up the diagnosis, I wish to say a little about causation. I have already stated that adolescent insanity is an inherent defect, that it is the natural development of an imperfect ovum (whether the sperm plasma or germ plasma or both be the carrier of the defect), and is in no sense due to external stresses and strains acting on a healthy organism. A healthy youth cannot be a victim. He may become imbecile or demented from organic brain disease, the result of infections, but he cannot break down without external cause. There must be, of course, from the mechanistic and material point of view an underlying anatomical cause for the defect, but what the lesion is we know not. The defect may be, as many suspect, some disturbance, congenital in origin, of the functions of the ductless glands, or some perturbation of the relations between them, but we do not know. We only know that it occurs in those who are constitutionally inferior. This inferiority is always the result of some taint in the family stock. I have never seen a person suffering from adolescent insanity, whose family history was, from an alienist's point of view, clean. Invariably there was some taint somewhere. High grade imbecility in one or both parents is common, and this not only in the lower walks of life, but in the so called higher classes. The lower grade imbeciles are less of a danger to the community in this regard because they are less prone to be fruitful, and because if they do have children the children usually die very early in life from some gross organic disease. The children of the lowest grade imbeciles are rarely intelligent enough to become in sane or strong enough to be dangerous. It is the high grade imbecile, the moron, who is the greatest danger. A common and dangerous type is the man or woman not mentally defective enough to be kept in an asylum, physically able to do manual labor, even sometimes willing, but not having sufficient power of continuous mental application to work for long at any task (for even simple labor requires some mental power, at least ability to fix attention), and not having any true realization of the meaning of a moral code, not having power of moral inhibition, but following always the easiest course, the man or woman who, if protected and sheltered by a well filled pocketbook and wise guardianship, may pass through life safely and without doing any grossly aberrant thing, and who to superficial observers appears harmless if not interesting. These parents are the more dangerous because they often are the kind of people, especially if they arouse sympathy by their poverty, that ignorant, optimistic, and determined, not to say pigheaded reformers imagine to be the victims of society, to be people who, if they had had education, that is schooling enough, would have turned out admirable citizens. The optimists forget that quite as frequently as not the morons belong to a social class which is able and willing and does spend large sums for their education. As a matter of fact, though they may and often do accept formal education to a certain degree, they lack the moral sense and it cannot be created in them. It is no uncommon thing for a

parent of this type to say, on bringing his child to the doctor that he does not know why his child should be sick because no such thing ever occurred in the family before, whereas the source of the child's degeneracy sticks out all over the speaker. They are also a danger to the community because not even the strongest advocates of legal restriction of marriage by law would think of bringing them under any law, yet they more than any other type are the springs which constantly feed the river of degeneracy.

Other dangerous parents are the hysterics and the paranoids. Even physicians are prone to regard hysteria lightly; really it is one of the most terrible diseases, because it involves, indeed is the whole character, and injures the offspring, not only by heredity, but by environment. The hysterical child of an hysterical mother has no fair chance in life because, starting life a mental cripple, the lack of wise home training increases his disability. The paranoids are often supposed by an innocent public to be brilliant because they are frequently fluent talkers, plausible, and full of pseudologic, and the world, especially today, is prone to worship the god of verbosity. If I were breeding people as we breed horses, no man with a gift of gab, a different quality than gift of speech, would be permitted to come into my experiment station.

The drunkard, whose children quite often are affected, is dangerous to his offspring, not so much on account of the effect of the alcohol on the normality of the sperm cell, which has not as yet been proved, as because craving for alcohol and evil mental results from its use, are themselves symptoms of degeneracy. The predestined drunkard is an abnormal man, though he may never touch alcohol; drinking merely brings his defects of nature into view. The normal man but rarely becomes a drunkard. The nice fellow, the goodhearted boy may be a victim and get much sympathy, but neither niceness nor goodheartedness is in itself a proof of normality. One kind of pussy cat niceness, shown in the purring young scamp who deceives us all by his pleasant manners, is rather a strong evidence of degeneracy. If excessive drinking could be confined to certain types of men and women, it would be one of the most expeditious ways of strengthening the race by killing off the unfit. Unfortunately drunkards, themselves unfit, frequently carry the fit down with them: an illustration of the power of weakness. There is room for difference of opinion as to whether real prohibition would be the proper solution of the problem, but the only logical argument in its favor is that it is the imperative duty of healthy men to give up their freedom in order that the weak and degenerate may be somewhat protected from themselves.

As to the direct, immediate, exciting causes of adolescent insanity, we know but little. Many commonly given are not causes at all. Thus it is customary when a schoolboy or college youth breaks down, to say it was on account of overwork. In a practice extending over more than a few years, with opportunity to study a very large number of insane young people among all classes of society, and after long investigation of the matter, I am forced to the conclusion that school work never causes insanity.



I have seen not a few indifferent scholars go insane while at school, but they became insane for the same reason that they were indifferent scholars, because they were inherently weak. I have seen youths whose ambition exceeded their ability break, but it was on account of the fragility of the machine, not because of the severity of the mental work. Really, our public schools need stiffening in their severity, not a greater laxness. We in America lose much of the good that comes from the real discipline of school. We do not give the bright, ambitious boys their rights because our public school system, as a whole, is so arranged as to make it possible for the poorest type, short of the real imbecile, to get through. In consequence the strong boy loses all the advantages that come from strict control, from being held to account for his task, and from steady work. Teachers and school authorities are little to blame: constant pressure is brought to bear on them to pass the unfit up. Kings and princelings, in Europe, are dealt with more severely than the future sovereigns of the great republic. Napoleon's son, the king of Rome, had a daily task, even as a child, and endured a Spartan discipline to which few American fathers would dream of subjecting their children. He was even taught to think and to control his emotions. He was trained by men, not women.

At the present time there is much talk about child labor as a cause of degeneracy and incidentally of adolescent insanity. I am almost afraid to say anything on the subject because it usually arouses a fury of emotion if one even hints that anybody ought to work, let alone boys and girls. The State ought to support everybody by taxing those who are silly enough to want to be independent men and not piglings at the public trough. However, as there is no possibility that I shall ever be a candidate for a political office and probably none of the wild eyed devotees of State support for everybody will hear what I say, and the uplifters will treat my feeble protest with proper scorn, it does not require great bravery to say that I believe the trend against youths' working is going far beyond reason. It has become one of the many symptoms of the hysteria of the crowd, the virulent contagiousness of opinion, from which America is suffering. Let me make my position clear. I do not think that children under fourteen years of age should do any regular systematic work, whether hard or easy, that deprives them of the chance to get a wise and wholesome education in reading, writing, arithmetic, and history sensibly taught, and above all, and beyond all, and more important than all, a thorough moral training; but I see no reason why a boy, even of twelve years, should not be permitted to work during the summer holiday, provided that the task is not physically too severe. I am sure that many boys are injured by being kept at school after the fourteenth year. Many healthy children cease to develop intellectually soon after puberty. Some cease to develop as far as mere bookishness is concerned, but grow in real manly desire to fight the battle of life, to work. Some have no mental power and simply drift along at school. None of these are made any better by being compelled to attend school after they have

conquered the fundamentals. Our friends, the believers in education as the panacea for social ills, like the ignorant patient who drank the whole bottle of medicine on the principle that if a small dose did good a large dose would do still more good, would make everybody drink largely and equally at the educational spring, not realizing that many people cannot even sip thereat without permanent mental indigestion, and yet may make perfectly good and entirely happy laborers in the fields Nature intended them for. We need laborers badly: somebody must work with the pick and shovel, even in a reformed world. To compel a boy who has no intellectual trend to continue at school after twelve or fourteen years of age, is often to unfit him for the work which Nature intended him to do and fitted him for. To make educational requirements independent of age, to demand that boys and girls must reach a certain grade in school before they are permitted to work, would deprive many of the possibility of ever earning a living, because they have not mind enough to learn bookish things and would increase, by necessity, the criminal class.

We come to diagnosis. First, I want to say a little about prophetic diagnosis. Is it ever, and if so how often, possible to foretell that a child is going to become a victim of this disease later in life? Sometimes, but rarely, prophecy can be correctly made, and it is probable that, as time rolls on and knowledge, if not wisdom increases, our medical posterity will be more and more able to foretell the mental fate of their young patients. Today it is seldom possible, barring cases of children who have become imbecile on account of organic brain disease, most frequently an encephalitis resulting from some acute infectious disease, and the much rarer cases of cranial trauma, to make a prophetic diagnosis in children, unless indeed symptoms of degeneracy have already appeared. The only pathological occurrences in childhood which, transitory in themselves, are danger signals of the future, are night terrors, frequent attacks of violent, causeless anger, convulsions, persistent nocturnal enuresis, stammering, St. Vitus's dance, and cyclic vomiting. None are positively prognostic of future mental breakdown. Thousands of children suffer from some one or another, yet regain permanent equilibrium. If a child suffers from several, the outlook is much worse. The most serious of all these diseases of childhood is frequently recurring causeless anger. Often it is really a very acute mania. Curiously enough St. Vitus's dance, which one would offhand be prone to regard as very definite evidence of congenital mental and emotional instability, seems to be rarely followed, considering its frequency, by any type of degeneracy. Certainly the percentage of patients I have seen with adolescent insanity who gave a history of a previous chorea, is very small. Repeated convulsions over a period of years leads to imbecility more frequently than to insanity. Pure physical weakness, or even illness in a child, is of no evil import for its mental future, and some diseases such as bone tuberculosis, especially spine and hip disease, are often associated with brilliancy. Apart from disease, very soon after puberty, and sometimes before, peculiarities of temperament may make manifest a mental weakness in a child, which

later will pass imperceptibly into a true insanity. The *trait* *was* is a centre often develops into the man with paranoid dementia præcox. On the other hand, notwithstanding the popular belief to the contrary, the really remarkable child usually continues remarkable through life—is the genius. Where the family history is very bad, a shrewd guess can be made as to the future, but even here the child may inherit altogether from some wholly normal ancestor though carrying within him a germ of degeneracy which may appear in his offspring.

The first internal strain of which we know comes to children at puberty with the awakening of the sexual instinct. At this time there is a great development of the imaginative power, the child breaks from his shell, realizes his own identity, knows he is a thing apart and separate from the external world. He begins to know that men and women are unlike, in this being wiser than his elders, the feminists. A whole new universe is opened to him. This is the period when, if he is a mental weakling, he begins to show signs of his weakness and breaks completely early or late in adolescence. From fourteen to twenty-four years of age, from puberty to achieved manhood, is Nature's testing time. It is during this period that the curve of insanity makes its greatest and most rapid rise. During early adolescence many boys undergo an epoch of disequilibrium which is merely temporary, and its occurrence makes prophecy difficult. Time and again I have seen boys recover from pubertal disturbances which seemed so severe as to be necessarily mind destroying.

We come at last to a brief review of more technical things, to things more really in the domain of formal textbook science, because I suspect that many of you are already saying to yourselves, "yes, all this is very pretty, and perhaps it is true, but it does not bear the stamp of official science, it is not the kind of matter we read in books on psychiatry." This is true, but wise mothers and fathers have been trying for milleniums to find facts on which they could base a prophecy of what is going to become of their children mentally, and when we men of science know more, there will be a chapter in books on mental diseases devoted to prophecy. To-day we are only on the threshold, and many are held back from studying prophecy or even believing in its possibility because they are held fast in the chains of the false dogma that education can make any child into a mentally, morally, and emotionally healthy man. Such people of course will not, cannot believe that we are what we are because our cells respond to stimuli in one or another way without asking permission of a hypothetically free will. They have not learned that in the domain of morals the highest type of man is not he who discusses with himself under any given circumstance what is the right thing to do, but he who reflexly, unconsciously, does the right thing, and that in the domain of intellect burning the midnight oil does not produce the highest type, but inborn acuity of mental vision. When we have really learned practical, clinical psychology we shall not have universal education, we shall not, as a professor, and therefore a man, presumably learned but surely not wise, in a baccalaureate address only recently given seriously pro-

posed, "send one hundred per cent. of the boys and girls to college," but we will send to school and to college only those who will benefit by it. The others we shall leave in happy ignorance of bookish things. Vocational training in secondary schools will then vanish from off the face of the earth and schools will once more become places to train in thinking those who have minds to think.

Adolescent insanity is not synonymous with insanity occurring in adolescence. It is one type of insanity and is divided into four subgroups, hebephrenia, paranoid dementia præcox, simple dementia, and catatonia. It is never sudden in onset, though usually the doctor is called hurriedly and only when some critical event has happened which makes the family realize that a serious illness is present. The prodromal period is longest in the paranoid type, sometimes lasting years. The first symptom is a change in character, showing itself by emotional rather than by purely intellectual disturbances. The boy, previously having shown little or nothing to mark him off from his fellows, becomes asocial. He does not want to play with or even be in the company of other boys. He is moody, now morose, now peevish, now for a little while merry. He becomes careless about lessons, not in the happy, irresponsible way common to many healthy boys, but because he is dreaming. He soon loses all respect for parents and indeed for everybody. He is entirely self centred, the universe exists for him alone. He is talkative and opinionated and at other times silent. All the healthy boy's generosity forsakes him and he is supremely selfish. His sexual desires go wrong and he is a confirmed masturbator or homosexual. At the age when most youths instinctively but unconsciously want to make themselves attractive in appearance to the other sex, he becomes slovenly or bizarre and effeminate in dress and manners. After this prodromal period has lasted an indefinite time, he develops, and often rapidly, the characteristic delusions of grandeur and persecution. His parents are not his parents and he was exchanged at birth; his parents were kings and queens, or rich, at any rate important. His family are keeping his wealth from him. He, in fact, may develop any of the delusions of his higher brother, the true paranoiac, but soon he dementes and finally becomes a mere vegetable. There is no remission, there is no cure, there may be at times slight temporary betterment.

In the hebephrenic the prodromal period is much shorter and there are marked physical symptoms. A boy usually of a higher mental type than the paranoid, often the ambitious, seemingly bright and hard working one of the family, begins to sleep badly, to lose appetite, to be moody, to fear that some uncanny thing ails him. Then after a few weeks he suddenly or almost suddenly develops delusions, usually, about his family and most often that they or some one of them is poisoning him. He refuses food, or will eat only eggs and other things that cannot be tampered with. He talks much and incoherently, and again is speechless for hours. He has outbursts of violence. He pays no attention to bladder and bowels; the former becomes overdistended and empties itself reflexly, the patient paying no attention, and the latter become constipated.

He is restless and will often run away, making long journeys. He is always on the lookout for insults and misinterprets trivial acts of strangers on the street. He reads slurring references to himself into newspaper articles and books. Like all the acutely insane, he is sexually shameless. His circulation during the acute stage is poor, the hands and feet are purple or bluish red, cold, and sweaty. The pupils are dilated, the expression is furtive, the breath foul, the tongue coated. Sometimes, at least so it seems to me, the sweat has a characteristic odor. There is loss of weight. The circulatory, indeed all the physical signs, pass as dementia advances. The duration is indefinite. Often there is apparent recovery, but there is always recurrence within two, or at the most three years, and after the second or third attack, permanent and complete dementia, lasting many years, ends the long tragedy, for tragedy it is, especially when, as often happens, the victim is a boy who gave promise of worth and who seemed at one time to have recovered. When the gods are kind, the patient develops an acute phthisis early in the attack, but the gods are rarely kind. The catatonic type differs from hebephrenia only by the occurrence of catatonic spasm or stupor. Indeed the only type that is clearly cut off from the others is the paranoid.

In addition to the foregoing types there is a simple dementia of adolescence without critical periods, without delusions, without excitement, without catatonia, without discoverable physical signs, but presenting only now a slow, now a rapid, but always a steady, sure decrease in mental power until dementia is complete. It does not always run its full course, but may stop at any time, leaving greater or less mental wreckage. It usually begins about puberty, but sometimes several years later. At the onset one suspects mere laziness. The boy becomes mentally sluggish, stubborn, and self willed. He simply refuses to go to school or to work, and nothing can make him do either. He wanders aimlessly about the streets, but never runs away because he has not energy enough. Soon he will not even arouse himself to leave the house, but simply sits about. Later he will not read, not even a yellow journal or go to "the movies." Nothing excites or interests him. Father or mother may die, it matters not. Told of some awful tragedy happening in the family, he barely listens. If the home is broken up and he is put upon the street, he has not intelligence and energy enough, if the case is severe, to steal (he is not kept from it by any moral sense), and permits himself without resistance to be sent to an institution as a vagrant. He is incurable. He lives many years. When the dementia is not too profound, he is frequently a petty criminal, often a cruel one, but never mentally strong enough to commit any complicated crime. Symptomatically he is identical with an imbecile, but, unlike imbecility, no cause is ever found, and before the illness he may have been a seemingly normal boy.

Prevention of adolescent insanity is of great importance because it is one of the commonest types of mental disease and its victims increase very largely the army of the degenerate. More than a few procreate during the prodromal stage, and some, the half wrecks, commit criminal acts during

the permanent stationary period of incomplete dementia. Those of the affected are fortunate whose mental deterioration is so patent that they are kept in institutions for life. Those who have intervals of apparent mental health between attacks often do things injurious to the commonwealth during the intervals and sometimes come into conflict with the police. Murder is infrequent. Their crimes are usually of other kinds.

Individual therapeutics is up to date fruitless, and the only way to attack the problem in a large way is by preventive measures. The only thing that can be done so far as the individual is concerned is to make the diagnosis early in the prodromal stage before he has committed any vicious or criminal act and to guard him so carefully that he will have no opportunity to beget offspring. There are, of course, no specific measures of prevention; the same means are applicable that are needed for the prevention of all kinds of degeneracy.

There has been an increasing interest in the question of the improvement of the race during recent years. Unfortunately discussion of the matter has not remained in the hands of competent persons, but pretty much everyone who has a babbling tongue or who can scribble and who either feels it is his mission to remake the world or who has discovered how easy it is to become famous via the cheap magazines, has taken part. Psychology and psychiatry are subjects that have a curious attraction for the eccentric, the borderland insane, the half educated, and the emotional, and as many people of these types have a ready tongue and pen, a great deal of harmful as well as harmless silly stuff has been printed. We in this country suffer more than some other parts of the world from self appointed improvers of the machinery of the universe because every man's opinion is as good as another's in a democracy, and inefficiency is inevitable when the people rule, because the political and scientific paranoiacs, who seize every opportunity to be in the front of every popular movement, and sometimes for a time succeed, always have a large following. Apart from the sincere but incompetent reformers and the crazy rectifiers of all evil, there is a small class of thoroughly dishonest people who get into any movement for betterment with a view to helping themselves. They become specialists in anything by reading the newspapers and a few popular books, and at once figure as great authorities and become headline attractions in the press. The dear people are prone to take them at their own valuation, especially when, as usually happens, they are exploited and advertised by the newspapers.

There are certain national shibboleths it is almost useless to fight against. One is that education is a cureall and that all men can be made mentally equal by schooling. Really an uncertain, but not very small percentage of boys are inherently unfit for any scholastic training beyond the merest rudiments, and the inability to accept higher school education is no evidence of abnormality, not even of slow wittedness. There is a type of entirely healthy boy who is a much better student in the university of the world than in cloistered halls. There are others who, though entirely healthy, are intended by Nature to be hewers of wood and drawers of water. They have no intellect for higher work. To try, as we



are trying, to force school education on those who are unfitted for it, is at best wasteful, at worst leads to evil. So far as the morally sound but mentally weak boy is concerned, such an educational policy is merely wasteful: when applied to the morally rotten but intellectually average boy, it is criminal. It gives him a potent tool for evil and he will use it. Silk purses and sow's ears both have their proper place in the economy of Nature, but to make the former out of the latter continues to be impossible. The real education that everyone ought to have, so far as he can take it, is training in inhibition, in self control, in obedience to authority, respect for law, desire to labor, self dependence, and self respect. An endeavor is being made to abolish this kind of education. The change in the point of view that has been going on in this country in recent years, the overturn in the ideals of the people, has led to a belief in a very noisy, if not very large group of people, that self control is a bad thing and that self indulgence is the one thing in life, that authority does not exist, that the criminal is to be sympathized with, that to be compelled to work is an evil, that the industrious man is cheating his fellows by saving money. The preachers of the new morality would have us so busy ourselves in helping other people that we should have no time to help ourselves. They are so obsessed with the value of freedom that they welcome license. They are so afraid that children will forget their own importance, that they will not allow them to use the phrases of common civility toward their elders. They forget that no people can exist without a code of manners. They forget that enlightened selfishness is more useful, more moral, and more altruistic than thoughtless unselfishness, and in truth are more egotistic than the most extreme conservatives.

The kind of altruism which is being widely preached in America at the present time, is making life much easier for a great many lazy people, but instead of improving the race is injuring it. In too many instances it is aiding people to live, whom it were better to allow to die. It forgets too often that the strong and the healthy also have rights. Its honest adherents are so ruled by their emotions, or rather by their sensations, that they do not stop to think before they act. They see an evil and in their hurry to correct it inflict much greater evils. It increases tremendously the parasitic class who today, as always, are perfectly willing to live off the fruits of other people's industry. The specific movement, technically called social service, the result of a genuine spirit of altruism, needs a little reform in its methods and a somewhat greater care in the choice of its agents, or its possible usefulness will be greatly diminished. The idea that a man is his brother's keeper is a beautiful and normal thought, but when it is interpreted to mean that the strong man is to be wet nurse to the weakling, and carry him through life, and work that he, without exertion, may enjoy the luxury of living, the weakling is going to enjoy himself without responsibility, propagate his kind, and weaken the race. No work needs greater wisdom and maturity of mind than social service, yet far too often its agents are enthusiastic, ignorant, and conceited young men and maidens who feel that they have a call to save the world, entertain unlimited

pity for the unfortunate, an overwhelming sense of the wickedness of the strong and successful, have no idea of justice, no training of any kind, little or no worldly wisdom, and, withal a desire to earn a living without hard work. Still worse are the middle aged men and women who, having failed in the battle of life, hunt for a snug harbor of refuge from hard work, and being plausible of tongue, pull the wool over the eyes of officers of charitable societies and get easy jobs. I speak thus harshly, not because I oppose social service, on the contrary I firmly believe in its usefulness, not because I am so barbarous as to disbelieve in the brotherhood of man, but because I so deeply believe in it that I am convinced that unless the organized effort put forth in its behalf is well done, evil will result and not good and the whole movement will fail. It is expensive, and the charitable people who supply the money will lose interest in it unless it brings adequate results. To attain good results emotionalism must be replaced by wisdom. Social service has to do with the question of adolescent insanity because so much of its work is among the degenerate class, and one lesson that every social service worker must learn, is that everyone who has the least taint of mental disease should be prevented from propagating his kind, no matter how complete the apparent recovery may be. The tendency among untrained workers among the insane is to be so delighted with improvement, as to waste time and energy in trying to make them lead a life for which they are incompetent. If the doctrine, common among inexperienced workers, that the weak should inherit the earth, is ever put into practice and prevails, it will not be many ages before there will be no human world to inherit. However, we need not worry because Nature is stronger than man and extinction of the unfit will continue, no matter what our efforts to prevent it.

Efforts to improve the race sometimes have unfortunate results. Thus the health laws regulating marriage now on the statute books of several States will not have the good results expected of them. The Pennsylvania law is impossible of enforcement because it asks impossibilities and merely gives candidates for matrimony an opportunity to lie. The asexualization of certain persons, ordered by statute in some States, will not be carried out on a large enough scale to influence the race in any way. One evil that would result if the laws were enforced would be that asexualized women would frequently become carriers of venereal disease. The newest scheme proposed for improving the race is that physicians should instruct newly married couples in the methods of preventing conception. The argument in its favor is that by this means all those people who are unfit to have children would enjoy all the pleasure of matrimony and be freed from its most vital duty. I suppose the next step will be to give the same instruction to unmarried couples. Why not?

There is but one way to decrease the frequency of adolescent insanity. Passing laws and emotional altruism will not aid in the least. The one remedy is to overcome as far as possible the evil of heredity by good environment, by so training youths that their power of resistance will be increased. Wise education in how to live will save many a boy from mental

breakdown. I do not mean instruction in the silly so called physiology taught in the public schools, which confines itself almost entirely to preaching prohibition by giving untrue arguments in its favor, nor do I advocate the wholesale teaching of sex hygiene which not infrequently leads to experimentation with sad results. I mean very different, much profounder things. Today the tendency is, not to endeavor to make youths strong to resist, but to try to remove all stress from them. They must not be given hard tasks at school, indeed, the cry is that children must feel that school is play. They must not be taught obedience and respect, lest they be servile. They must have much amusement. All this is dependent upon the idea that life is meant for pleasure and that work is a curse. In addition, this altruism teaches such great sympathy for the vicious, the criminal, and the degenerate, that children brought up under its influence are no longer taught, by the most advanced philosophers, to have disgust for vice and crime, but to have sympathy for the vicious and the criminal. May not the sympathy be changed into a love for the vice and the crime? The result to aftercoming generations is bound to be bad.

We must stop the present tendency toward the easy life if we wish to develop a strong race and bring down the insanity rate. Moral and mental health are closely related, and the newest philosophy of life does not make for mental health. We have too much education and not enough training. We have too many people who read and too little that is worth reading. The newspaper press, which is the sole reading matter for most people, is for the most part vicious in its influence in that it is silly, vapid, sensational, and false in the philosophy of life it teaches. We hear too much of the rights of people, too little of their duties. We spend untold millions in money and effort in trying to remove the stresses and strains of life, we spend relatively little in training youths to withstand stress and strain. We are acting as if it were possible to make life easy for everyone. We are doing all that we can to weaken the race. We have lost virility and are becoming effeminized.

Fortunately there are a good many cave men left, men who do not philosophize and are not learned and who of course are far from being sweetly good and superrefined, but who are firm fibred, with healthy natural instincts, and mate with their kind (for men do mate with their kind, the degenerate is attracted to the degenerate, the healthy to the healthy), and train their offspring to have contempt for weakness, belief in self dependence, respect for law, a desire for true righteousness, love for strength and health, and these cave men will by their descendants regenerate the race. Virility will win.

1018 SPRUCE STREET

**Intramuscular Injection of Blood in the Treatment of Leucemia.**—Kiralyfi, in *Zentralblatt für innere Medizin* for February 6, 1915, is said to have reported a case of splenomyelogenous leucemia in which benzol treatment yielded only temporary benefit. Intramuscular injections of blood were used with success.

## PROTEIN ABSORPTION AS A FACTOR IN THE CAUSATION OF CANCER

By J. W. BEVERIDGE, M. D.,  
New York.

The origin, or rather the causation of malignant disease has been a stumbling block to medical research students and clinicians, it may be said, for hundreds of years. At intervals of time, the alleged discovery of the causation of cancer has been loudly and widely heralded, only after careful investigation, to find that the announcement was premature or that a mistake had been made. The history of the investigations into the origin of malignant tumors is a tale of misplaced hopes. It is not that the workers, for the most part, have not been earnest, enthusiastic, and patient, but they have been too frequently led away by their enthusiasm and their goal has never been reached. Nor is it to say that all this painstaking work has been for naught. The way has been, to some extent, made clearer and the path of future investigators rendered somewhat easier.

A few years ago, it seemed as if the parasitic origin of cancer was the true one and that there would be no need to probe into the matter further. However, the parasitic theory has fallen into disrepute, indeed may be termed almost dead and the problem appears nearly as far from solution as ever, although, of course, some advance has been made. Several delvers into the question have cited heredity as one of the main factors in the causation of this dread disease, while more recently the embryonic theory has perhaps taken the first place. Forbes Ross, in his work on cancer, has formulated a novel hypothesis which is as follows: Cancer is due to a want of balance in the particular mineral salts of the body and the disturbance of this balance leads to the disorderly and malignant growth of epithelial cells which is professionally known as cancer. At the present time the situation is as follows: Granting that no positive proofs have been brought forward with regard to its causation, a few negative facts stand out boldly. It is not known what cancer really is, but it is known what it is not, therefore, by a process of elimination the final solution may be attained. All who made a study of the matter, or at least, a majority of them, seem to be more or less agreed on these points.

That cancer is neither of microbic nor of parasitic origin, that while local injury or irritation may play a role of very considerable importance in its causation, it is not by any means entirely due to such a cause, that occupation has not a great deal to do with its causation, that heredity is not a factor of supreme or even of great importance in its initiation or development, that it does not belong to or affect either sex or any race or class of persons, that its geographical distribution is not limited to any especial section of the globe, that it is not wholly a disease of older age, and that it is not contagious nor infectious—these, then, are the negative facts concerning the origin of malignant tumors which may be said to be, at any rate, to some extent, common knowledge. When all the other probable causes of cancer have been passed in review, and after mature consideration have been rejected, the sole cause left which appears worthy of discussion is

disordered or perverted metabolism. The disease denominated cancer is an aberration in the action of tissue cells, a deviation from the normal. If this is so, and there is no doubt that such is a correct description, so far as it goes, what causes this aberration? And the answer, in the opinion of many authorities, is perverted metabolism. According to Roger Williams and others, the process of cell proliferation which is termed malignant disease is dependent upon excessive or faulty nutrition. These errors of diet bring about disordered or perverted metabolism.

In order to endeavor to show that the theory of perverted metabolism as a cause of cancer is founded upon sound premises, I shall deal briefly with some of the arguments in its favor. If the consumption of an excessive or faulty diet may produce perverted metabolism, what is the diet at fault? It is mainly due to a protein diet. How does such a diet act in this maleficent manner? In the first place it can be stated as an incontrovertible truth that toxins are formed in the alimentary canal which, when absorbed into the general circulation, are poisonous to the organism. Furthermore, when the liver does not properly perform its normal functions, that is, act as a shield to the entrance of poisons into the system, the poisoning is effected by foreign proteins as such and not by bacteria, in fact, the poisoning is of chemical origin. This point may be emphasized, that during the ordinary process of digestion, protein, even without the action of bacteria in the intestine, may yield toxic results. When ulceration or other lesions of the alimentary canal are present, according to Harley (1), it is conceivable that the proteoses and end products of protein digestion may reach the general circulation, and if the quantity absorbed is larger than the liver can deal with, their presence may explain many of the toxic symptoms which are periodically observed. The aromatic substances, indol, skatol, phenol, and cresol are formed by the breaking down of protein by various bacteria in the alimentary tract, and in all diseased conditions of the bowel which lead to increased intestinal putrefaction there is usually found an increase of indican, skatol, and phenol. Indol, skatol, and phenol may all be considered as more or less toxic substances. Moreover, the sulphur of the protein, if putrefacted in the alimentary canal exists, can form sulphuretted hydrogen which when absorbed into the blood may produce various symptoms, disturbances of the nervous system in particular. These are the principal substances which can be isolated and are derived from the protein by putrefaction in the alimentary canal and which are presumed to be mainly responsible for that condition known as auto-intoxication or alimentary toxemia. Professor W. A. Dixon, F. R. S. (2), has this to say: "In general, I think it must be accepted that alimentary toxemia is poisoning produced not by 'toxins,' the term being used in its strict sense, but by relatively simple chemical substances. These poisons must originate as a result of digestion or putrefaction of food and our attention may be concentrated almost entirely on the digestion of the proteins."

Mellanby (3) suggests a method whereby pathological symptoms may be traced to the intestine. In the first place, he remarks, came Bayliss and Star-

ling's striking discovery of secretin. The detection of gastrin by Edkins followed this discovery. Again quite recently the results of Cow, in work done in Hans Meyer's laboratory, indicate that water taken by the mouth acts as a diuretic, not by its direct action on the kidney, but indirectly by liberating some substance from the alimentary tract which stimulated the kidney to secrete water. Such results as these which prove the presence of chemical stimulants in the alimentary wall make one wonder whether a generalization is possible so that each organ in the body is stimulated to activity by some specific chemical substance present in the intestinal mucous membrane, each particular stimulating substance being liberated by a particular food-stuff. If such a premise is correct, it is clear that all sorts of symptoms might arise when an excess or deficiency of the specific chemical stimulant is liberated into the blood stream in consequence of abnormal intestinal putrefaction or other disturbance. Work based on such a hypothesis, Mellanby thinks, might be useful in elucidating the causal relationship between some of the more obscure conditions and the alimentary canal. This is somewhat straying from the main subject, but was introduced as an ingenious theory bearing on the question in some degree. Protein absorption then is more than under grave suspicion, in truth the proofs appear evident, that it is probably a predominant cause of alimentary toxemia which may induce perverted metabolism, which in the opinion of many may lead to malignant growths. It will be as well now to enter more fully into the relation of diet to cancer, that is the excess of a protein diet. The difference between the fats and carbohydrates and the protein foods is that the fats and carbohydrates are oxidized in the body to carbonic acid and water. On the other hand, the protein foods, when oxidized, give forth the toxic substances previously referred to, and which, if the organs concerned with the digestion do not act normally, and especially if the liver fails to perform its proper functions, enter into the circulation and poison the entire system to a greater or less extent.

According to presumably reliable statistics, statistics quoted by Bulkley in his recent book on cancer, the incidence of cancer increased *pari passu* with the consumption of meat. In England the per capita consumption of meat used to be 130 pounds a year, which had doubled during the past fifty years, while during the same period cancer had increased four-fold; but in Ireland, where the meat consumption was estimated in 1895 at only forty pounds per capita or less than one third that in England, the cancer death rate is very much lower, not much over one half. In Italy, where the per capita consumption of meat was the smallest of any European country, the cancer death rate was almost the lowest. In the United States cancer has greatly increased during the past fifty years and it is also known that the consumption of meat has increased steadily—in fact, it has reached the enormous amount of 172 pounds per capita yearly, much more than in England. Of course, absolute confidence can never be placed in statistics, and it is likely that cancer has not increased to the extent that the foregoing figures seem to show: at the same time, there is no doubt, allowing for all exaggerations and dis-



crepancies, that in all civilized countries and in countries in particular in which meat is largely consumed, cancer has made great headway.

In considering the relation of diet and cancer, the question of intestinal stasis must come in. An excessive protein diet has a great deal to do with the production of intestinal stasis, and intestinal stasis is largely responsible for the chemical and bacterial poisoning of the system, which is known as auto-intoxication or alimentary toxemia, which in its turn is a potent factor, according to many authorities, in the causation of cancer. Bulkley, in his work already cited, comments thus on this phase of the subject: "I almost feel like saying that the toxins produced by the millions of microorganisms generated through intestinal stasis and fecal putrefaction are the real incidental cause of cancer." Robert Bell, in his book on cancer, says that whatever acts prejudicially in the production of cancer, arises in this way; bad ventilation, constipation, worry, sedentary habits, and other unhygienic conditions act perniciously and react upon an organ which in other circumstances might be able by its inherent vitality to resist successfully the onset of malignant disease. The same author says that a catarrhal condition of the distal portion of the bowel is liable to be set up from chronic constipation, intestinal stasis, and erosion of the mucous membrane. By this sequence of events, following constipation, not only does a direct exciting cause of cancer arise, but a vitiated state of the blood follows from absorption of fecal matter. This again acts in facilitating the development of disease by lowering the vital standard of the blood. The latter is produced as can be readily comprehended by the contamination of the vital stream consequent upon the products of decomposition being absorbed into the circulation; the toxic effects thereby produced, incapacitate the blood from performing the normal functions of a pure blood supply. In consequence of this vitiation, every organ and tissue of the body suffers and becomes pro rata prone to disease and to a similar degree loses its recuperative power.

Sir Arbuthnot Lane (4) says the breast behaves in a characteristic manner in auto-intoxication, so much so that it may be regarded as the barometer of the degree of poisoning. It presents at first induration, which commences in the upper and outer zones of the left breast, extending subsequently to the entire organ on both sides. Cystic or other degenerative changes may ensue, and at a later period cancer appears with remarkable frequency in these damaged organs. Jordan (5), the well known British radiologist, states that early cases of cancer often show the typical appearance of a chronic gastric ulcer with only slight alteration due to the malignant involvement. Another point and a very important one, is that all the parts exhibit the characters of intestinal stasis. Thus we have a further illustration of the importance of intestinal stasis in the etiology of malignant disease. When stasis is recognized by medical practitioners in its early stages and rectified, there will be far less cancer, not only of the stomach and large intestines, but also of the bile ducts and of the breasts. Rowell (6) says with regard to cancer he has often seen the symptoms of

long standing chronic intestinal stasis demonstrated in cases of cancer of the breast; and repeatedly in cases of cancer of the bowel, disease of the gallbladder, and of the pancreas, the ileac kink has been clearly shown.

Jordan says, in another communication, that chronic ulcers tend to become cancerous and in several cases he has been able to show the actual transition from simple chronic ulcer to carcinoma of the stomach. The point as to whether simple chronic ulcers may develop malignancy, and if so with how great frequency, is important and has a definite bearing on this discussion. The question of the cancerous transformation of an ulcer of the stomach was first discussed by Cruveilhier, in 1839. To Ditrach, writing in 1848, belongs the chief credit for drawing attention to this matter. Brinton, in 1856, recognized the possibility of the grafting of cancer upon a long standing ulcer, and in 1903 Audistere concluded as follows: 1. Simple ulcer of the stomach may be the starting point of a cancerous growth, a condition of things which appears to be not infrequent. 2. This malignant degeneration affects, as a rule, the chronic ulcers, especially in the prepyloric region. The change begins in the mucous membrane, at the margin of the ulcer. 3. The transformed ulcer presents for a long time almost the same symptoms as a simple ulcer. According to Mayo Robson, the number of carcinomata beginning in chronic ulcer is reckoned at three per cent. by Haberman Fenwick, Plange, and Berthold; four per cent. by Wollmans; six per cent. by Rosenheim and Hauser; nine per cent. by Lebert; and fourteen per cent. by Sonicksen. Zenker believes that all or almost all carcinomata are secondary to ulcer. Opinion is divided on the question, but the majority of authorities hold that a callous gastric ulcer is frequently the starting point of cancer.

It may not be out of place in a paper dealing with protein absorption as a cause of cancer, to discuss in a few words the influence of the internal secretions in the production of intestinal stasis auto-intoxication, and perverted metabolism. But before touching upon this subject, this point which has been overlooked may be noticed that, just as the cells of various organs supply secretions which normally assist in regulating metabolism and maintaining the tissues as they should be maintained, so these aberrant cells are believed to secrete a malignant hormone which exerts an injurious effect upon the body and hemolytic action on the blood. Now, to revert to the influence of the internal secretions on body-metabolism and thereby their connection with cancer, there is little doubt that the internal secretions, with which are included the ductless glands, exercise a profound influence on the regulation of the metabolism of the body cells. If an internal secretion fails to perform its proper functions, it may put the entire machinery of the body out of gear, for the functions of these glands are interrelated. Referring to the adrenals, Sajous says: "The adrenals as supporters of the thyroid apparatus in the defensive process and in sustaining oxidation, metabolism, and nutrition, seem to offer a new clue to the pathogenesis and treatment of cancer that is worthy of further inquiry." All the ductless glands are

...the metabolism of the body, but probably the thyroid is of greatest consequence. The secretions of the pancreas and pituitary gland also count for much, and stress may be laid on the point, that when one of these does not act, or acts deficiently or inadequately, the system feels this lack at once to a greater or less degree. However, there is no space to pursue this branch of the matter further and it must suffice to say, that the internal secretions seem to have an extremely close connection with the development of cancer, the reason that they exercise a paramount influence on body metabolism. It is said and rightly, that a prophet has no honor in his own country, so that it may be unwise to prophesy, but if I were to prophesy I should be inclined to predict that it is in the internal secretions that the solution of the problem of cancer lies. As for the biochemistry of cancer, we are groping somewhat blindly, and while some facts have been unearthed and many theories evolved, we are still far from reaching any definite conclusions. Beebe, not committing himself to the expression of any decided opinion, goes this far: "Diet doubtless forms an important part in the growth of cancer, possibly even in the origin of the disease." To try to deal fully with the biochemistry of cancer is altogether beyond the scope of this paper, and the subject may be dismissed by stating that progress in this direction has borne some fruit.

It will not be exaggerating to say that cancer is essentially a disease of civilization; with the advance of civilization has come into vogue a mode of living which is the reverse of simple. Luxurious or self indulgent habits have permeated the whole population of civilized countries, and the more prosperous and the more highly civilized the country, the more do these habits prevail. A very large variety of food is eaten, and indulgence in eating and drinking is the rule rather than the exception. As noted previously, the consumption of animal food has greatly increased, and despite the contradictions of those who oppose the theory that eating too much protein food is a cause of cancer, it appears to be more than a coincidence that in the countries in which the most meat is eaten, there is cancer the most common. Other articles of diet, such as alcohol, coffee, and tea may be responsible for perverted metabolism, with its melancholy sequelae, but meat is the most conspicuous of all. It must likewise be borne in mind that figures appear to prove conclusively that a low diet and simple living ward off cancer. The hypothesis may be advanced, if it may be termed a hypothesis, that the excessive consumption of strictly protein foods brings about a condition whereby protein substances are absorbed into the blood stream, perverted metabolism ensues, and this may cause cancer. The theory of perverted metabolism as a cause of cancer has more to commend it than the other theories of its causation, and as protein absorption appears largely responsible for perverted metabolism, it may be stated that protein absorption is a factor in the causation of cancer.

## SOME IMPLICATIONS OF PSYCH-ANALYSIS.

By MARY KEYT ISHAM, M. D.,  
New York.

The general practice of medicine has grown many branches, among which is the specialty of nervous and mental diseases. From this in turn has been developed psychiatry, which concerns itself more particularly with the causes, diagnosis, and treatment of mental disturbances; and from psychiatry a special line of practice is differentiated which is usually termed psychanalysis. The physicians who are engaged in this practice investigate the soul life of the patient so thoroughly that they have no time for other phases of medical work.

In an address, *The Relations of Internal Medicine to Psychiatry*, before the members of the American Medico-Psychological Association at their annual meeting in 1914, Dr. Lewellys F. Barker said:

Though there is no unanimity of opinion among medical men, their special training and experience make them much more sympathetic with some tendencies than with others. First of all, they desire to stick close to experience, lauding the empirical and depreciating the speculative; but despite this tendency, which on the whole is a good one, they often refuse to theorize when it would be helpful, and they are ever unconsciously transcending experience. In the second place, brought up in the school of the natural sciences, saturated with mechanistic explanations, the medical mind has a structure which predisposes it, at least at the beginning of its critical and philosophical interest, to what metaphysicians designate as materialism and realism rather than to what they call idealism.

The practice of psychanalysis, however, more than any other department of medicine, demands the idealistic view. It acknowledges certain states of feeling as the source of trouble in the mental disturbances which it seeks to cure, and makes use of mental analysis in order to liberate all the reminiscent emotional and cognitive factors in the mind of the patient concerned and give them a chance to take their natural place in the economy of the soul life. It may be viewed as that offshoot of psychiatry which allows the greatest and most productive opportunity for medical practitioners of strongly speculative inclination. Dr. C. G. Jung emphasizes the necessity of speculative thought—both for the physician and the patient—in any constructive method of dealing with psychic troubles. "The mother of a new thought is speculation. Experience without speculation leads nowhere."

But first a few more words about the position of psychanalysis seem advisable, if one may judge from the erroneous ideas of it which still prevail. If it were a fad, it would attract wide attention, but being a method in use by quiet, conservative, thoughtful physicians, it does not gain notoriety and has suffered from partial eclipse, although it is slowly emerging from obscurity. I quote a paragraph from the preface of the second edition of Dr. A. A. Brill's work, *Psychanalysis*:

As psychanalysis deals with mental factors, it is only just to expect that those employing it should have a training in psychiatry and neurology. The normal and abnormal trends and reactions of each patient must be known before psychanalysis is undertaken, and these can be correctly diagnosed only by those trained in mental work; for not every nervous and mental case lends itself to analysis, and proper selection of cases would obviate many failures and criticism. The writer has seen much harm done

to patients by "wild psychoanalysts," who had no conception of what they were doing. Those who wish to take up the work should proceed in the same manner as in any other specialty. The reading of some theoretic works about the eye or throat does not make an ophthalmologist or laryngologist, nor does theoretic knowledge make a psychoanalyst. It must be remembered that all the pioneers in this field have been neurologists and psychiatrists first. To practise psychoanalysis without previous training in mental work is as dangerous as practising surgery without a knowledge of anatomy . . .

There is considerable stubborn opposition to this specialty by those who do not understand it. Of course I am aware that the stock retort given to those who do not accept what we do, is that they do not know it thoroughly. And it is quite plain that the reason is that it never attracted them enough to warrant a more extensive acquaintance, and even if it should seem more desirable, they are too busy with more exacting matters to make an investigation. But the fact is that psychoanalysis is easily vindicating its existence by a steady accumulation of successful results, and its value in the treatment of the psychoneuroses and in giving insight into them is already well established. The history of the development of this emphasis on psychic determinates or sources in the psychoneuroses—from Charcot to Freud and his followers—is a profitable and convincing argument in itself.

Much discussion centres about the role which Freud maintains for sex. He holds that all neurotic disorders can be traced to some emotional disturbance in the infantile sexual life. Whether it does play this role or not is a question which argument does not help to answer. We can argue both ways with equal facility. Argument is two faced. Let us take the ameba as the simplest animal to use as illustration of this fact. It divides or reproduces, when it has taken in and assimilated so much food that the resulting new mass of body cannot be furnished with enough nourishment to sustain it through the old absorbing surface of the cell wall. The ameba, therefore, reproduces as a result of overeating. Nutrition therefore comes first. The reproductive process is a result or sequence of the nutritive process. We may reasonably assert that nutrition is the first and essential function, for without it reproduction could not take place. On the other hand, we may reasonably reach a contrary conclusion. We may argue that if this ameba had not been reproduced in the first place, it never could have taken nourishment; and that, in addition, it is practically concomitantly reproducing itself with every osmotic draught of nourishment, and that nutrition is only for the final purpose of reproduction. So whether does argument lead? So far it has not thrown any light on Freud's proposition. We may dismiss the perplexing question by concluding that nutrition is the primary essential in the life of the individual and reproduction in the life of the race. Well, then, suppose that this individual ameba has the power of exercising its nutritive function indefinitely, while its correlated sexual function is suspended. What would happen? It would gradually collect a mass of dead material within its walls, until it finally died of mortification. Since this stage of the argument gives a chance to explain Freud's view, it is a good stopping place. His theory includes the idea that some emotional factor in the sexual life of

the patient who suffers from a psychoneurosis, has been repressed, and the repressed material interferes with the free play of personality. The patient carries about with him the dead remnants of his former self, although these remnants are alive enough to make a vast amount of trouble. "The hysteric suffers mostly from reminiscences." (Freud.) But the question as to whether reproduction is more fundamental than nutrition is in no way settled by argument, for we could suppose that similarly the nutritive function was suspended or decreased and get some very interesting conclusions.

Psychoanalysis proper, however, is not concerned with quibbling. Freud gives sex the responsible role he asserts for it in the psychoneuroses, because he has found this to be a fact in the many cases which he has examined. The reports of his work show a distinct reaction from rigid classification, dogmatic assertion, and academic domination. They are exceedingly cautious and conservative in statement and use modifying terms most abundantly, such as *perhaps, may, generally, in this case, possibly, probably, it seems to me*, etc. They do not attempt to arrive at preformed conclusions, and that is the reason so many readers find the ideas contained in them hazy, intangible, and even arbitrary. But his method of analysis escapes arbitrariness by its plasticity. It allows each case to speak for itself and looks at patients from an interpretative point of view. Its interpretations are fluid and adaptable, because the entities to be interpreted are in a similar condition. Not only is the wide range of possible interpretations acknowledged, but the personal equations of both physician and patient and their reactions upon each other are frankly admitted and discussed at some length in Freudian literature under the term "transference."

The many more or less witty criticisms against the purely Freudian analysis are very ably refuted in the writings of Dr. Ernest Jones, Dr. James Putnam, and others. But I cannot refrain from a few additional sentences concerning Freud's very inclusive sex symbolism which is so often denounced. It appears that he lines up practically every concrete object as a symbol for either the male or female generative organs. Upon first acquaintance with this symbolism, it seems most artificial, arbitrary, and nonsensical. It seems that one could take any object and insist that whatever resembles it in any way should be considered its symbol. For instance, you might select the object *rod* and say that anything which has more length than it has breadth or thickness—as a pen, candle, snake, banana, umbrella, cane—is the symbol of a rod. This notion, of course, is extreme foolishness, and without deeper reflection, Freud's scheme of symbolism impresses one as being quite as foolish. But further study and application of symbolism shows that he uses the most essential conjugates, the universal *sine qua non* of creation as the archetypes to be symbolized. But he did not invent this symbolism. He merely borrows what he finds in common use in myths, folklore, fairy tales, poetry, and dreams. It is a common mode of expressing what is emotionally elemental and fundamental. These commonly used symbols aid in the interpretation of dreams and of the behavior of every day life, and are a means of



directing the patient's gaze toward those elemental truths within himself, against which he has been struggling in vain, and distorted, repressed ideas of which lie at the basis of his neurosis.

In the formation of its theory and applications, near and remote, psychanalysis makes use of a consummate mixture of psychology, science, art, philosophy, poetry, and medicine. It is a hint of that combination of medicine with allied branches which is destined to work the most conspicuous wonders in the new era which is close upon us—a combination which will develop the human psyche into the thing of beauty dreamed of by poets. "And it may be a greater undertaking, but no more impossible to make ways to good will and a good heart in men, than it is to tunnel mountains and dyke back to sea. The way that led from the darkness of the cave to the electric light is the way that will lead to light in the souls of men, that is to say, the way of free and fearless thinking, free and fearless experiment, organized exchange of thoughts and results and patience and persistence and a sort of intellectual civility." (H. G. Wells.) Freud has placed for us the largest and most indispensable stepping stone into these realms of psychic exploration. His method not only dissolves distresses of the mind, but his publications are teeming with implicit suggestions of how the riddles of philosophy may be answered.

From a study of "repression," we learn that when a person experiences a great conflict and cannot reach a decision, he is trying to reconcile factors on different levels or planes of consciousness. He must first get his thoughts or emotions on the same level and then they naturally fall into their own places. We infer that this helps to solve the old riddle of "error" with its questions about right and wrong, truth and falsehood. The old and also present idea is that you must struggle hard through a series of fierce intellectual decisions to reach the absolute truth. An implicit suggestion of Freud's researches points to the strong probability that the conflict between truth and falsehood is only a confusion which arises from trying to piece together integral parts, when they are on different planes. It is a childish attempt to put away all your blocks in a box upstairs, when part of them are downstairs and you do not know it. You cannot fill your box properly. The child in this predicament is under a parental compulsion to account for all his blocks. He arranges, rearranges, gets angry, and finally invents excuses for the blocks which are not there. Being still under the sway of the parental influence, to account for the missing blocks and not knowing where they are, he conscientiously constructs an untruth. If this untruth is accepted, the child is quite pleased. His conclusion is acceptable. It "works" and therefore must somehow be right. In a similar situation, the adult calls his excuses arguments, and the one which "works" is a valid conclusion and proves him a rational being. So all conclusions are forced, when the parts are not all there. If the parts are manifestly present, they explain themselves.

Psychanalysts as such are of professional use only in the treatment of mental complaints which can be traced to psychic causes, and therefore they are especially interested in tracing all the symptoms they reasonably can to such sources. And since "the

functional aspect of organic process is the dominant theme of Freud's psychology" (Dr. Trigant Burrow), they hail every sign which confirms this theme. They are pleased to see in the medical signs of the times that many surgical conditions which were once called pathological are now, under more detailed study and after experience with a greater number of cases, seen to occur in many other cases which do not give evidence of being unhealthy. In other words, much that was once considered pathological is now termed physiological. It is found that in many cases the organ which is apparently diseased is merely in a temporary condition of excess or decrease of function. Pathologists who work extensively with neurological specimens are convinced that it is impossible to draw a sharp line between normal and abnormal. They cannot find a brain which can be labeled absolutely normal, even when the patient to whom it belonged was to all appearances mentally sound; and conversely, very insane people have brains which, upon post mortem examination, show no abnormalities which account for the mental symptoms once exhibited. These facts serve to lessen the breach between the brain which is viewed as diseased and the one which is considered sound, and suggest that during certain periods of function the organic condition is indistinguishable from one diseased, and that processes of disease may possibly develop from a habit of bad manners in function.

In the case of endocrinopathies, the changes which are attributed to the action of "hormone inadequacy" may only secondarily be due to the active principle of secretions. There is a very strong probability in a large number of cases, that the primary excitant is strong emotion, for it is well known that emotions change not only the quantity of secretion, but its quality.

A long and increasing list of somatic manifestations, both temporary and permanent, which are known to have been the sequence of great emotional shock or of continuing affective strains, can be furnished by every physician of large practice.

There is hardly any sort of clinical finding which might not be found at certain times in the apparently well individual, if he could be examined at the time when the condition obtained. We have no means of knowing exactly how much of ill-feeling in a patient is due to any one or more findings, because we have not a complete clinical history, either of himself or of others with whom to compare him. The more we study given cases individually, the more difficult it is to make hard and fast rules. "Could you take men by the thousand billions, you could generalize about them, as you do about atoms; could you take atoms singly, it may be you would find them as individual as your aunts and cousins."

Since psychanalysts attempt a very detailed study of the patient's individuality, one must expect to find what seem to be inconsistencies of statement in their reports. The domain in which they are working is one newly laid out and calls for a most delicate balance of empirical and speculative tendencies.

149 WEST SEVENTY-NINTH STREET.

**Sciatica.**—Don't treat sciatica, says the *American Journal of Surgery*, without thorough physical examination. Sometimes carcinoma in the spine, metastatic from an overlooked tumor is the cause.

## SODIUM BICARBONATE IN HAY FEVER

*A Preliminary Report.*

BY KENNETH E. KETLOGG, M.D.,

New Britain, Conn.,

Tulane, New York Academy of Medicine.

My case records show a series of fifty cases of hay fever, covering a period of three years. The first patient presented a general acidosis with a mild and transient glycosuria; the second high specific gravity of urine with a marked acidity. Acting on the theory that the general condition served as a primary cause by reason of certain irritating qualities of the blood, making the mucous membranes hypersensitive, I gave both patients sodium bicarbonate in dram doses three times a day. Such a marked relief from the rhinitis symptoms followed that I felt justified in administering the same treatment to the remaining forty-eight.

Reviewing the records, I find that ninety per cent. of the patients enjoyed a marked amelioration of symptoms, and seventy per cent. complete relief after a few days' treatment; the remaining ten per cent. were not as markedly benefited, although they all seemed to show some improvement.

The improvement of the local symptoms seemed to be independent of the exciting cause. Some suffered from the inhalation of cotton weed; some of rag weed; some of wild rose; others of golden rod; and a few presented precedent lesions of the nasal interior. The alkali acted nearly the same in the majority of cases regardless of local or general conditions. It appeared to have a desensitizing action upon the mucous membranes. Possibly it may also have had some influence in keeping the toxins of the pollen from becoming soluble.

In three cases I found it necessary to supplement the treatment by the administration of a nasal spray of sodium bicarbonate solution. Regarding the effect the alkali may have upon the anaphylaxis or the allergic phenomena, I am unprepared to speak. The fact remains, however, that at least marked relief was given in a goodly number of cases, and for this reason I feel justified in reporting them.

This is a preliminary report. It will be followed by a more detailed one later.

173 MAIN STREET.

## A HEALTH PROGRAM FOR NEW YORK CITY.\*

BY HAVEN EMERSON, M.D.,

New York,

Deputy Commissioner of Health.

Let us admit that we mean a brief outline of the order and subjects suitable for a health campaign, a writing for the future, a plan of action.

May I consider that whatever the shortcomings in imagination or accomplishment of the city health department, no plan can be carried out with full success without its official cooperation, if not with its direction and initiative. Further, it must be granted that no official action can obtain its best results unless supplemented and completed by the ac-

tivities of citizens, in organized groups, and associated with the department of health by common interest in results, or bound to it by professional and technical opportunities. If we accept such premises, must we not further agree that a certain permanence of organization and leadership, in both official and citizen groups, must prevail during the prosecution of the common object, namely, raising the health standard in the community.

Thanks to the blessing of nonpartisan city administration we can be assured of freedom from political interference with official health work at present. This is not, however, a sufficient safeguard, for nothing less than a commissioner of health, assured of suitable compensation and permanent employment, freed from the risk or certainty of replacement with each change of city administration, will permit of that confidence and determination which come only from knowledge that the work accomplished and effort put forth this day or year can be made part of a statesmanlike structure for the years ahead.

It is evident that sad waste in effort has resulted from the changes in plan and ideals held by short term commissioners of health. The commissioner's personality, ability, and qualifications can be expressed only when he has moulded the official family of three thousand to his needs. The department employees can do their best only after the commissioner has learned the capacities and limitations of his subordinates, and has in some measure created a new organization during his term of service.

The city of New York can afford better to sacrifice the once cherished privilege of its elective mayor than to continue to trust the health of the city to the fortunate appointments of their chief executive. Men of outstanding ability cannot be retained in this office unless they are assured of permanence of opportunity and accomplishment.

As the first step in a health program I wish to urge such alteration of policy and law as will make the position of health commissioner permanent, and provide it with a salary in proportion to the responsibilities put upon it and the qualifications to be demanded. I believe that with this exception the provision by the city of a force of civil service employees can be made sufficient to prosecute to effective conclusions any health program which may be agreed upon as desirable.

In view of the intimate relation of health work to the police administration, the city would gain as much at least if the police commissioner were a permanent city officer.

From the time of the first organization of private charities there has been an increasing tendency toward cooperation among all the agencies which lead primarily to community and personal health. The agency of fundamental importance for health work in this city which falls particularly short of its possibilities, is the public dispensary. Other facilities may lack elements of efficiency from failure of cooperation or financial support, but no one appears to me to be so far behind its opportunities, to miss to such a degree the field we may properly expect it to fill as that abused, neglected annex to hospitals, the outpatient department. It is of immediate importance that the conception of the role of the dispensary

\*Read by invitation at the Sixth, New York City Conference of Charities and Corrections, May 26, 1913.

be radically altered. Far from their being places chiefly for the dispensing of drugs and dressings, they should be the courts of first resort for all the dependents of the community. Maintenance of a condition of health by examination and instruction of the apparently well dependent man, woman, or child, and not the admission room for ward treatment, should be their chief function. The hospital ward should be the annex of the dispensary, and the measure of the service to the community of a hospital plant should be the number of applicants who have been so examined and taught to keep well, that a constantly decreasing number of ward beds would be needed. A consultation room for the healthy might well be their title. Their appeal for support should meet with more response than a demand for more beds for those already disabled.

It is impossible to conceive of a logical attack on ill health without presupposing that diagnosis for prevention will take precedence of treatment of the sick.

With the dispensaries or health clinics of this city reorganized from the point of view of the social and medical hygienist as active agents in the campaign, I see no great difficulty in welding the other various forces professional, social, and religious, already devoted to preventive medicine into an unofficial health army great in its possibilities.

Taking the city as a whole we find ten matters needing action in all boroughs: 1. Sewage disposal; 2, prevention of alcoholism; 3, traffic sanitation; 4, occupation standards for all varieties of buildings, residence, work, recreation, and education; 5, elimination of insect pests; 6, teaching food values; 7, annual medical examinations for everyone; 8, correlation of our public health education system with official health work; 9, unification of the sanitary control and administration of care for the tuberculous; 10, universal registration of patients with syphilis and gonorrhea who are capable of communicating the disease to others. The first two have, up to the present time, escaped official consideration from the health standpoint; the others have had a certain degree of attention, but not enough continued and organized support to obtain lasting results.

1. In every borough shameful, insanitary conditions on land and water exist as a result of the lack of a sound policy in the past in regard to sewage disposal by the city. A consistent constructive policy is urgently needed and should be admitted at once as the burden to be met in a generous way as soon as the credit of the city is freed from the cost of traffic provisions for man and merchandise now under construction or consideration. The present city suffers serious positive harm, and also lacks the use of otherwise admirable opportunities for healthful public bathing and recreation of various kinds because of our sewage polluted waters. The city of the future cannot fail to suffer in health of its citizens and in its material development if the present sewage disposal system is not fundamentally changed.

2. Alcoholism is as yet untouched by sanitarians as a health problem. It has been the good fortune of the liquor traffic, the whiskey and beer makers and purveyors that their opponents have, up to the present time, been for the most part prepared with

but doubtful arguments, and have themselves represented fanaticism rather than public opinion.

Every published record of relief, every official conclusion of actuaries, and we may fairly add every reliable scientific study of the effects of alcohol on living organisms leads to the inevitable conclusion that substandard bodies result from alcoholism, and that no ill, either communicable or degenerative in young or old, is affected other than harmfully by alcohol—alcohol, the depressant drug *par excellence*, the creator of inefficiency, the destroyer of those highest attributes of man, his powers of self restraint, self control, and coordination; alcohol, the predisposing cause of the four great diseases of our city, poverty, tuberculosis, syphilis, and feeble mindedness; alcohol, the most habit forming of all habit forming drugs, before whose evil record opium becomes trivial as an offender; alcohol, uncontrolled, more accessible than water in our thoroughfares, more dangerous than our epidemic diseases. Attack alcohol, diminish its use, teach its dangers, and more than half our burden of economic failure and disease will fall from us.

3. The prevalence of sickness and the increase in deaths from diseases which, we believe, are spread largely as result of exposure of great numbers of the community to extreme risks of personal contact, have made necessary the entry of the health department into the field of traffic control. We need on the part of the companies higher standards in the equipment of conveyances, cleaner methods of maintenance and operation, willingness to submit to regulations as to the loading of their cars. The public must cease to foul its own conveyances by such habits of spitting, coughing, and sneezing as inevitably lead to increase of inhaled infection. Official action may be counted on to direct the operating companies. Education, example, and self interest must be relied upon to train the travelling citizen.

4. In spite of the Tenement House Department and the State Department of Labor, in spite of their record of wise regulations and their accomplishment on behalf of home and factory conditions, it is apparent that we are still far from realizing anything that approaches an ideal or even passable standard for occupancy of buildings. There is needed an immediate unification of inspection of buildings for construction and for occupancy under requirements, high but practicable, precise and exacting, yet capable of adaptation to the widely varying needs of the different boroughs. In this work and in the application of results of inspections for maintenance of standards, all the agencies for health must share, because all are vitally interested. Each neighborhood has its unsuitable buildings, its relics of poor construction, each trade its instances of bad and good working environment, each type of building its low and high mark.

5. Permanent elimination of all mosquito and fly breeding premises in the city is the least we can agree to as sufficient. It is not too much to expect that mosquitoes will be eliminated within the next five years. The means of ridding the city of flies are known; their application does not present any technical difficulties; but only temporary and local improvement can be obtained unless the citizens feel and act upon the responsibility of clearing each his



own premises of conditions capable of breeding and feeding flies.

6. Teaching food values. None but those who will not see can be blind to the results of malnutrition at all ages. It is less a lack of food or ability to obtain it than ignorance of the kinds best suited to the age and work of the individual. The safety of food can be well controlled with nothing more than persistence and extension in well established methods. The use, value, cost, and preparation of food is but little understood where the actual survival of families depends on the closest economy. All agencies that reach the home, that study and offer relief for the dependent and the sick, must share the task of teaching the best way of feeding children and workmen. A mother taught to provide and prepare good food for her family is a greater asset to the community and credit to her teacher than is a sick person healed of his disease.

7. Annual medical examinations for every one sick or well: Until within recent times none but the hypochondriac and the idle rich resorted to the physician's office unless there was pain or fever to be relieved. Similarly dentistry was confined to the extraction of teeth when the ache of ulceration became unbearable. The physician who heals the sick will always be loved for his services. The one who prevents disability and postpones advancing infirmities by his foresight and guidance, will be respected for his wisdom and cannot fail of increasing appreciation.

It takes a keener diagnostic skill to detect the early signs of approaching degenerations than to name them and offer treatment when the clinical picture is well developed. Preventive medicine awaits the appreciation by the mass of people that to keep healthy is worthy of their attention. We shall not be availing ourselves of the services ready at hand, until we have developed a habit in the community of obtaining a competent medical examination at least once a year. The cost of this type of life insurance is low and the demonstrable results most encouraging.

8. Development of our public education system as an organic part of official health work: Education is at present the major part of official health department work. Are not health departments in fact schools of public health in which the teachers are the field workers, the class rooms the homes and shops, the students the people of all ages? Why spend our millions for school buildings and leave them idle a good share of the day and year? What are the children taught more important than what the nurses teach the expectant mothers? Where is the essential difference between teaching the rules of grammar and the laws of personal hygiene? Have the school graduates mastered the information needed to keep them strong and well, while working for their living under abnormal industrial conditions?

Where else should the children begin to learn the elements of health than at school, and who should more properly teach them than the doctors and nurses who know their homes and where they will be working? Take advantage of the habit of school age, keep the children's interest in study by a continuing contact with the schools. The school build-

ing where the child has met a matter of course the school doctor and nurse, should be the headquarters from which the local health campaign starts. Health and education should be made synonymous to the minds of children and their parents.

We now come to the last items in the list of subjects and intentionally the last in order because they concern disease, and disease should be less prominent in any health program than the subject of prevention.

9. Unification of the sanitary and administrative control and care of the tuberculous: Up to the present time, relief rather than sanitary control has been the principle of action. Prevention is based on abatement of a multitude of sources of infection. Clinical and social classification of the diseased spreaders of tuberculosis permits of a proper determination of their care. The machinery of diagnosis and control must be in the same hands as the facilities for treatment, care, and social reconstruction. The hospitals and sanatoriums are means to an end and must be operated with a view to their relation to the entire campaign, and not as separate problems of institutional housekeeping or therapeutic experiment.

10. Notification of disease is the first step in an intelligent understanding of its extent, location, and the possibilities of its control. There is needed in the community a conscience in the matter of notification of syphilis and gonorrhea. The laity as well as the medical profession have failed up to the present time to dissociate the question of antisocial practices from the matter of the prevention of communicable disease by reasonable sanitary restrictions.

A high standard of personal conduct will diminish perhaps more than anything else the increase of venereal disease, but we must not await the millennium before we put out our hands to save the babies from blindness, the children from feeble-mindedness, the clean working man and woman from the lurking poison in the cup and towel in their factory, the guest within our gates, from the diseased cook or waiter in the eating places.

Notification and registration are primary needs. Treatment, education, if necessary segregation, can be used with justice only on the basis of accurate records of incidence of the disease.

Two other matters I would call to the reader's attention, one a problem of a race, the other of a profession. Most preventable diseases among the colored race are from two to three times as fatal as among others of our community. Apart from all thought of consideration of our duty to these guests in our nation, these climatic and environmental misfits in New York, we must recognize the presence of such a mass of uncontrolled infection as a serious danger to the remainder of the community. Their leaders and teachers see the seriousness of their problem, and have recently asked the whole community to help them help themselves. Those races less susceptible to disease, those citizens more favorably situated by inheritance and earning capacity will not reach the standard of health they are themselves entitled to until these weaker members of our community are taught how to save their babies and protect themselves against tuberculosis.

The only service which the medical profession can give which cannot be provided by any other worker

in the medical field, is the making of a diagnosis of personal disease. For this they are trusted upon their merit, in this alone they must be judged. Treatment is of wholly secondary importance. The medical profession can justify itself only by its ability to make accurate diagnosis of illness or to declare a person free from disease.

Without question the most urgent need of the profession in this country at the present time is a reasonable attitude on the part of those in charge of public and private hospitals, which will permit of the universal performance of autopsies. Nothing less will show the public, entitled to know, whether the physician is competent to hold his trust. I believe that the control of preventable disease would be more rapidly advanced by a provision in law, or by voluntary agreement of hospital superintendents that no one shall be admitted to a hospital without consenting to post mortem examination in case of death, than any measure for public health under consideration.

Until such time as we have vital statistics of deaths based mainly upon autopsy records, we shall be deluding ourselves in the fundamentals of the science of preventive medicine.

No local health program can be considered sufficient without the understanding, declared or admitted, that there is a serious need for a Federal health department devoted to directing a National health campaign, and capable of remedying the many forms of water borne and air borne interstate nuisances, and of controlling certain phases of interstate commerce in perishable foods. We should commit ourselves to the support of such a Federal department.

The subjects I have briefly called to attention seem to me worthy of our united efforts whether we serve the public officially or as members of organized groups of volunteer or paid workers. Each main subject presents a problem tempting alike to the technical or professional expert and to the public spirited lay worker. Those associated in health conferences have it in their hands to undertake the labors necessary. The public has more than once recognized such leadership by liberal support.

## THE USE OF ALKALIES AND SALTS IN CERTAIN CLINICAL CONDITIONS OF APPARENTLY OBSCURE ORIGIN.\*

BY ARTHUR D. DUNN, A. B., M. D.,  
Omaha.

*Medical Director, University of Omaha Medical College.*

I have determined to review briefly certain principles of colloid chemistry and then to discuss their practical application by citing several illustrative clinical cases. I trust that this may be worth while, as many of the facts and principles established by the physical chemists have not yet received from medical men the attention that they deserve. The pathologists have been engrossed in the study of etiology, morphology, and immunity. The pharmacologists have busied themselves with the specific action of various drugs and organic extracts. The

physiologists alone have adequately appreciated the physical chemistry of the colloid state as related to the biological problems of health and disease.

Thomas Graham (1861) distinguished two states of soluble matter, crystalloids and colloids, based on the ability of substances in solution to diffuse and dialyze. Crystalloids diffuse and dialyze rapidly. Colloids, on the contrary, diffuse and dialyze very slowly, if at all. The difference between these two states of matter is due to the size of the particles contained in the solution (Wolfgang Ostwald). The size of colloid particles varies from  $1/10,000$   $\mu$  to  $1/1,000,000$   $\mu$ . According to Wolfgang Ostwald, the term colloid is not to be used in a chemical sense, but rather in a physical one, in that it designates a "state" which practically all matter may be made to assume. Liquid colloids are called sols; solid colloids, gels. When the solvent is water the sols are called hydrosols. A solution of gelatin, for example, is a hydrosol, the same gelatin in solid form, a hydrogel. From the biological standpoint colloids may always be considered as holding water or as being held in solution in water. Wells defines the cell physicochemically as "a collection of colloids and crystalloids, electrolytes, and nonelectrolytes, dissolved in water, in lipoids, and in each other, surrounded by a semipermeable membrane and perhaps subdivided by similar membranes and surfaces." Bechhold considers the organism—plants as well as animals—as "a vessel filled with an aqueous solution in which various colloids occur in dispersed form." The dispersed phase is composed of (colloid) substances which are held in the "solvent," or, to use a more correct term, the dispersion means. It has been demonstrated that many of the properties which have long been considered as "peculiar" to cells are really nothing but the properties of colloids and subject to the same laws. As Hofmeister, Pauli, Spiro, and others have well emphasized, *there is an extensive parallelism between the laws which govern changes in the colloid state and the changes observed in the living organism.* The therapy of my cases has to do with the water content; in other words, with the swelling and unswelling of the body colloids.

The following laws govern the swelling and unswelling of protein colloids:

1. Colloids swell in dilute acids and alkalies. Their susceptibility to the presence of acid or alkali is extremely great. Chiari was able to detect one part of carbonic acid in 1,000,000,000 parts of water, a delicacy of reaction far beyond that of our most delicate color indicators.

2. Colloids which have taken up water in the presence of dilute acids can be made to give up the absorbed water by neutralizing the acid with alkali.

3. Salts cause colloids to give up water, but at the same concentration they are unequally effective in this regard. When the efficacy of salts with a common acid radical is compared, they assume the following order: K, Na, Mg, Sr, Ca. When salts with a common basic radical are compared, we get the following: Cl, Br, NO<sub>3</sub>, CH<sub>3</sub>COO, SO<sub>4</sub>, PO<sub>4</sub> (Martin H. Fischer). Moreover, the variations in the degree of swelling and in the volume of solid colloids of the approximate size of body cells occur with a velocity which corresponds with that observed in the

volume changes of living matter itself (Wolfgang Pauli).

4. The foregoing reactions are usually reversible, i. e., colloids can be made to swell and unswell almost indefinitely. This quality of elasticity gradually disappears; hence *colloids may be said to age*. This is comparable to the aging of body cells whose reactions become more and more sluggish as the organism ages. Unswelling occurs with aging. This tendency begins even in fetal life. In the third month of fetal life the body contains ninety-four per cent. of water, at birth sixty-six to sixty-nine per cent., in the adult fifty-eight per cent. (E. Biscoff).

5. Under certain conditions a colloid state may become irreversible. Thus, the water content becomes fixed when albumin is coagulated by heat.

These facts make it evident that the life history of a colloid is to an extent a *function of its water content*. Every organ of the body has, under normal circumstances, a normal water content, in other words, it is in a normal state of swelling. Departures from this normal water content mean disease or death. The constancy of the water content of cells depends on the presence of certain electrolytes and nonelectrolytes and on the maintenance of a neutral reaction. The failure to maintain neutrality is followed by swelling, and impaired function accompanies this. The role of water in metabolism has been too largely neglected. The presence of a definite amount of water in different parts of the body is necessary to their normal life. Water mobilization is a function of the swelling and unswelling of colloids.

Now, as far as the matter has been studied, all injury to protoplasm, be this produced by thermal, mechanical, chemical, or electrical means, results in a lack of oxygen in the injured parts. But every such deficiency of oxygen results in an abnormal acid production (Araki). Lactic acid appears in abnormal amounts in the organs, fluids, and excretions of the body after many different kinds of poisoning, as with arsenic, phosphorus, hydrazine, and chloroform. The pathological consequences of all such poisonings resemble those due to lack of oxygen. How the lactic acid is formed need not be discussed. What interests us is that in the presence of such an acid in the colloids making up the body we have all the things necessary, when water is available, for a swelling of the affected parts. This explains why cerebral edema follows injury to the head, alcoholism (delirium tremens), and "uremia." Edema of the lungs and of the brain, cloudy swelling of the liver and of the kidneys (cellular edema), and acute swelling of the spleen (splenic tumor) are invariable post mortem findings in deaths due to acute infections. All are familiar with the highly acid urine in such cases, and special methods show a high acid content of the organs and of the blood of such patients long before they die. Such facts must have therapeutic significance.

CASE I. R. K., twenty years old, primipara, was brought to the hospital February 10, 1910, on account of headache and vomiting; she was in the seventh month of pregnancy, stuporous and mentally incoherent. There was a lack of coordination of the ocular muscles. A well marked papilloedema was present. The skin was dry, hot, and icteric. The liver could not be palpated and the area of absolute

dullness was small. The pleon was not enlarged. The uterus corresponded to a seven-month pregnancy. Fetal heart sounds were present. The temperature was 100.8° F., the pulse 115, the respiration 20. The leucocyte count was 14,000. Examination of the urine showed a few casts, but no albumin, no sugar, no leucin, and no tyrosin. The twenty-four hour amount was 1,280 c. c. (forty ounces) and contained 4.5 grams of ammonia. Immediate emptying of the uterus was advised, but refused.

On account of the large quantity of ammonia it was decided to alkalinize the patient. Large quantities of sodium bicarbonate water, and lemonade made with milk sugar were urged upon her. In twenty-four hours the patient was completely conscious, the headache and vomiting had ceased, and the jaundice had faded perceptibly. She gave birth to a healthy child two months later after a normal labor.

Diagnosis: Acidosis; cerebral and bulbar edema; probable cloudy swelling of the liver with pressure upon or edema of the bile capillaries.

In this case we were unquestionably dealing with a general acidosis, as proved by the high ammonia output (4.5 grams). Impaired cerebral function was betrayed by disturbed cerebration, by headache, and by vomiting, which symptoms may be interpreted as due to swelling of the cell colloids of cortex and medulla. The interpretation of the jaundice is more difficult, but it may be assumed that with swelling of the cells the bile capillaries became pressed upon, or that these became occluded through an edema of the bile capillaries themselves. Rapid disappearance of the symptoms on alkalization supports these contentions.

CASE II. C. B., man, aged fifty-one years, was seen by me in October, 1912. He stated that he had been suffering for three days past with a "bursting, thumping" basilar and occipital headache which had resisted large doses of the usual headache powders. There had been delirium and vomiting. Fifteen months before he had, against advice, been operated upon for what proved to be a unilateral edema of the left kidney which had declared itself in symptoms simulating renal stone.

The patient's face was flushed. He was extremely nervous and was suffering intensely from headache. The deep reflexes were markedly exaggerated. Both discs showed a swelling of about two diopters. The urine was scanty, highly acid to methyl red, and contained a trace of albumin. The blood pressure was 220. A hypertonic sodium chloride and sodium carbonate solution was administered per rectum. Fruit juices, milk of magnesia, and sodium carbonate were taken freely by mouth. In forty-eight hours the headache had completely disappeared. The patient's blood pressure fell, and when examined two years later was 140. After his initial attack he enjoyed excellent health.

Diagnosis: Acute cerebral edema.

It may be assumed that the headache in this case was due to an acute brain swelling. In fact it would seem quite likely that many headaches are due to acute or chronic swelling of the brain colloids. It is worthy of note that many of our popular headache formulæ, especially those for the relief of the "bilious" headaches, contain little more than alkalies or alkaline aperient salts. In fact, saline cathartics constitute an integral part of the routine treatment of sick headaches. The diuresis which so commonly accompanies the use of these mixtures and which goes hand in hand with the cessation of the headache, is nothing but palpable evidence of the dehydration which has been produced in the body colloids, including, of course, the brain which had swelled to the point of aching.

CASE III. Mrs. B. T., aged forty-five years, was seen one week after a right nephrectomy for hydronephrosis.



She had stood the operation well, but on the sixth day she became rapidly ill.

The patient was in a dyspneic coma. The skin was dry and hot. There was a divergent strabismus, exaggerated knee jerks and ankle jerks, with positive Babinski reflexes on both sides. The pulse was 120, the temperature 100.8° F. The abdomen was distended and peristalsis was absent. An examination of the urine made several hours before showed a specific gravity of 1.026 with much albumin and many granular, hyaline, and cellular casts. Sugar was absent. A specimen could not be obtained at the moment for an ammonia estimate, though one obtained the next morning contained 0.9 gram to the litre.

The stomach was practically empty. Lavage with sodium bicarbonate solution was performed, after which 60 grams (two ounces) of magnesium sulphate and 15 grams (0.5 ounce) of sodium bicarbonate were left in the stomach. A hypertonic sodium carbonate and sodium chloride solution was started by the drop method by rectum. Three hours later the patient was reported as resting quietly. Twelve hours later she came out of her coma, was quite clear mentally, and was breathing naturally. The administration of alkalies and salines was continued and an uneventful recovery resulted.

Diagnosis: Postoperative acidosis; cerebral and bulbar edema.

CASE IV. B., man, aged twenty-five years, had been operated upon five days previously for an acute suppurative appendicitis. The patient did not do well after the operation. During the past twenty-four hours he had been very restless and had vomited frequently.

The patient appeared to be in collapse. Facies hippocratica was present. The abdomen was much distended and no peristalsis could be heard. The pulse was 124, the temperature 98.6° F., the respiration 20. The leucocyte count was 12,000. Nothing of importance was found in the urine, except 1.7 gram of ammonia to the litre.

A stomach tube was inserted and 750 c. c. (1.5 pint) of greenish, feculent fluid was withdrawn. The stomach was washed with a dilute sodium bicarbonate solution. Thirty grams (one ounce) of magnesium sulphate and 12 grams (3 drams) of sodium bicarbonate in concentrated solution were left in the stomach; 0.002 gram physostigmine (teserine) was administered hypodermically. A hypertonic sodium carbonate and sodium chloride solution was given by the drop method per rectum. Three hours later the patient felt much better. The heart rate fell and the symptoms of collapse lessened appreciably. A rapid recovery ensued.

Diagnosis: General acidosis; acute dilatation of the stomach.

CASE V. C. M., man, aged thirty-three years, gave a history of severe headaches for several months past. In the last few days these had become intense and he had vomited incessantly. When I first saw him he was in a noisy delirium which was followed by a stupor with involuntary passage of urine and stools.

The patient lay in a deep stupor. The pupils were dilated, unequal, and reacted feebly to light. The fundi were normal. Incoordination of the extrinsic eye muscles was present. There was noticeable rigidity of the neck. The ankle and knee jerks were exaggerated. Babinski's and Oppenheim's signs and ankle clonus were present on both sides. The abdominal reflexes were absent. Kernig's sign was present. The pulse was 50, the temperature 97.3° F., the respiration 20. A specimen of the urine could not be obtained on account of urethral strictures, until the patient had come out of his coma. The urine was then found to be normal. The leucocytes numbered 5,000; the blood pressure was 120. An examination of the spinal fluid (which came under a normal pressure) showed three cells to the c. mm. The ammonium sulphate and Noguchi butyric acid tests were negative.

In all other respects a thorough physical examination of this patient proved negative. Careful questioning of the relatives and of his family physician failed to suggest any explanation for the existing condition. The seat of the trouble was clearly intracranial. The picture resembled that of a low grade meningitis, but the examination of the spinal fluid failed wholly to substantiate this view.

A diagnosis of subacute cerebral edema was made by exclusion. Magnesium oxide and citrate were administered freely. The correctness of the diagnosis was sub-

stantiated by the rapid recovery of the patient, who enjoyed excellent health subsequently (six months).

The exigencies of practical medicine do not always permit us to study each one of our patients with the accuracy of laboratory experiments, and in this sense some may feel with me that the cases are lacking in certain laboratory and clinical data. Moreover, they are open, as are all therapeutic results, to the ever recurrent *post hoc, propter hoc* criticism. The justification of my report lies in the fact that the therapy employed is based on principles fundamentally sound. There is no longer any debating the fact that certain known conditions determine the swelling and unswelling of colloids. Clinicians have not yet sufficiently considered the truth that changes in the physical state of the body colloids are responsible for certain pathological manifestations which can be corrected by appropriate therapy. To be sure, such treatment is often essentially symptomatic, but it is equally certain that it often leads to permanent restoration of function. Many failures must of necessity be expected in the application of the principles of colloid chemistry to the treatment of disease, but when such is the case it must be borne in mind that these do not change the fundamentals upon which the therapy is based. They can only be an expression of misapplication, of the principles involved, of a lack of knowledge or of technic, or of an incomplete understanding of the conditions and forces with which the therapist is dealing.

808 BRANDEIS THEATRE BUILDING.

## THE APPENDICULAR LIVER.\*

BY RICHARD N. DUFFY, A. B., M. D.,  
New Bern, N. C.

The liver, acting as it does as a filter for the portal system, receives the brunt of the attack of bacteria and toxins elaborated in inflammatory conditions of the area drained by this system. The vermiform appendix, like its attached cecum and all other portions of the intestinal tract, is supplied with venules which form a rich network of ramifications in its various coats. These unite into larger and larger branches and finally form the appendicular vein. This vein traverses the mesoappendix and empties into the ileocecal branch of the superior mesenteric, thus being a part of the portal system. Through the veins of Retzius the appendicular venous system anastomoses also with branches from the systemic venous system which supply this area. As the portal vein enters the liver it divides into a right and a left branch distributed to the respective lobes. The right branch is almost a direct continuation of the main portal trunk, whereas the left is given off at practically a right angle. *A priori*, therefore, we would expect that the right lobe of the liver would be more extensively involved than the left in the attack of toxins and bacteria through the portal system, and such we find to be the case in a majority of instances.

According to Loisson, in addition to the portal route, infectious products from the appendix may reach the liver by way of the bile ducts, the hepatic

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artery, the lymph channels, and lastly through the peritoneum.

It is difficult to see how the bile ducts could play an important part in the development of hepatic infection from the appendix, but Pilliet and Gosset report a case in which they aver that the intra-hepatic bile ducts were occupied by abscesses, which later extended to the liver substance, the abscesses having originated in appendicular suppuration.

The hepatic artery may evidently convey infectious agents to the liver, either by the infection finding its way into the inferior vena cava by means of the anastomosis of the appendicular veins with the systemic system through the veins of Retzius, or, it is possible to conceive that the infection may come by way of the portal vein, fail to lodge in the liver, be conveyed to the heart, and then be brought back to the liver again by the hepatic artery. The latter condition would represent then only a part of a general pyohemic process.

There is a difference of opinion among anatomists in regard to the anastomoses of the lymphatics of the appendix. According to Loisson, the appendicular lymphatics do not communicate with the liver, but during the adhesive processes developed during appendicitis, a connection may be established with the parietal lymphatics which ascend toward the diaphragm. In this way the infection may reach the liver by this route. Poirier, Delamere, and Cuneo hold that the only normal terminations of the cecoappendicular lymphatics are in the glands of the ileocecal group. They state, however, that the subserous network of the cecum anastomoses normally with that of the adjacent parietal peritoneum, and that it is through this network that the cecoappendicular lymphatics may communicate with some of the neighboring groups. It is conceivable that infection may reach the liver, therefore, by the lymphatic route, but the importance of this channel is a minor one. The liver may become infected by extension from suprahepatic or subhepatic collections of pus originating in the appendix and extending through the peritoneal cavity or retroperitoneally, but these cases belong more properly to the group of subphrenic or subhepatic abscesses.

From anatomical considerations it is quite evident that the portal route is the most likely for the transmission of appendicular infection to the liver. This deduction is borne out by clinical observations.

The importance of hepatic infection after appendicitis seems to warrant more than the casual treatment it usually receives in the literature. The subject is dismissed in many of the textbooks in a few paragraphs. Even in the monumental work of Kelly and Hurdon on the appendix, although one may find a very complete discussion of suppurative hepatitis, yet other phases of the appendicular liver receive scant attention.

The present paper by no means intends to appropriate to itself the qualification of being a complete treatise. It is the purpose to discuss the subject, as briefly as possible, under two headings: 1. Toxic hepatitis; and, 2, suppurative hepatitis.

Soon after the onset of appendicitis, as early indeed as the second or third day, toxins elaborated in the appendix may make their way to the liver, mainly via the portal route, and there instigate a

toxic hepatitis. This condition was first described most clearly by Dieulafoy in a communication to the Académie de médecine of Paris, in 1898. The toxins instrumental in causing the changes in the liver cells are not associated with bacteria, and the liver does not suppurate in toxic hepatitis.

A day or two after the onset of the abdominal pain in appendicitis, it may be noted that the patient is slightly jaundiced. The jaundice is rarely deep, and is usually limited to the conjunctivæ and the skin of the face. Its onset may make one doubt his original diagnosis and think of gallbladder and bile duct involvement. However, it is found that the tenderness is not over the gallbladder, but at McBurney's point. The liver is very rarely enlarged and palpation elicits practically no tenderness along its margin. The urine in these cases is of a dark reddish brown color, suggesting the presence of bile. As a matter of fact, true bile is usually not present. When tested with fuming nitric acid the characteristic green and yellow rings of biliverdin and bilirubin cannot be seen as a rule, but a brownish disc is evident at the line of contact. Further tests prove this to be due to urobilin. The urine may further show a distinct trace of albumin, and renal casts will be found in the sediment.

These findings usually indicate a severe grade of appendicular inflammation; especially is this so if albumin and casts be present in the urine. The patient's symptoms may be all the while deceptively mild. The following was a recent case in my practice:

CASE I. Mr. D., aged forty-eight years, had been having at intervals for fourteen years attacks of so called "colic," which had subsided each time after his taking emetics and purgatives. The present attack began like previous ones with pain in the epigastrium. The patient took mustard water and also various purgatives without obtaining relief. I saw him the night of the second day after the onset of his pain. At this time he did not look very ill. His facial expression was good. His pulse was of good quality and 100 to the minute. The temperature was only 99.8° F. The abdomen was slightly distended and showed a slight degree of general tenderness. There was quite marked tenderness definitely localized at McBurney's point. The next morning the picture was still not alarming on superficial examination. The facial expression was still good. The pulse was still 100 and good quality. The temperature, however, was 100.4° F. The tenderness over McBurney's point was slightly more marked, but still not very great. On looking closely there could be seen a slight icteric tint to the scleræ and the skin of the face. There was no tenderness about the liver and no enlargement of the viscus. Operation was advised as being urgent. The abdomen was opened as soon as the patient could be prepared and the appendix was found to be gangrenous and surrounded by considerable fresh plastic exudate, also numerous old adhesions. The appendix was removed and the patient made an uneventful recovery, the icteric tint of scleræ and skin disappearing a few days after the operation.

Occasionally the involvement of the liver in this toxic hepatitis may be quite severe and the symptoms correspondingly alarming. Dieulafoy reports a case in which the early symptoms were apparently mild, but in which there were present an icteric tint to the scleræ and the skin of the face, a trace of albumin in the urine and also urobilin. At operation the appendix was found to be gangrenous and bathed in pus. He continues in his description of the case as follows:

This example shows once more that the gravity of the appendicular lesions is not always in direct relation to the

manifestation of the symptoms. The adhesion of the appendix caused the primary focus for the liver and the kidneys were also affected. On Wednesday the situation became critical. The patient was moribund, the face was drawn and yellowish; hicough was frequent, the urine was scanty and albuminous; the temperature was  $102^{\circ}\text{F}$ ., and the pulse 106. Two injections of serum (one pint each) were administered. He passed a better night. Next day, Thursday, the hicough had almost gone; the temperature was  $99^{\circ}\text{F}$ ., but slight jaundice was still present. Urobilin still persisted in the brownish urine, but, an important point, the albumin had disappeared.

The case then proceeded through a rapid convalescence. Kelly reports an even severer grade of intoxication under the caption of Acute Yellow Atrophy of the Liver, in appendicitis. The case mentioned was reported by M. Ballin (*Annals of Surg.*, 1912, 3, 2, 1903).

The patient, a brass worker, aged twenty years, had three typical attacks of appendicitis. He was operated on in the third, when the appendix, which was adherent, friable, and covered with a fibrinopurulent exudate, was removed. The abdomen was closed without drainage. A few days later, when the temperature and pulse were normal, there was slight jaundice of the skin and conjunctivæ, some vomiting, and restlessness. Two days after this again, the jaundice was increased, vomiting greenish and there was delirium. The next day there was noisy delirium with increased jaundice and vomiting of black fluid, with intervals of deep coma. These symptoms all increased, the stools and urine became involuntary, and the patient had to be held in bed by two men, and finally tied there. The jaundice went on to a deep brown color, when venesection and intravenous saline infusions were used. The urine six days after operation, showed albumin, casts, bile, and crystals of leucin and tyrosin. From this time there was a gradual improvement, and ultimately a complete recovery.

The foregoing cases very probably belong to the class of hepatic intoxication by the portal route. I have recently had a case which illustrates no doubt a mixed venous and lymphatic absorption.

CASE II. About two weeks ago, I saw in consultation a patient, the onset of whose abdominal pain had been one week previous to the time I saw him. He was distinctly jaundiced. A mass could be felt in the right iliac region extending rather high up, and could be palpated also back in the loin. A diagnosis of retrocecal appendix abscess was made. At the operation I found an abscess extending up from beneath the cecum under the ascending colon to the inferior surface of the liver. The abscess was drained from the loin and also anteriorly. A few days after operation, the jaundice disappeared and his convalescence has since been uneventful.

Occasionally one may see a case in which the toxic hepatitis is evidently not of a severe grade, but nevertheless the jaundice is very obstinate and may persist for months until the appendix is removed. Henri Hartman, of Paris, quoted by Dieulafoy, reported a case in which the onset of acute appendicitis was in September. The acute stage subsided, but the jaundice persisted and the liver was enlarged. On October 2nd, the patient had another acute attack and jaundice was still noted. There was also albumin in the urine. On October 14th, Hartman removed the appendix, and by October 25th, the jaundice and albumin had disappeared.

Dieulafoy also reports a case of a woman who had an attack of appendicitis in February. Jaundice appeared soon after the attack and persisted until the following August. The appendix was removed in August and the jaundice disappeared in ten days.

CASE III. On April 29th of this year I was consulted by Mr. M., aged twenty-five years, on account of recurrent pain in the right iliac region extending upward toward

the right hypochondrium. He had been having this pain at intervals for four or five years. During the past year the pain and discomfort had been quite constant. There was marked tenderness at McBurney's point. There was a slight bile tinge to the scleræ and the skin of the face was slightly yellow. The liver was not enlarged and there was no tenderness over the gallbladder. The patient's mother told me that he had been yellow, as she expressed it, for a long time. I operated on May 11th and found an extremely long appendix that extended upward toward the liver. It was literally buried in adhesions. A few days after the operation the jaundice disappeared.

The foregoing cases serve to illustrate fairly well the various phases of toxic hepatitis after appendicitis. The jaundice in these cases is sometimes so slight that it may be overlooked, unless the patient is examined carefully. Very rarely the jaundice may become general. The liver may be sometimes enlarged. The stools are never clay colored. The combination of jaundice and abdominal pain may, of course, make the diagnosis confusing, as one is apt to think of gallstone colic, especially when the appendix is of the ascending type, when the pain may radiate to the hypochondrium. In all cases, however, the greatest tenderness is at McBurney's point and this is the diagnostic key.

All cases of appendicitis associated with jaundice should be looked upon as serious, as they usually represent a severe grade of intoxication with changes in the hepatic cells. Especially is the case to be mistrusted if the jaundice is associated with albuminuria and casts in the urine. If the appendix is not soon removed, there may ensue the symptoms of icterus gravis, urinary and hepatic insufficiency and death.

Histological examination of the liver in fatal cases has shown the lesion to be a granulofatty degeneration of the central lobular cells, a lesion characteristic of hyperacute intoxication.

We shall now turn to a consideration of our second division of the forms of the appendicular liver, namely, suppurative hepatitis, consecutive in the vast majority of cases to suppurative pyelophlebitis. The symptoms of toxic hepatitis, as we have seen, develop early. The symptoms of suppurative hepatitis are later in their full development, although the process is comparatively early in its inception. It is the product of microbic activity in the portal ramifications and the liver substance, whereas toxic hepatitis is due to the action of toxins alone. The picture is entirely different. Whereas toxic hepatitis is not associated with pain in the region of the liver and the liver is not enlarged, as a rule; suppurative hepatitis, on the other hand, is associated with great pain in the hepatic area and marked enlargement of the liver.

During the past year there came under my observation an illustrative case, which was extremely interesting from the standpoint of differential diagnosis. A description of this case will serve to fix in the mind the main points of diagnosis of suppurative hepatitis following appendicitis.

CASE IV. On December 1, 1913, I was called to see Mr. C., a farmer, aged twenty-seven years. It was rather difficult to obtain a satisfactory history from him on account of his very ill condition. It seemed that he had been taken acutely ill about three weeks before with abdominal pain and vomiting. The pain began in the right iliac region. Later he said that he had pain in the right kidney region radiating around to the iliac region. He stated that he had passed some blood (?) in his urine,



though his mother denied this. He had passed no gravel and no stones. He had had much nausea and vomiting. A few days after the onset of the pain, he began to have chills and had since had a chill each day followed by a drenching sweat. The chill was accompanied by an exacerbation of his abdominal pain, which was then general over the entire abdomen, but mainly in the upper half. He had much nausea and frequently vomited. The bowels were quite loose, green in color, and contained much mucus.

I had seen this patient about two years before with an attack of pain in the right iliac region and marked tenderness at McBurney's point. At this time I thought he had appendicitis and advised operation; this was refused, and the patient later passed a renal calculus with a subsidence of the pain.

On examination, at my first visit, it was seen that the patient looked extremely ill. He was much emaciated. His cheeks were sunken. The eyes were hollow. There was jaundice, evidenced by a yellow tinge of the sclerae and of the skin over the entire body. The tongue was dry and coated. The temperature was 99.8° F., and the pulse too and quite weak. His heart was normal in size and position. There was a systolic murmur at the apex, transmitted to the body of the heart. The lungs were negative. The abdomen was generally distended, especially in the upper half and mainly in the epigastrium. There was general abdominal tenderness, most marked in the epigastrium. There was distinct tenderness over McBurney's point, but not so marked as in the epigastrium. There was also marked tenderness in the right costovertebral angle. Neither kidney nor the spleen was palpable. The abdomen was so rigid that it was impossible definitely to palpate the mass in the epigastrium, but a distinct edge could be seen moving with respiration. This edge was about a hand's breadth below the costal margin in the epigastrium and extended straight across to the right anterior axillary line. The percussion note over the mass was a dull tympanitic. The liver dullness extended above to the fourth rib in the right mamillary line and the dullness in the epigastrium and right hypochondrium merged with the liver dullness. On account of the rigidity, one could not palpate deep enough to detect whether or not there was any mass in the appendix region. The urine was reddish brown in color, turbid, and contained bile and a faint trace of albumin. There was no blood.

The patient was seen again on December 4th. He was still having violent shaking chills every day. Some days he would have two chills. The chills were followed by profuse sweats. The abdominal pain was about the same. The bowel movements were still very frequent, grass green, and contained much mucus. At this visit he told me that, about three months previous to the onset of his acute abdominal pain, he had been having much trouble with his stomach. There had been considerable pain and burning in the epigastrium. This was relieved by taking food. There had been much "sour stomach," and on one occasion he had vomited blood. He had not passed any blood recently in the bowel movements, but the preceding summer, he had had dysentery and at this time he had passed blood.

On examination at this time he was seen to be even more emaciated. His eyes were bright. The jaundice was slightly deeper. The tongue was red and glazed; the pulse rapid, but of fair quality. The temperature was 102.6° F. The abdomen was still much distended. There was quite evident bulging in the epigastrium and a diffuse pulsation visible here. Tenderness was very marked over the mass in the epigastrium and quite severe, though not so marked, in both hypochondriac regions. This mass gave suggestive fluctuation. The same edge was seen to move with respiration as was noted at the former visit. The percussion note over the area above the movable edge was, as before, a dull tympanitic, especially dull over the epigastric tumor. The dullness marked with the liver dullness. The mass could not be defined by palpation on account of the marked rigidity. A white cell count showed a leucocytosis of 18,400 per c. mm.

It was quite evident that the patient was suffering from a severe septic condition of some kind. The merging of the dullness over the mass with that of the liver, the descent of the edge with inspiration, the jaundice all pointed to the process being in the liver, and the extreme promi-

nence in the upper epigastrium showed that the greatest involvement was in the left lobe. The swelling here was so globular in outline, fluctuation was so suggestive, and the history of dysentery last summer was so suggestive that, without an examination of the stools for amebae, a probable diagnosis was made of solitary abscess of the left lobe of the liver. The history of the stomach symptoms previous to the onset of the trouble pointed to the possibility, however, of a slow rupture of a gastric ulcer, with possible suppuration in the lesser peritoneal cavity and secondary involvement of the liver, although the pain of onset was not typical. The mass was rather high up for pancreatic suppuration, but this was thought of. The tumor was too definitely in the epigastrium to be the gallbladder.

In conversation with a doctor who had seen the patient at the onset of his illness, he told me that he felt quite certain that when he saw the patient that he had acute appendicitis, so it was considered possible that he might have a suppurative pyelophlebitis with liver abscess.

Operation was advised, and two days later the patient consented, at this time he was in extremely bad condition. However, I felt so positive that I would find a solitary abscess in the left lobe of the liver which I could evacuate in a few minutes, that I thought it advisable to operate. Accordingly on the morning of December 6th, his abdomen was opened through a left rectus incision under light ether anesthesia. Upon entering the abdomen, I found that what I thought was a solitary abscess of the liver was a very marked smooth enlargement of the left lobe. The right lobe was also enlarged, but not to so great an extent. The surface of the liver was everywhere smooth and was of a mottled reddish brown and yellow color. It was quite boggy, but no area of fluctuation could be determined, and exploration with an aspirating needle could locate no collection of pus. There were no adhesions. The gallbladder and bile ducts were normal. There was nothing wrong with the stomach or pancreas. There was no pus beneath the liver. A mass, however, could be felt in the region of the appendix. By the time this amount of exploration had been completed the patient was in an extremely critical condition from shock, and did not admit of any further operative procedure without running the risk of death on the table. The wound was rapidly closed and the patient put back to bed. The diagnosis was quite evidently suppurative pyelophlebitis with suppurative hepatitis, the abscesses being no doubt multiple and small in size. The greater involvement of the left lobe of the liver was unusual. The patient lived six days after the operation. His rigors and sweats continued. He became delirious and gradually weaker, death being preceded by a low muttering delirium. Unfortunately it was not possible to obtain an autopsy.

Suppurative hepatitis following appendicitis has its onset never earlier than the fifth or sixth day after the beginning of the appendix inflammation. It may follow an apparently mild attack. The patient may seemingly be convalescing beautifully. There may be practically an entire subsidence of pain and elevation of temperature, a stage of "treacherous calm." The appendix may have been removed, say on the seventh or eighth day after the onset of the attack, but the mischief may have already started in the portal vein and then the appendectomy is futile.

The chills occurring in this condition are most violent and the temperature rises high. The sweats are drenching. The liver enlarges rapidly and the enlargement may become enormous. The right lobe is usually more involved than the left, contrary to the condition in my case. The spleen shows no enlargement. There is great hepatic and epigastric pain, much nausea and vomiting, and diarrhea is quite a frequent complication. Jaundice may be early or late, slight or intense; the urine usually contains bile, albumin, and casts. The general symptoms are typhoidal, the tongue is dry and red. There may be intermissions in the disease with hope-

ful improvement, as in a case reported by Robins, and the patient may live for many months before he finally succumbs. Practically all cases are fatal, though they do occasionally end in recovery. Hellström has recently reported two cases of spontaneous recovery, and Treves and Koerte have reported a few others. The condition is fortunately rare, though Deaver has given the incidence as between one and two per cent. of the cases of appendicitis. This estimate must be, however, rather high. The occurrence of the condition is unfortunately sufficiently frequent to give us pause.

The infection can usually be traced from the appendicular veins to the superior mesenteric, thence to the main portal trunk, and finally to its ramifications in the liver. The abscesses are usually quite small and multiple, and are not visible on the surface. Occasionally an abscess may be seen bulging through Glisson's capsule. Very rarely there may be a solitary abscess. Koerte and Loisson have each reported an instance of this kind in which operation was successful.

On section, the cut surface of the liver is variable.

The intrahepatic portal veins alone may be affected, and show, where cut, a dark red, firm, adherent clot, or a friable reddish gray clot, or fluid puriform material. Extension from the veins to the hepatic tissue produces abscesses varying in size from a few millimetres to many centimetres. Their contents varies from a thin fluid to a grumous mass. Their color depends on the admixture of pus cells, hepatic elements, bile, and blood. The walls may be smooth or ragged, and they are sometimes lined by granulation tissue. The abscesses are round or irregular in shape, anastomosing along the course of the venous trunks, or showing diverticula due to the parietal coalescence of adjacent cavities. . . . The intralobular veins are filled by thrombi or by pus, with the walls practically normal and the liver tissue showing no change; or by groups of necrotic liver cells (central or focal necroses). The interior of the veins may also appear normal, although the pathologic process has begun to invade the wall, and the peripheral connective tissue shows leucocytic infiltration. Sometimes the latter condition exists without the presence of thrombi in the veins, and there is then an acute suppurative interstitial hepatitis without pyelophlebitis. When necrosis and softening begin, there are abscesses, sometimes confined to the periportal connective tissue, but more often involving the liver lobules. These abscesses may be large or small, they may be widely separated, or the section may be thickly studded with them. The abscess wall is sometimes formed of liver cells, and these may be little changed, or they may be degenerated and much compressed; sometimes the walls consist of remains of the periportal connective tissue. Reparative changes may appear in the shape of granulation tissue lining the abscess cavity, which, if death does not ensue, eventually forms adult connective tissue. Liver cells about the abscess may be evidence of proliferation. Degenerative changes remote from abscesses are generally prominent throughout the liver parenchyma. (4.)

A review of the foregoing consideration of the various phases of the appendicular liver, both toxic and suppurative, leads us inevitably to one conclusion, and that is, that medical treatment of appendicitis is dangerous. The only rational treatment is early surgical intervention—as early as is possible. As soon as the diagnosis can be made, the appendix should be removed. By this means the hepatic and all other complications can be prevented and the mortality in skilled hands will be practically nil. As Dieulafoy says, "In appendicitis we must never wait, for we can never know what the future has in store for us."

## REFERENCES.

1. DEAVER, J. B.: *Appendicitis, Its Diagnosis and Treatment*.
2. DIEULAFOY: *Textbook of Medicine*.
3. POIRIER, CUNEO, and DELLAMERE: *For Lamphams*.
4. KELLY and HURDIN: *The Liver and Appendicitis and Its Diseases*.
5. HELLSTRÖM: *Brit. J. Clin. Chir.*, lxxx, 546, 1912.
6. PILLIET and GOSSET: *Bull. de la Soc. anat. de Paris*, lxxx, p. 1431, 1895.
7. LOISSON: *Revue de chir.*, xxi, p. 522, 1900.
8. ROBINS: *Internat. Clinician*, iii, 23, p. 240, 1911.

ELKS' BUILDING.

## SHORT CUTS IN MEDICINE.

By M. SCHULMAN, M. D.,  
New York.

From the outset I wish to insist, that nothing that follows must be construed as belittling the value of the modern laboratory as an aid to complete and thorough diagnosis and therapeutics. Some of the statements, if isolated from the context, might be so misinterpreted. My purpose in writing is to sound a warning against falling into hasty and slipshod methods of work, by placing undue reliance on the laboratory and consequently neglecting the old, tried, and still useful means to be found in taking a careful history and making full use of the primary senses. It is every bit as necessary today to have exhausted all older means of arriving at a diagnosis, of a gastric disturbance, for example, as it was before the days of Röntgen ray, and then and only then, should we take the additional findings that the ray yields. Gradually, but steadily we are becoming less painstaking and less exhaustive in our clinical study of patients, in spite of the multiplication of diagnostic tests. To the man in the laboratory, who sees his work and his share in the determining of diagnoses steadily growing, the truth of my statement may not be apparent. It nevertheless is true, and the clinician who will examine himself closely and honestly, will soon agree with me. Consciously or unconsciously, in our rush for the evidence of the laboratory, we are making short cuts across the visible, audible, and palpable evidence that the patient presents to the unaided senses. Let us have the evidence of the laboratory, by all means, but let us not rush for it across lots. Let us make as careful studies as possible with the means that we always have at hand and that we can always carry with us to the patient's bedside, even though we are summoned at three a. m., and even though the patient lives in a log cabin; then, more being requisite and the patient's condition allowing the time, let the laboratory yield more symptoms to confirm or disprove our suspicions or conclusions.

I wish to address my plea more especially to the younger generation of teachers in medical colleges. Do you not too often, when studying a pulse with your students, rush for the sphygmomanometer before you have made even a mental estimate of the blood pressure? Have the sphygmomanometric measurement, by all means, but make it a check and an educator. Will not you and the doctors you are helping to form be better equipped to handle a case of uremic asthma, for example, if you train yourself and them to estimate blood pressure with the unaided senses, and then call in the machine to show you how near right or how far wrong you are. Your next estimate will be more accurate. Also, when you meet the uremic asthma, it may be when you

have no sphygmomanometer available, and you have no time to lose. It takes more time and a good deal more mental effort to study a pulse with your finger before resorting to a machine, but it is worth while, and this effort should not be shirked any more than the easier mechanical study. Do you not see the truth of my contention, that the purely mechanical method (unfortunately too fashionable) is a short cut? Let us have the new and everything new that is good, but only to supplement, not to displace what is good in the old.

The Wassermann test is an invaluable aid in the diagnosis and treatment of syphilis. It nevertheless is as true today as it was ten years ago, that the gamma of the cord or brain must be immediately diagnosed and treatment instituted before the Wassermann test can ordinarily be completed. We are growing so dependent on this valuable test, that we do not venture a diagnosis of syphilis without it; and what is much worse, we do not investigate our cases closely as we used to. We rush blood to the laboratory whenever syphilis is a possible diagnosis, without much troubling to find out, until after the laboratory sends a negative report, whether we are not dealing with a carcinoma, let us say. I call a resort to a Wassermann test without a careful and complete clinical study, a diagnostic short cut.

The following brief citation illustrates a present day state of mind too often met with. A young negro, twenty years of age, presents himself with a story of having a painful and swollen right knee of three weeks' duration. He denies having ever had any similar trouble before, and in fact denies having ever been sick in his life, except for an attack of measles at the age of five years. An orthopedic specialist sees the knee, and when asked for a diagnosis says, "we have here a case of synovitis, possibly arthritis. Let us get an x ray picture, do a tuberculin skin test, and do a Wassermann." We have here a short cut attempt at diagnosis. A careful examination revealed the fact that the patient had tissue paper scars over the upper part of the tibia, a scar adherent to bone over the right eighth rib, and a pharynx which is a mass of scar tissue, dense and fibrous. Other physical findings are negative. The administration of antisiphilic treatment relieves the pain and reduces much of the swelling before the result of the Wassermann examination is reported. Too often do we do our diagnostic work and thinking in a similar manner, and this, consciously or unconsciously, because we feel that we have a simple short cut method up our sleeve.

A waiter, aged thirty-six years, comes with a story of six weeks' diarrhea, with consequent weakness. All past history is not relevant. The man is very pale and worn looking, has a lead line on his gums, which is found to be due to lead acetate powders he had taken for his diarrhea. His blood reveals a marked secondary anemia and granular degeneration of erythrocytes. A sigmoidoscope is passed, the bowel wall found congested, but not ulcerated, and a study of mucus from the bowel wall reveals no amœbæ. A later digital examination of the rectum reveals an annular carcinoma. The digital examination is simpler, more constantly possible, and should have preceded the instrumental.

A subcutaneous tuberculin test, for diagnostic

purposes, should be a very rare procedure. To employ it as is sometimes done, before all other known means of arriving at a diagnosis have been exhausted, is to make a very blameworthy short cut.

Lumbar puncture is today a diagnostic procedure altogether too carelessly and unwarrantably resorted to. This is an operation not infrequently followed by very unpleasant and sometimes fatal results. To my own knowledge, such diagnostic punctures (where no medication by spine follows) has resulted fatally in more than one case. Many neurologists, especially, are aware of such results, but unfortunately, they do not often report them. At most, they whisper about them. A diagnostic lumbar puncture should no more be resorted to when the diagnosis can be arrived at by other, even though more laborious study, than should exploratory laparotomy. Nor should it be done to check up the result of treatment with undue frequency, nor should it be done with less care than a major surgical operation. But it should not be omitted when really necessary.

My plea, therefore, is, that doctors may not neglect the use of their eyes, ears, and fingers because laboratory aid is available, but rather call upon the latter to render supplementary symptoms in conjunction with those obtained by the unaided senses. The newer and more exact symptoms obtainable through the laboratory should, and when properly used, will, render diagnosis and treatment more often correct, but when hastily resorted to will soon suffer undeserved discredit. Also, and what is most deplorable, the short cut to the laboratory causes us to neglect the training and development of our senses.

## MEDICAL EDUCATION AND MUNICIPAL HOSPITALS.

### *Some Vital Criticisms,*

BY AUGUST SCHACHNER, M.D.,  
Louisville.

I feel every man a debtor to his profession. BACON.

There is something fundamentally wrong, when about half of the doctors are not as efficient at the end of five or ten years' practice as they were when they graduated, and the wrong can be traced with reasonable clearness to the improper relations of the municipal hospital with the municipality. The medical profession is the sponsor for our health and lives, and if our lives are worth anything, it behooves us to be mindful of what influences the efficiency of the medical profession.

The council of medical education of the American Medical Association has rendered valuable services, but because it has done so, it should not be exempt from public suggestion or public criticism. The council works the soft pedal on the reduction of the number of medical schools, and the loud pedal on the monopolization of all eleemosynary institutions and the wringing from the public and private sources, funds, under the alluring but often misleading title of education, research, and efficiency.

To be more definite, at the beginning of the nineteenth century there were four medical colleges in the United States—Harvard, Columbia, Dartmouth,



and Pennsylvania. And at the end of the century there were about 100, or about forty-eight per cent. of all the medical colleges in the world. As the result, the country became overcrowded with doctors, many if not most of whom were more or less under-trained.

At present there are about 100 colleges. That one third or one half of that number should be entirely sufficient is the difficulty to demonstrate. The Carnegie foundation for teaching developed the fact that there is one doctor for every 568 persons in the United States, which gives us twice as many physicians per mille of population as England, four times as many as France, and five times as many as Germany (Pritchett).

As there is an economic side to medicine that cannot be ignored, it is only fair to say that a certain but undetermined proportion of these 568 to every physician are objects of charity, and another but unknown proportion are professional beats. If the influence of these two factors could be determined, it is needless to say that there would be a shrinkage in the 568 allotted persons for economic purposes.

Furthermore, we must not overlook the strides that surgery has made in reclaiming those confined to invalidism, the influence of sanitation, the advantages that attend a more hygienic form of living, the prevention of diseases through vaccination, notably typhoid fever and others, the aborting and curing of diphtheria and other diseases through serum therapy, and lastly, the general and more successful management of disease in general. To all this must be added the various forms of contract practice that are becoming firmly rooted, and have reduced visits in the east to six and a half cents (Tannenbaum), and in Germany to as low as five pfennig (Carnegie Report, *Bulletin*, vi, p. 298), before we obtain a complete picture of the demoralization from overcrowding and the uselessness of sixty-five or seventy of the remaining 100 medical colleges. Therefore, the demands of the future are plain—fewer, but more efficient doctors.

This demoralization from the excess of medical colleges is not only direct, in disturbing through overcrowding the proper earnings of a physician, but the indirect damage is of equal or perhaps greater importance in driving men, largely out of necessity, to illegitimate practices on the one hand and, on the other, in keeping them inefficient by the schools needlessly monopolizing all the advantages that eleemosynary institutions offer under the specious plea of education and research.

The medical schools frequently behave as though, when a student has acquired an education, it is not necessary for the physician further to seek the hospital to maintain this education; as if the educational advantages which hospitals afford were educational only when applied to the undergraduate; or as though research could be carried out only through medical colleges, when we know that some, if not a majority, of the most productive research laboratories are not connected with a medical college, or are not presided over by a corps of medical teachers.

It is now being realized that the average medical teacher is usually a busy practitioner and therefore is suspected of being entirely too busy properly to fulfill the role of teacher, not to mention the more

exactng duties of an investigator. It must not be overlooked that, theoretically, learning the steps of a new procedure, does not carry with it efficiency in the execution of that procedure. This efficiency comes through practice, and this practice the municipal hospital should give to the profession of the municipality in part or in whole. In this way the efficiency of the profession can be better maintained.

The writer was asked by a well known educator, Is a democratic organization in a city hospital after all the best thing? The answer was, A municipal hospital belongs to the municipality, and should be open to the doctors of the municipality.

Perhaps you will say, that exposes it to incapables. The writer's answer is, If a man is not capable of practising in the hospital, he should not be permitted to practise in the municipality. The indigent sick should be protected. But why should this protection be confined to the indigent class?

The hospital is as important for maintaining a medical education as it is for acquiring one. It will no longer do to say that it admits inefficient doctors. However inefficient the doctor may be under proper restrictions, he has as much right there as the inefficient student; especially so when he is a taxpayer and helps maintain the hospital. If he is inefficient, some school is perhaps largely responsible for his inefficiency, and, it is the school's moral duty to aid and not impede the desire physicians may have to increase their efficiency. Lastly, a partially efficient doctor may thus be made a thoroughly efficient one, and a doctor who is hopelessly inefficient should be eliminated from the community.

It is reasonable to assume that without proper precautions the democratic organization of city hospitals may become chaotic. But since the semiprivate hospitals controlled by religious and other orders are democratic without being chaotic, it is only another way of calling attention to the need of regulating and reorganizing municipal hospitals, when the fear of demoralization is expressed.

The writer has endeavored to point out very briefly the present overcrowding in the medical profession, together with its inevitable attending evils; and the unwise and harmful attitude of the medical colleges in soliciting funds and monopolizing eleemosynary institutions in order that this excess of medical colleges may continue their harmful existence largely at the expense of the public welfare.

Twenty-five years ago the relative scarcity of physicians and the relative simplicity of medicine in a large measure justified both the existence of the number of schools and the practice of not demanding a closer relationship between the hospital and the medical profession. Today these conditions are exactly reversed. We have an excess of physicians and a rapidly increasing complexity in medicine that urgently demand a decrease in the number of physicians and an increase in the opportunity for these physicians to maintain and increase their efficiency by better hospital opportunities, particularly in municipal hospitals. There should be a fairer division of the hospital opportunities between the teaching minority and the practising majority.

Doing away with the excess of medical colleges, is not doing away with medical education, and conducting the eleemosynary institutions with the view

of a fairer distribution of their advantages between the teaching minority and the practising majority, is not denying the schools the use of the hospitals for teaching students or conducting research. It is only calling attention to certain functions of a municipal hospital, which in the past have not received the attention they deserve and will deserve more and more every day in the future, owing to the increasing complexity of medicine.

In discussing this question recently with a research worker of note, some interesting facts were developed. He, without equivocation, was opposed to the use of the municipal hospital by the municipal profession on the ground that confusion would result and that the best end would not be accomplished. He maintained his opposition even after being reminded that in Louisville six institutions were being conducted on democratic lines as smoothly, if not more so, and far more satisfactorily, than the municipal hospital which was only partly on democratic lines.

The research worker also admitted without equivocation, that there is an urgent need for better opportunities to enable doctors to maintain and increase their efficiency; and even reinforced the statement by adding that he frequently received letters, especially from colored doctors, asking for aid in this direction.

As this research worker was positive that the democratic administration of the hospital was not best, and equally positive that a need existed for improving the present opportunity, open to the practising profession, it was entirely natural to ask him for his remedy. This request was attended with a seemingly mental halt that possibly indicated that finding the remedy was not as easy as criticism. The fact that he received letters, especially from colored physicians, is only a proof of the injustice of the situation and the urgent need of reform.

It is generally known that the colored race has, as a race, not yet come into its own, and therefore it was entirely natural that he should receive letters from the source that most keenly felt the injustice of the arrangement. In not so positive a tone, he offered as a partial solution, the employment of a dispensary, i. e., seeking experience and justification for advancement through meritorious services in the dispensary. That this remedy hardly represented a scratch on the surface of this important question, seemed evident from the uncertain tone in which it was offered, and that it will never solve the difficulty can easily be demonstrated.

The research worker's attitude may perhaps better be understood if we remember that he has never been a practitioner of medicine and has always been an attaché of an institution, hardly, therefore, in the most favorable position to appreciate the fine points of this important question. His position brings him in contact with teachers and heads of medical colleges, who, as our experience goes, have as a rule not felt disposed to look at any but their own side of the question, which, we cannot help thinking, is narrow, unwise, and selfish. Had this research worker studied this question as he studied scientific problems, it is possible that he would not only have said that the need existed for improved opportunities as he did say, but might have advocated a fairer ad-

justment of the hospital opportunities instead of presenting a half hearted suggestion of a dispensary as a possible remedy. His position reminds us of the average boards of health; working overtime on health problems on the one hand, and dead to the necessity of providing better means for medical men to maintain their efficiency, on the other hand; forgetting that an inefficient medical profession is a menace quite comparable to bubonic plague or tuberculosis.

The writer's interest in this agitation was aroused by the efforts of the major portion of the Louisville profession to prevent their exclusion from a million dollar hospital then nearing completion, whose bonds they helped to pass at the election, and whose maintenance they are helping to bear, but whose benefits they felt would soon be denied them, and now after organized effort, are in a minor degree, and possibly only temporarily, accorded them.

Every public institution, from the courts to the parks, is open to all under free and equal conditions, except the hospital. This is reserved in an autocratic way for the benefit of about ten per cent. of the profession. The injustice to the medical profession *per se* is quite enough, but behind the medical profession is the community, and what affects favorably or unfavorably the efficiency of the medical profession likewise affects favorably or unfavorably the interests of the community. It requires but little reflection to realize that it is a community's struggle and not a doctor's struggle.

The agitation developed many excuses on the part of the medical department of the University of Louisville, all of which were publicly answered. Those foremost in the movement for the opening of the hospital to the profession insisted that the medical schools did not need all the hospitals, and that the school should be willing to divide the hospital opportunities equally in every way between the teaching minority and the practising majority, especially since the greater part of the medical services which were rendered by the majority, and what affected the efficiency of the majority, affected also the efficiency of the majority's services. They pointed out that universities such as Princeton, Bryn Mawr, and others, were without medical departments, and some universities had the courage and deserved the credit for having voluntarily closed their medical department for the public good.

It was further felt that the academic department of the University of Louisville, which was doing good work and was needed in the community, was hampered by its medical department, since the medical department of a university, if properly conducted, is generally acknowledged to be the most expensive.

In view of these facts, together with the fact that it stood third from the bottom before the State examining board with 21.4 per cent. of failures against it, according to the American Medical Association, in 1914, many agreed that the University of Louisville would do a real service to itself, to the community, and to the medical profession, by concentrating all efforts on the academic department instead of hoping for financial aid to continue a medical department that, because of the overcrowding

of the profession, could easily be demonstrated to be useless and harmful.

The Louisville example is mentioned, not that it is peculiar in itself, but precisely because it is not and can be applied in a modified way to many communities. It bears a relation to a somewhat general condition through two essential features, namely, a need for a reduction in the number of medical colleges as a remedy for demoralization in the profession through overcrowding, and a better and fairer adjustment of hospital opportunities as a means for maintaining efficiency.

The time has arrived for the municipal hospital to assume the role of the postgraduate school to the municipal profession, and this role must be exercised in a direct way with proper safeguards, and not in an indirect way through an advertising faculty and a fee additional to the taxation the profession are already paying for maintaining this institution. There is no field so unsuited for an autocrat as the scientific field.

The objections to the foregoing are the objections common to all advances, and were tersely described by Judge Gaynor, the late mayor of New York, when he said: "We owe all that we have to the steady advance of the human race against the compact mass who always cried out, and still cry out as lustily as ever, 'Don't disturb the existing order of things.'"

## ACUTE INFECTIOUS INFLAMMATIONS OF THE THROAT.\*

BY ISAAC M. HELLER, M. D.,  
New York.

That familiarity breeds contempt is no better illustrated medically than in throat affections. Their universality has rendered laymen and physicians alike indifferent to their possibilities. "It is only a sore throat" is a daily expression, and who has not been told, "as long as it is not diphtheria, doctor, I'm not worried"? Yet in the light of modern diagnosis and treatment, an early and properly managed case of Klebs-Loeffler infection from being the most dreaded has become the most amenable of all severe throat inflammations. At least one feels that in antitoxin he has the veritable forty-two cm. gun of medicine, capable of making its mark every time and destroying the invading enemy.

Fortunately, most sore throats are not of the serious type and many recover under any or no treatment. Nevertheless, one may stumble over a malignant form most unexpectedly, and is brought up with a sharp turn to realize that there are inflamed throats which will tax our medical resources to the last degree. A rather extended experience with some of these severe infections, both in my own practice and in consultation with colleagues, has impelled me to detail them.

To illustrate the violence which such an attack may assume, let me recite to you an abstract of the most rapidly fatal case on record, reported by Sir Felix Semon (1). On June 5, 1888, Sir P. M., aged fifty-six years, previously in the best of health,

awoke at 6 a. m. with a chill, fever, pain in the throat, and difficulty in swallowing. His family physician was summoned, who found him with a temperature of 104° F. and extremely prostrated. Symptoms rapidly became worse, so that at noon he was aphonic and unable to swallow anything. At 4 p. m. Semon saw him. There was no swelling of the tonsils, but marked bluish edema of the pharynx, epiglottis, and arytenoids obscuring a satisfactory view of the larynx. Patient constantly hawked up a rusty colored sputum. Considerable external tenderness of the larynx and some dyspnea were noted. While the medical attendants were in an adjoining room, explaining to the wife the probable necessity of a tracheotomy, they were suddenly called to the patient's side, where he was found pulseless and deeply cyanosed. An emergency tracheotomy was done with a pocket knife, but in spite of its success, artificial respiration, etc., resuscitation was unsuccessful. He had died after an illness of only eleven hours.

Better to understand their present status, let us briefly consider the previous situation of throat diseases. Until the last quarter of the nineteenth century, the utmost confusion in the conception and nomenclature of septic throats prevailed. Almost as many kinds existed as there were names for them. Thus, as recent as 1888, Senator before the Berlin Medical Society described what he called a New and Little Known Disease and termed it Acute Infectious Phlegmona of the Pharynx. A most animated discussion followed, in which the renowned Virchow, Paul Heyman, Guttman, and others took issue with the reader. It was the consensus that Senator's case was but another variation of those previously described under other names by Massei, Sonnenberg, Morel Mackenzie, Solis Cohen, and others.

In 1895, Kuttner (3) published a masterly article on acute infectious throat inflammations, explaining much of the existing confusion, and grouped all the serious cases under three headings or stadiums: *a*, Stadium edematosum (erysipelas); *b*, stadium plasticum, and, *c*, stadium suppurativum (acute phlegmon and abscess). Shortly after, in the same year, Semon, before the Medicochirurgical Society of London, read a most thorough and exhaustive paper based on fourteen cases personally observed covering a period of thirteen years. He stood flatfooted on the conclusion that acute edema of the larynx and pharynx, erysipelas, angina ludovici, laryngitis, submucosa purulenta, edema of the glottis, etc., were one and the same disease, differing not in kind but in location and degree of virulence. His one weak point was that he had been unable to prove his contention by bacteriological studies and his conclusion brought forth a storm of protest in the discussion. Ph. De Santi (2), however, in 1903, before the same society, reported four cases identical, clinically, with those of Semon's, where bacterial investigations had been made in three and showing up *Streptococcus pyogenes* as the predominating germ in all. With better laboratory facilities, other observers have been working along these lines until now, twenty years later, Semon's summing up statement is generally accepted. To quote him verbatim, "the various forms of acute septic

\*Read before the House, Chicago Medical Society, February 1906.



inflammation of the throat and neck, hitherto considered as so many essentially different diseases, are in reality pathologically identical, that they merely represent degrees varying in virulence of one and the same process, that the question of their primary localization and subsequent development depends in all probability upon accidental breaches of the protecting surface through which the pathogenic microorganism which causes the subsequent events finds an entrance, and that it is absolutely impossible to draw at any point a definite line of demarcation between the purely local and the more complicated or the purulent and edematous forms." By "pathologically identical," he later explains, he means the same morbid process not necessarily caused by the same germ.

With this general introduction, let us take up the subject more in detail, following Kuttner's excellent paper read before the Seventeenth International Medical Congress at London, 1913 (4), to which I acknowledge indebtedness. All acute inflammation of the throat can be divided into: 1. Mechanical, chemical, and thermal injuries; 2. infectious processes, that is, as the result of the introduction of pathological germs. This second class can be subdivided as forerunners or complications of *a*, constitutional infections, as syphilis and tuberculosis; *b*, local manifestations of general infectious diseases, as measles, scarlet fever, influenza, pneumonia, etc.; and, *c*, as independent affections situated in the pharynx, nasopharynx, and larynx. It is this last sub-heading which will be considered, and include such names as angina, angina ludovici, Vincent's angina, tonsillitis (erythematous, follicular, parenchymatous, exulcerating, edematous, erysipelatous phlegmonous, and abscess), peritonsillitis, pharyngitis and laryngitis (acute and erysipelatous), submucous laryngitis, edema of the glottis, etc., and the pseudomembranous group. All these and some others are grouped under one heading, acute infectious inflammations of the throat, and belong etiologically, pathologically, and clinically close together, if they are not absolutely identical.

Aside from the Klebs-Loeffler bacillus of diphtheria and the bacillus of Plaut-Vincent, observers have thus far failed to discover any specific germ the invariable cause of the above named affections. Nor is this surprising when it is recalled that staphylococci, streptococci, pneumococci, meningococci, diplococci, and others are denizens of the normal throat. Nor is the predominance of any one necessarily a sign of its particular influence. Moreover, in any given case different organisms may be found on succeeding examinations; or one kind on the surface, while another builds deeper down. Therefore, unless almost pure cultures are obtained, it is difficult to state which particular germ is the real culprit. With our present understanding of the subject, the following are the most important factors in the bacteriological fields: 1. Klebs-Loeffler bacillus; 2. Bacillus fusiformis and Spirochaeta denticola of Vincent; 3. Bacillus coli communis; 4. pneumococcus; 5. staphylococcus; 6. streptococcus; and some others of which little or nothing is known. Of the Klebs-Loeffler bacillus, little need be said, except that contrary to earlier belief, the germ may be present without the false membrane, and conversely one may encounter

a false membrane which in all its clinical and microscopical aspects is diphtheritic without the bacillus being demonstrable. The exact status of the bacillus of Vincent's angina does not seem to be established to the satisfaction of all observers. Bacillus fusiformis appears alone or in symbiosis with Spirochaeta denticola. The clinical picture, however, is so well recognized as to place it well within our consideration. Bacillus coli communis is frequently found in the normal mouth and its part as infection producer is likewise not always clear. Suffice it to say, however, that as a secondary factor it does play a most vital part. Indeed, it has been found in pure culture from the depths of the infected tissue by Lermoyes, Helme, and Barbier. Those foul, fecal smelling peritonsillar abscesses so frequently encountered are largely if not wholly due to this germ.

The pneumococcus (including both the Fraenkel and Weichselbaum forms, since in the throat at least there is no demonstrable difference) has been found to be the cause of the following varieties: *a*, Acute erythematous inflammation of the larynx and pharynx; *b*, pseudomembranous angina of the larynx and pharynx; *c*, acute follicular disease of the tonsils; *d*, erysipelatous, phlegmonous, and abscess inflammation of the throat, in short, practically all possible manifestations. While most of these may occur direct, it is undoubted that some may be carried to the throat through blood channels, as shown by Neufeld, who injected pneumococci into the bloodvessels of rabbits, which promptly developed erysipelas. It further goes to prove the streptococcus is not the only germ of this affection, as has been universally believed.

The staphylococcus (in its various forms, albus, aureus, and citreus) is the commonest of all, is constantly in the mouth, possesses wonderful resisting powers, and is so prolific that even if it is not the primary cause of an inflammation, it may reproduce so rapidly as to crowd out the original invaders before the process is fully developed. However, one is justified in stating that the staphylococcus is rarely the germ of the angular, aphthous, or pseudomembranous forms and least of all the erysipelatous. On the other hand, its influence in the infiltrating, phlegmonous, and abscess styles is equally unquestioned, either alone or with its ally, the streptococcus. This is by far the most powerful and resistant of all known bacteria. It has been found in all possible throat inflammations, superficial or deep, localized or infiltrating, erythematous or pustular, and most of all in the erysipelatous. Its presence renders the prognosis grave and it is the undoubted cause of such complications as pericarditis, nephritis, orchitis, meningitis, osteomyelitis, pyemia, septicemia, etc. Frequently these general complications become so severe as to overshadow or even obliterate the original infection in importance or consideration.

With all these virulent agents in the normal mouth, it would be most natural to ask why severe throat inflammations are not more common. Roe (5) contends that the virulence of an infection depends more on the patient's condition than on the particular germ; while Jonathan Wright holds "that bacteria can be carried as saprophytes in throats for years, totally innocuous to their bearer, but deadly

in its neighbor, and when extreme conditions affect the host the germs may begin their deadly work." Traumatism or other debilitating factor may be all that is needed to break down the fortifications. As to how entrance is effected is likewise readily explained. The throat is full of "physiological wounds" such as the tonsillar crypts, and Gerber has shown there are tiny isolated areas where the normal epithelium is wanting. Thus, although one occasionally elicits a history of trauma, following the ingestion of a hot drink or piece of bone, that is by no means necessary to a thorough understanding of the case.

With this necessarily incomplete review of the bacteriology, let us consider how these apparently different diseases came to be looked upon as one and the same process. First, they all exhibit the same local manifestations in the clinical and pathological sense. The disease may assume, *a*, a catarrhal type limited to the superficial layers of the mucous membrane, with increased secretion of mucus, breaking down of epithelial cells, and outpouring of leucocytes; or, *b*, pseudomembranous (croupous) type where the superficial layers become necrotic and mixing with the outpouring leucocytes form a new membrane more or less adherent to the underlying tissues; or, *c*, the serous exudative or edematous form, where the bloodvessels and lymph vessels pour out a rich supply of fluid element, infiltrating the submucosa, lifting the mucosa and exposing it as a glary, pearly or waterlogged membrane; or, *d*, the cellular exudative or infiltrating form, where the leucocytes, lymphocytes, and wandering cells filtrate through the vessels into the tissues, dissecting their way along the fascial planes of least resistance. If this process is a rapid one, a phlegmon results. Where it is slow enough for Nature to build up a sufficient line of defense, we are apt to find an abscess. Hopkins (6) reports a case where the sloughing extended into the large vessels of the neck, resulting in instant death and my own last experience was quite analogous. It is almost needless to add that two or more forms may exist simultaneously in adjoining localities and render the line of differentiation difficult if not impossible. As best illustrating the pure catarrhal, we have the simple acute laryngitis and pharyngitis. Of the pseudomembranous, are tonsillitis and diphtheria. Erysipelas illustrates the serous exudative class, and under the cellular exudative fall the abscesses and phlegmons, including angina ludovici. Thus is seen that the pathology is identical regardless of the mode or seat of infection. A word about erysipelas. It is far commoner in the throat than ordinarily believed, and many an otherwise unexplained case of facial erysipelas has had its origin there. Careful questioning will often bring out a history of sore throat a short time prior to the skin rash.

Secondly, these diseases all display the same general symptoms, which are, *a*, fever; *b*, leucocytosis; *c*, anemia; *d*, enlarged spleen; *e*, kidney irritation and inflammation, which assumes the parenchymatous form; *f*, depression of the nervous system, often affecting the heart's regulating mechanism and probably accounting for those sudden deaths as in Semon's and allied cases; and, *g*, bacteremia, septicemia, and pyemia. Germs have been found in the

blood of those suffering from severe infections, repeatedly, and with improved technic and method will be demonstrated undoubtedly in the milder forms. That the toxins circulate freely in the blood with the occurrence of pyemia and septicemia is too well known to require more than mention.

Thirdly, the symptomatology, too, shows a common factor. More or less sudden onset, frequently with a chill, local pain and tenderness, difficulty in swallowing are the exclusive pictures in no one variety. Of these, dysphagia is most universally complained of, since the act is quite complicated and involves the tongue, epiglottis, larynx, and all the muscles of the palate and pharynx. It is the first to attract attention, the last to leave the field, and within limits may guide our prognosis. Dyspnea is bothersome only when the epiglottis or laryngeal tissues are included in the inflammatory process.

The diagnosis is usually self evident to anyone who has seen a few cases. Localized pain, dysphagia, angina, or swelling in the throat, combined with fever and prostration, form a picture not readily overlooked. Difficulty is frequently encountered, however, in differentiating between the infiltrating and pustular forms, that is between a cellulitis and a peritonsillar abscess. I know of no hard and fast rule which can be laid down in every case, as both forms may appear identical. In general it may be said that an abscess in its tendency to remain circumscribed, shows a localized boggy to the finger. A cellulitis displays a diffuse brawny extending as far down the pharynx as one can see or reach, accompanied by marked edema of the surrounding tissues. Some of us have had cases of apparently undoubted peritonsillar abscess where we succeeded in striking pus only after repeated trials and concluded our failures were because the abscess was not yet "ripe." Swain (7) has taken particular interest in this form, and concludes that these abscesses are not of the true peritonsillar type (meaning, situated between the tonsils and pillars), but lie within the posterior column of the pharynx proper and, by pushing the tonsils out of place, give the picture of a quinsy. In these cases the ordinary incision will prove futile, and one must go behind the tonsil into the posterior pillar from the inner side, to strike and evacuate the pus. Blood counts and cultures should always be made when feasible.

#### TREATMENT.

The light cases do well under almost any rational treatment. Cold externally and internally, changed to heat later if there is a tendency to pus formation, is the rule. We scarily the edematous forms and incise deeply the pustular and phlegmonous. A word as to antistreptococcal serum. I have seen it work wonders and I have seen it fail miserably, probably because the infection was not of that sort. This seems to be the experience of all the authorities I have read. It can do no harm, however, and should be used energetically where that germ appears to be at fault. Rest and supportive measures suggest themselves. If an operation is necessary, avoid the use of any general anesthetic. Several cases of sudden death under such conditions are on record, some even before the knife was used. In throat infections, it seems, the nervous mechanism controlling

the heart action is so overwhelmed that it apparently cannot withstand the additional shock of the drug. Where analgesia is required, a novocaine solution by hypodermic injection is far safer. I will not take up valuable space with many case reports, but just detail a few of the most interesting.

CASE I. Mrs. L., aged thirty-four years, sent me by Doctor Henschel, May 27, 1912, complained of severe pain in the right side of throat since the day before, worse on deglutition. Inspection showed a swollen mass in right arytenoepiglottic fold with slight edema of right side of pharynx and arytenoid cartilage; the mass was more freely incised. Next day, she felt somewhat better, but on the 29th, following a poor night, she was sent to Lebanon Hospital. Swelling now occupied whole space between base of tongue and epiglottis on right side and edema had extended to the left. Temperature  $102^{\circ}$  F., pulse 120. Blood count showed 14,000 whites, and eighty per cent. polynuclears. Again incisions failed to strike pus, although I felt sure of its presence. Some relief followed, but the next day swallowing was limited to fluids. On June 1st, middle finger of right hand became the seat of a painful phlegmon, which was treated and opened freely the next morning. Throat condition remained stationary and, on the 3d, a small round tender area developed to the right of the cricoid cartilage, externally as if an abscess was getting ready to point. The following day another attempt was made to strike pus, this time with success, and coming from a point quite anterior from where one was led to expect. In fact it was almost in the root of the tongue. Marked relief and a speedy recovery followed. There were two more of this type, but less severe.

CASE IV. Baby L., aged two and one half years, seen on September 22, 1914, with Doctor Axelrad; was operated upon two weeks prior for a swelling under right jaw, probably an adenitis. This was practically healed. Mother noticed that the child breathed noisily during the night and deglutition seemed difficult. Doctor Axelrad was called in the morning and noticed a small tender swelling in the neck to the right of the cricoid. During the examination and manipulation the child became cyanotic and ceased to breathe. Seizing a knife, the doctor plunged it into the throat to do a tracheotomy, but fortunately entered an abscess cavity and released a fair amount of pus. Artificial respiration was instituted so that when I arrived, a short time after, the little one was doing nicely. Examination showed pus exuding from the wound to right of larynx, while inspection of throat disclosed marked edema and swelling of the left posterior pillar. Tonsil normal. Introducing a finger, I found the infiltration extended far down and pressure forced considerable pus from the external wound. A probe introduced was directed up and to the left passing between larynx and pharynx and met the finger. Marked infiltration of surrounding areas could be made out. It was quite evident that the pus had traveled from the left to the right side, pressing on both esophagus and trachea (perhaps on the vagus), accounting for the sudden interference with respiration. Stridulous breathing persisted for a time, but the patient made a complete recovery.

CASE V in an adult was bilateral and did not point externally. They are the only ones I recall involving the pillars as mentioned by Swain.

CASE VI was the most interesting and impressive of the series as well as the most gratifying in its result. It corresponded in its rapidity of onset and development to that of Sir Felix Semon. Miss B. D., aged twenty years, engaged to be married shortly, spent Sunday evening, February 10, 1913, at home with a small party of friends. She retired at about eleven and slept as usual until five the next morning when she was suddenly awakened by a sharp pain in her throat and mouth. This rapidly increased, and at 9 a. m. her physician, Doctor Raymon, saw her. He found her in a temperature of  $101.5^{\circ}$  F., pulse 125, marked difficulty in swallowing fluids and moving her jaw. At 11 o'clock, floor of mouth showed distinct swelling, and it was almost impossible to move the tongue. Patient was removed to the Mount Vernon Hospital. I saw her at 3 p. m. and found a robust young woman with a temperature of  $103.5^{\circ}$  F., pulse 138, respiration 28, with her mouth half open and fixed, drooling saliva. Infiltrated area under chin extended almost from ear to ear and down to the thyroid

cartilage, brawny and boardlike. This, I was told, had extended perceptibly since her entrance. Tongue was pushed against hard palate so that its under surface could be seen without an instrument. This member itself was not thickened, and after forcing it down a small laryngeal mirror could be slipped over and a fair view of its posterior surface and the larynx obtained. There was no involvement here. Patient looked profoundly ill and septic, while swallowing fluids was entirely out of the question. Mind, this frightful condition had taken but ten hours to develop. Operation was counseled at once and under one per cent novocaine, locally, a wide collar incision was made at the level of the hyoid bone down to the deep fascia of the neck. Induration was extreme, making the impression as if using a dull knife, although this was in reality quite sharp. No pus was encountered. Tissues separated as widely as could be by blunt dissection and a counteropening made beneath the tongue through the floor. Drains were inserted, wounds left open and wet dressings applied. Patient was given twenty c. c. antistreptococcal serum as soon as she reached her bed. Next morning she felt somewhat easier. Temperature had fallen to  $101^{\circ}$  F., pulse 106, she could move the jaw a trifle, but swelling and tenderness persisted. Ten c. c. serum was administered again and wound dressed. Considerable necrosis had taken place, but no free pus. The next day showed marked improvement. Septic appearance had disappeared, she could swallow fluids and seemed quite cheerful. On dressing wound, marked necrosis was evident as in a severe cellulitis elsewhere. From that time on, case progressed favorably and without interruption. This was the only true example of angina ludovici type which I have seen recover and I felt it was due to the serum.

CASE VII. Mr. H., aged fifty years, furrier, was seen four days after Case VI on February 23, 1913, with a history of having had some teeth drawn from the lower jaw some days before. Three days later a swelling had appeared under the chin, which soon became so extensive as to lock the jaw. I found his clinical picture almost the counterpart of the young lady's. Tongue fixed to palate, speech limited to gutturals, and deglutition impossible. In fact a more pitiable sight than either of these patients presented with their open jaws and appealing, anxious facial expression was difficult to imagine. Under the chin was an area of swelling and induration extending down to the hyoid bone and six to seven inches across. One spot seemed to fluctuate, especially with one finger in the mouth and to the right of the tongue. He was removed to Lebanon Hospital at once, where, under local anesthesia, a deep collar incision was made as before. Here, however, we discovered about an ounce of foul smelling pus. Finger introduced showed much breaking down and wide infiltration, extending below the hyoid in front and well toward the ramus to the right. Speedy relief and eventual recovery followed in a short time.

Thus far, results have been satisfactory, but I have three more less fortunate.

CASE VIII. Mr. K., aged thirty-six years, dentist's mechanic, called, July 13, 1911, with pain in the left side of throat for two days, worse on swallowing. Left side of neck quite swollen in tonsillar region and very tender. Palate and uvula edematous, while left half of throat was swollen and infiltrated as far into the hypopharynx as could be seen or felt. A satisfactory view of the larynx interior could not be obtained owing to swelling and pain. His voice was clear so that in all probability cords were uninvolved. Numerous deep incisions were made and he was sent home with proper instructions. Temperature  $102.5^{\circ}$  F. Unfortunately, his family was in the country and he had no one to nurse him. He spent a poor night and the next day the swelling had extended down the outside, almost to the clavicle. Marked swelling had occurred within, but no pus. He presented a most miserable aspect and I insisted that he go into a hospital where he could receive the needed attention. Before leaving, I again made some deep incisions in the hope of striking a purulent focus, but in vain. He went home and stayed there a day or so without medical attention as I subsequently learned. Then he was taken to Fordham Hospital, where he died a day later.

CASE IX. Mrs. H., aged twenty-nine years, mother of two children, had complained of sore throat for three days prior to my first visit on February 4, 1913. (This with



case, it was made three within nineteen days). She had been in bed for a month by her family physician. I found her lying fairly well but with severe pain on left side of throat and neck and unable to swallow even fluids. There was marked brown swelling of floor of mouth at angle of jaw and externally about tonsillar region; no evidence of pus. Uvula was markedly edematous and a slight exudate resembling a false membrane covered the tonsil. Deep incisions were made in posterior pillar low down and in anterior pillar through tonsil to posterior column. About a thumbful of grumous pus was evacuated. She had some relief and could swallow fluids until two o'clock the next morning, when pain and dysphagia became quite severe. At six o'clock she felt something give way in her throat and expectorated some pus, again with temporary relief. I saw her at 9:30 a. m. when she looked decidedly sick. Temperature had risen to 104° F., pulse 120, deglutition impossible, and throat edema increased. Site of incisions showed considerable necrosis; exudate had spread and gave off a foul odor. I sent her to Lebanon Hospital at once where she arrived at 11:30 a. m. with a temperature of 106° F., pulse 138. At 2 p. m. Doctor Lederman and Doctor Roth saw her with me. By their advice I extended throat incisions deeply down the posterior pillar as far as possible, literally slicing it to ribbons, but found no pus and only moderate bleeding resulted. Then Doctor Roth, under local anesthesia, incised outside of neck most freely in the indurated area between left chin and clavicle. He succeeded in establishing a communication with one of the openings I had made from within; wound drained but not sutured. Twenty c. c. anti-streptococcus serum were administered and patient was put to bed. Slight relief followed, but she passed a poor night, being awakened from a drowsy slumber every few minutes by efforts to swallow. Next morning temperature had fallen to 101° F., pulse 120, weakness extreme, and speech impossible. Whole of left throat was one foul smelling necrotic mass, and edematous swelling had extended to the right. External wound dressed and likewise showed extensive sloughing. Patient conscious only at intervals. At 4 p. m. temperature rose to 104.5° F., pulse scarcely perceptible, and at 6 o'clock she died; two and a half days after my first visit.

CASE X. Mrs. T., aged sixty years, mother of nine children; had enjoyed generally good health, except for hemorrhoids for which she applied only home remedies. In the latter part of October, 1914, her hemorrhoids remained prolapsed, and, suffering with severe pain she called her physician, Dr. R. The following day she mentioned pain in her throat for the first time and difficulty in swallowing. I saw her with Dr. R. on November 1st. She then had distinct swelling of the right side of pharynx, involving posterior column only and extending down to larynx. Uvula, arytenoepiglottic fold, and epiglottis markedly edematous. These areas were freely scarified but no pus discovered. Temperature was 104° F., pulse 125, and none too strong and patient looked sick indeed. During the night she had some fainting spells, but no chills. Next morning, throat presented same picture, but free edge of epiglottis was much thickened and covered with a white hieb, which I thought might be an abscess. Its incision brought none forth, which proved it to be but necrotic tissue. There was slight redness and tenderness of the skin at level and to right of larynx, which we believed to be due to much poulticing. Larynx itself tender, but, aside from slight infiltration of right arytenoid cartilage, was uninvolved. Voice quite clear, deglutition limited to water in small quantities. When seen, November 3d, temperature had ranged from 102° to 104° F. Necrosis had spread all over lingual surface of epiglottis while edema of uvula and in tonsillar region had diminished. Numerous small incisions were made in infiltrated tissue without result. Reddened area on outside of neck had extended perceptibly, and it was now clear that it was part of the inflammatory process progressing externally and not due to the hot water bag. Antistreptococcus serum given at once. Deglutition was somewhat easier, and with effort she managed to take some milk. That night she had more weak spells when pulse and respiration almost ceased, but from which she rallied after stimulation. In the morning, it was seen that external infiltration had spread almost to clavicle and quite brawny, though not very tender. Dr. L. M. Kahn was called in, and confirmed the

diagnosis of an extensive cellulitis, and under novocaine anesthesia made several deep incisions from the clavicle upward and above the hyoid level. No free pus, but much fecal odor, serousianous material, strongly presumptive of a colon bacillus infection disclosed. Patient improved for a day and could swallow fluids quite readily. Two days later, because of extending infiltration, Doctor Kahn operated again, but under ether. Now he laid the whole of right side of neck wide open from ramus to clavicle. Tissues were necrotic everywhere and broken down. Wounds were drained with rubber tissue and purposely not packed to avoid pressure necrosis. The next day, November 8th, showed no improvement and wound was dressed at 9 a. m., but lightly as before. Her physician saw her about 5 p. m. weak, but fully conscious and not suffering. He had left the house but a short time when patient sustained a severe hemorrhage in the wound and bled to death before aid could be summoned. This, then, was a case of *Bacillus coli* infection and Doctor Kahn believed it to be an embolic process with its source in the ulcerated hemorrhoids.

In conclusion, permit me to say that I am keenly aware that many phases of this important subject have been omitted and others only lightly touched upon. My object was to group these more or less confusing throat affections in such a way as to give the general practitioner a bird's eye view of them, as it were. If I have succeeded in doing this, I shall be content.

#### REFERENCES.

1. S. MEYER: *Trans. Med. Soc. N. Y.*, 1905, 2, 187. 2. DeSANTI: *Ibid.*, 1903, p. 313. 3. KUTTNER: *Larynx, Edem, etc., Virchow's Arch.*, 1903, p. 307. 4. TOLEM: *Ann. Otol. Rhinol. Laryngol.*, 1913, 22, 11. 5. Arché: *Ann. Otol. Rhinol. Laryngol.*, 1913, 22, 11. 6. HOPKINS: *Ibid.*, 7. SWAIN: *Ibid.*

450 TREMONT AVENUE, EAST.

## THE RECUMBENT POSITION IN SCOLIOSIS.\*

*An Invaluable Aid in the Treatment of the Early and Progressive Stages.*

BY MAX STRUNSKY, M. D.,  
New York.

Since Abbott made his important contribution to the NEW YORK MEDICAL JOURNAL,<sup>1</sup> thousands of articles have been written in this short time on the treatment of structural scoliosis. While we have been under the spell of this new orthopedic baby, we have entirely neglected to say anything on the treatment of the earlier stages of scoliosis, which must still be considered the preplaster cast stage. This spirit shows itself plainly in the manner in which patients with scoliosis are treated at present. While the patient with the structural lesion gets expert advice, and time consuming and complicated jackets are made for him, requiring a trained staff of physicians, the child with the early lesion is very much abused. A woman's plain corset is often prescribed for him, and, at best, he receives perfunctory exercises. Children with incipient scoliosis are still sent to school by the thousands, though their spinal column is not strong enough to support the weight of their head and shoulders, and are made to sit up for hours. Every time a child whose spine lacks the stamina normally to balance the superincumbent weight, sits or stands up, the sickly force which eventually makes a cripple of him is lashed into activity. Moreover, like an evil instinct, the

\*Part of the craft of the Hospital for Deformities and Joint Diseases, February 17, 1915 to March 1, 1915, and April 27, 1912.

superstition that the patient will "outgrow it" has survived the centuries and is still alive in the minds of parents of all classes. The child with the early lesion in the vast majority of instances is at present compelled to wait till the deformity has advanced to the point of obvious asymmetry before it can hope to receive serious attention.

Do I mean by the early stages, the postural cases only? No! I refer especially to that classical second stage so profusely described in the textbooks. It is the period in the evolution of every case of scoliosis where the deformity makes the maximum progress. I believe that the treatment against the tendency of the spine to become deformed and the treatment of the actual lesion itself are two distinct problems. I make this obviously artificial classification for the reason that the treatment which helps one does not help the other. For example, no gymnastics, no matter how often or how skilfully executed, have ever straightened a curve which has once actually become organized, or one which the patient still retains when he is in the recumbent position. On the other hand, jackets, casts, and supporting apparatus of all kinds have no power to bring to a halt the pathological forces which cause the deformity. This is shown by the angulation of the ribs (the force of a cast merely bends the ribs, while the curves in the spine persist), which we have seen in our own dispensary in several cases where the Abbott method was used in this soft boned stage. Also when the straight cast is used, though it prevents the spine from deviating for the time being while the cast is on, yet the flattening of the bodies of the vertebrae, the distortion of the laminae, spinous and transverse processes, and the ribs, and the rotation of the vertebrae (1) and other deforming processes often continue within the spinal column that is encased in a cast. This has been shown by the studies of Klapp and others on unlimited material, when casts were used in all stages of scoliosis, by Hoffa on the continent, and by Lewis Sayre in the United States. The prejudice against all confining apparatus arises also from the fact that they torture the child, make him "air hungry," swallow faced (look at the pinched expression of the children who have casts on), cause atrophy of muscles, produce anemia, delay the ossifying process of the vertebrae, a condition which is already present in early scoliosis and is probably one of the causes of the deformity. This does not mean, however, that the use of casts in the treatment of scoliosis is to be deprecated. On the contrary, only casts, felt, and force have ever straightened a curve which had structural changes in it. But in the early and the progressive stages the use of casts is not necessary, and for the foregoing reasons are even dangerous. To bring to a halt the pathological process itself, is the important indication in all early and progressive cases. The correction of the lesion itself is comparatively unimportant. The reverse is true in the arrested structural variety. Casts, as we have shown above, have not the power to do that, while recumbency, by immediately relieving the spine from the weight of the body, is the most effective barrier we have to the continuation of the deforming process.

All the theories of the causes for scoliosis, from

the oldest theories of rickets of the vertebrae, short limb, empyema, etc., to the numerical variation, cervical rib, sacroization of the fifth lumbar vertebra, absence of ribs, supernumerary ribs, etc., must remain pure theory. For every one of the supposed causes is frequently found in perfectly straight spines, while in some of the worst scoliotic specimens, anomalies of any kind are frequently found wanting. Why congenital anatomical peculiarities should manifest themselves so much later in life, certainly needs explanation. There must therefore be an underlying condition, beside the existence of anomalies, which acts as an exciting cause of scoliosis. The hypothesis of Schanz,  $B > T = D$ , is that in spite of the presence in the spinal column of anatomical peculiarities, when the spine as a whole has the power adequately to support the superincumbent weight, scoliosis does not occur (2). On the other hand, no matter how free of anomalies the spine may be, so long as the weight of the head, shoulders, and arms, is too heavy a load for it, scoliosis must occur. Like adolescent flat feet and adolescent coxa vara, scoliosis is due to discrepancy between the weight and the support, and all these conditions occur at puberty, because at that time the weight of the body suddenly becomes great, while a corresponding increase in the strength of the support is for some reason delayed. Physicians discourage early walking in a child who has rachitic limbs for fear that knock knee or bow legs will supervene. Adolescent flat feet and adolescent coxa vara are given plenty of rest so that the tarsal bones will not become distorted and the head of the femur is not pressed down or telescoped (3). In scoliosis, which is a similar condition, due also to disturbed balance with an identical pathology, rest is neglected, though given plentifully in the other conditions. We must remember that animals do not have scoliosis, while it is prevalent in man. Scoliosis is due to the fact that man has not yet learned to support his weight adequately in his comparatively new assumption of the erect position.

Recumbency for scoliosis has been tried from time immemorial, often with disappointing results. This was so because it naturally has no effect on the lesion itself, though as a means of preventing further progress, it is invaluable. This is not theory. Schanz put his patients to bed for nine months in this stage. Klapp has tried recumbency in thousands of cases. I have tried it often, and the result is more than encouraging, though I do not minimize the difficulty and hardship of keeping a child in recumbency a great many hours a day for an indefinite period. Still enough is known of recumbency to prove that it has power to hinder the further advance of the trouble more effectively and more naturally than casts or any thing else we have conceived of at present. I consider, therefore, the present treatment of early scoliosis as vicious. For the patient with the early lesion, exercise is given first of all. If the child gets worse in spite of the exercise, a jacket is added. If he gets worse in spite of the exercise and jacket, which are the rule in bad cases, then perhaps recumbency is resorted to. Why not reverse the procedure? For every child who has a tendency to a weak spine, complete freedom from the weight bearing function should be





silicofluoride solution should be held in the mouth for two minutes after the cleansing with the magnesium and perborate dentifrice. This cleansing is to be carried out both morning and evening.

**Morphine in Mitral Disease.**—G. Lemoine and G. Devaux, it is stated in *Presse médicale* for July 4, 1915, think that morphine is decidedly useful in mitral lesions, especially in a dose of 1/24 grain (0.0025 gram) of the sulphate, in combination with appropriate amounts of strychnine, sparteine, and ergotinine. The dyspnea is thus effectually relieved and the heart beats slowed and strengthened. The improvement may be permanent in cases not too far advanced. Neither cyanosis of the face, peripheral edema, nor albuminuria contraindicates the use of morphine in these circumstances. [The advice is not new, but it is worth keeping in mind.—Eds.]

**Treatment of Acute Dysentery.**—F. M. Sherman, in the *Kentucky Medical Journal* for August, 1914, discusses that form of acute dysentery which is prevalent in the summer months and early autumn, attacking both young and old, and more serious in the young. In the treatment, complete rest in bed is, in the first place, to be enjoined. Medically, the first indication is to unload the bowels thoroughly, and for this purpose, the author especially recommends a mixture in equal parts of castor oil and syrup of rhubarb:

R Olei ricini, ..... ad 5ss (15 c. c.).  
Syrupi rhei, .....

M. Sig.: One teaspoonful every two hours to a child a year old until bowels move freely.

The foregoing mixture is advantageous in that it not only evacuates the bowel but exerts an astringent aftereffect. This is often sufficient, in mild cases, to control the hemorrhage from the intestinal mucous membrane, and the only other drug required is bismuth in one of its compounds, preferably the subgallate. In the more severe cases, however, resort to some more powerful remedy, such as tannic acid or opium, will be necessary. In such cases, moreover, the author always administers enemata of an emulsion of elm bark or starch water, which places a coating over the bowel mucosa and is very serviceable in quieting tenesmus. A soft rubber tube, well lubricated, is used. The diet in these cases should be nutritious but light, and should leave as little residue as possible. Stimulants may be used if there is much prostration and emaciation, and iron or syrup of lactophosphate of calcium should be given after the stools have returned to normal and the appetite has improved.

**Treatment of Acute Pulmonary Tuberculosis.**—Roqueplo, in *Journal de médecine et de chirurgie pratiques* for November 25, 1914, reports the case of a man admitted to a hospital in a condition of marked prostration, with fever, copious sweats, coated tongue, dyspnea, auscultatory signs of diffuse bronchitis, some abdominal tenderness, diarrhea, and borborygmi in the right iliac fossa. Typhoid fever was excluded by a negative Widal test and the absence of rose spots, and three days after admission, an initial intravenous injection of two and a half drams (10 c. c.) of a colloidal silver preparation was given. Further injections were given on the second

and third days thereafter. The intestinal symptoms disappeared, but the lung condition grew worse, fine subcrepitant rales becoming audible from apex to base of both lungs, dyspnea increasing, and a mucopurulent sputum containing numerous tubercle bacilli being expectorated. Considerable emaciation was noted. In the succeeding ten days four additional intravenous injections of two and a half drams each were given. The sputum continued to show numerous bacilli, but the pulmonary state showed progressive betterment, the rales diminishing and breathing becoming easier. In the ten days following, six injections were given, all but one in a seventy-five minim (5 c. c.) dose. Rales and fever disappeared some days before the last injection was administered. Three weeks later the patient had recovered most of the weight he had lost and appeared entirely cured, auscultation revealing no abnormal sign. The result is ascribed to the colloidal silver injections, as these constituted the only therapeutic measure employed.

**Germicidal Power of Glycerin.**—E. H. Ruediger, in the *Philippine Journal of Science* for November, 1914, presents an investigation of this subject. Glycerin possesses a distinct, though feeble, germicidal action. The action varied greatly with the temperature, being much weaker at 15° C. than at 30 to 35° C. It also varied according to the diluent employed. In glycerin diluted with normal saline solution the bacteria succumbed much sooner than in glycerin diluted with bouillon or horse serum. In a fifty per cent. solution of glycerin in normal saline solution all the organisms not forming spores, died in less than four days, though the anthrax bacillus—probably because of the presence of spores—was not destroyed in fifteen days. Glycerin seemed to be a selective poison for the plague bacillus, the cholera spirillum, and the diphtheria bacillus, killing them all in one to four days even in a twenty-five per cent. solution.

**Treatment of Seminal Vesiculitis.**—Thomas and Pancoast, in the *Annals of Surgery* for September, 1914, lay stress upon the frequency with which chronic seminal vesiculitis is responsible for obscure nervous and arthritic conditions. In the treatment, massage is recommended as the best primary procedure in the average case. In the majority of instances it is sufficient to effect a cure. In some cases autogenous vaccines may be used with gratifying success. Occasionally, spontaneous cure occurs after a time. Indications for treatment vary, however, according to the condition of the ejaculatory duct and vas deferens. This can be determined by vesicular palpation, massage, and microscopical examination, supplemented, when necessary, by vasopuncture and colloidal silver radiography. If the ejaculatory duct is completely stenosed, massage is futile, while if the vas is occluded near the seminal vesicle, vasopuncture or vasostomy and direct medication will similarly accomplish nothing. Seminal vesiculotomy has a definite indication in a certain proportion of cases, while vesiculectomy is reserved for the grave, chronic—including tuberculous—cases. Colloidal silver medication has, in the hands of the writers, resulted in at least a temporary cure of a number of cases of persistent chronic vesiculitis.

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CHARLES E. DE M. SAJOUS, M.D., LL.D., ScD.  
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## DRUGS AND THE VASOMOTOR CENTRE.

Many gaps in our knowledge are still to be supplied in connection with the action of drugs in disturbances of the vascular system. The exact manner in which some important drugs affect the blood pressure is in many cases imperfectly known; it is evident that more exact knowledge would be useful, in a case of low blood pressure after vasomotor paralysis, to explain whether a drug employed to counteract the low pressure acts upon the heart or upon the vasomotor centre or upon the peripheral vessels. Pilcher and Sollmann (*Journal of Pharmacology and Experimental Therapeutics*, vi, 323, 1915) have made a contribution to our knowledge of the action of various drugs upon the vasomotor centre. They isolate an organ (spleen or kidney) from all connection with the animal except that it remains in connection with the vasomotor centre through its nerves; the bloodvessels of the organ are perfused from an independent source and so the outflow from the veins is independent of changes in the blood pressure of the animal, but is dependent upon the activity of the vasomotor centre. Of course we well understand that such a method is not the easy, obvious one which many, unacquainted with laboratory work, may suppose. In interpreting

the results, it is important to remember that anemia and asphyxia, however produced, stimulate the vasomotor centre. In this way it was shown that the fall of blood pressure after the administration of nitrites is caused solely by their direct action upon the peripheral vessels; many had believed that these drugs have, in addition to this peripheral action, a depressing action upon the vasomotor centre. Pilcher and Sollmann find on the contrary that accompanying the fall of blood pressure, owing to the peripheral vasodilator effect, there is often an actual stimulation of the vasomotor centre; this is, however, secondary and caused by the anemia of the centre through the fall of blood pressure.

It is, of course, well known that strychnine in convulsive doses causes intense stimulation of the vasomotor centre; there has been some doubt as to whether it has this action in nonconvulsive or therapeutic doses. Pilcher and Sollmann found that strychnine in large but not convulsive doses may stimulate the vasomotor centre moderately; usually it was without action. If, however, the centre is already under stimulation as a result of asphyxia, such doses of strychnine cause intense vasomotor stimulation. The same would probably be true in a case of anemia of the vasomotor centre. These results would seem to furnish a firm pharmacological basis for the use of strychnine as a vasomotor stimulant in certain cases accompanied by conditions of asphyxia or of anemia.

Epinephrine had no direct action on the central vasomotor apparatus; the rise of blood pressure was caused entirely by the peripheral action upon the vessels and the heart. Camphor in convulsive doses caused an intense stimulation of the vasomotor centre; doses not convulsive sometimes stimulated the centre moderately, sometimes were without effect. Even when the centre was stimulated there was not invariably a rise of blood pressure; this would seem to agree with clinical experience according to which the effects of camphor upon the blood pressure are somewhat uncertain.

Chloroform directly depressed the vasomotor centre, but under certain conditions, fall of blood pressure through cardiac depression or during asphyxia, there might be stimulation after these secondary influences. Ether had no effect or stimulated the centre moderately; this stimulation may have been secondary to asphyxia. Nicotine caused intense stimulation of the centre. Ergot and its constituents and hydrastis and its alkaloids and their derivatives had no effect on the centre. Strophanthus stimulated the centre moderately; digitalis not at all or to a much less extent. In neither case was the central action sufficient to influence the total action of the drug.

## HYSTERIA AND INSANITY.

One of the events of the present war is that democracy has taken a somewhat severe fall in its encounter with the military nations. It has picked itself up, rather bruised and obviously shaken, and we hope to see the effects of the tumble wear off speedily; but neither sedentary militarists nor politicians nor education-mongers have in their minds or in their tabloid speeches any feasible working alternative of this National weakness. We publish some thoughtful remarks on the causes. Virtually hysteria and insanity are not scares, to amuse newspaper readers; they are terrible realities, and as to duty, the plain truth is that a paradise of pleasure is the ideal of a spoiled and pampered nation which self rule has corrupted. A searching examination of the material, the youth of the country, is the best suggestion that we can recall in a long while, and supposing it to be practicable, should invite discussion and drive home the impression that the most loathsome of all maladies, the insanity of youth and hysteria, with its vices like the sands of the sea, are ever and anon throwing out their feelers to make victims. A re-shuffle of these crazy elements is the only way that serious people have turned over in their minds to enable us to go forward hopefully.

An increasing class of deficient and ill balanced youth is a disagreeable symptom in unquiet times, but there is a much worse symptom—namely, the state of mind known as hysteria or gush. Let us carefully distinguish. To doctors hysteria, strictly speaking, is a disease marked by anomalies of character. In this sense, the term is not inappropriate when applied to anomalies of the popular character. For instance, when a mob of men, women, and children dash off to see a man hanged, when they debate over his mutilation, etc., we have the precise state of mind that Kraepelin calls *Lustmord*, that is, the murderous orgy that delighted the fierce mobs of Rome and the French Revolution. Were these mobs hysterical or insane? In a sense they were; for the vampire men and women who made up their elements had the seeds of hysteria and insanity in them—seeds which on a fertile soil easily germinated into an exuberant and frightful crop of bloody chimeras and nightmare. This popular insanity is a suppressed and silent one; it grows inwardly, secretly, in spirit not less than outwardly by voice or pen; it is the spirit that has made the master martyrs of the world die in the amphitheatres and by the guillotine; it is the spirit that signifies that it is doubtful whether a nation in which it flourishes will produce anything of rare worth or endurance. Perhaps a nation may in a few extraordinary instances find an antidote to its own constitutional malady; perhaps it may study out a cure by long preparation through

a long discipline of labor and wracking anxiety, doubts and fears. But the tendency to hysteria and insanity among the young, unless it is checked, may grow and become generally distributed, to the injury of the country.

The gushing habit is another form of the hysterical frenzy. The subject is to the point now because in too many quarters there is a tendency not to reform or discipline but to gush; to swell with emotion over the fallen angels who are sent to prisons. The kind of gush we are thinking of is the windiness that is fond of declaiming against the terrific bogey of punishment; that tells us in plat-form efforts that children and criminals should not be punished; it is the form of babble which we associate with pompous sermonizing and hands laid on hearts—the emptiness and windiness that incite the public to pose before the mirror and admire itself prodigiously. It is not only an absurd and dangerous habit but a morbid one. Hysterical gush and windiness serve no good ends, except to butt thick heads against hard facts. They help to deceive the people for a time, to deceive them as to their brains and nerves, to prevent them from regarding increasing idiocy and hysteria clear enough in the light of symptoms of national disease. The way most assuredly to fight the malady is not to go "up in the air" on political or piratical airships, armed by crazy mobs, for on such a craft it is impossible to steer clear of vertigo or provide rules of law and common sense.

## ARE YOU A VETERINARIAN?

A surgeon who offered his services for work with the French army was asked whether he spoke the French language, and, upon answering in the negative, was politely told that he could not be accepted, as he would be "little better than a veterinarian." It has in fact been made a rule that no physician who does not speak the language fluently shall be accepted for service in the French army.

The role of personal influence in medicine, as exercised through the spoken word, was never more concisely, if indirectly put, than in that phrase "you would be little better than a veterinarian." The expression does not reflect upon the healer of animals, for the latter is a very useful person indeed; nor does it indicate that a physician who cannot speak the language of his patient cannot make a correct diagnosis and successfully treat a malady, especially in the form of an injury produced by a bullet or shell. Indeed such injuries may be better dealt with by one surgeon unfamiliar with the language than by another less skilled person who speaks that language readily.



The personal touch, given most readily by word of mouth, is everything to the patient, whether in his home or in an army hospital. We boast much of our advance in science, but science is naught to the sick and wounded compared with the word of comfort and assurance. It is literally true that we would rather die than be treated successfully by certain practitioners. There is no other way of accounting for the phenomenal success of some otherwise ill equipped physicians, and for the enormous clientèle of those who cure all ills by the forcible laying on of hands, unless it be due largely to their exerting through words, an influence which passes all scientific understanding, and without which the science of medicine itself seems, to the sick, a crude and well nigh useless thing. The veterinarian who practises the laying on of hands or suggestive treatment gets no following and no results; there are no veterinarian chiropractors. The human animal is different; for him a little sympathy outweighs much science. There is no reason, however, why the two may not be combined, for, while we may know science, we need not be "too scientific" in our advice.

#### PERSONALITY AND PRACTICE.

The astonishing way in which some men, who left their medical schools with seemingly the least possible acquaintance with medicine, suddenly spring into practice, usually seems quite unaccountable. It is like the success attained by even the less sincere and the less acquainted with medicine—the quacks. To the more earnest and thorough students, it seems puzzling that the superficial should succeed so well. There is one explanation that covers it all. The success is due to the peculiar personality of the practitioner. Every man has, of course, a personality. In what does this attraction for others consist? It would certainly be difficult to analyze this peculiar thing we style strong personality; it differs according to the group of persons to whom it appeals. In general it consists of a set of qualities, mental, often backed by physical, which produce upon a number of people an impression of power, knowledge, kindness, and assurance of a happy issue out of present difficulties. The number of people to whom a given personality appeals may be large or small, and one group, as a whole, may differ very widely from another in the way it is impressed. The fact is fortunate; else one personality might dominate exclusively a whole community. Personality, then, is a psychical phenomenon and depends on a certain background of strength, power, and assurance. It, of course, must be backed by some mental quality,

or it loses its influence in the long run, but, no matter how brilliantly skillful a surgeon or physician may be, if he lacks those general qualities which appeal to the many, he will be limited to a smaller circle than he would otherwise have reached.

A great deal of medical influence is, after all, psychic or sympathetic, and it is no wonder that one who does not possess the requisite personal adjustment should fail, while men of lesser mould, scientifically speaking, have all they can do. It is no wonder that so many cures based on suggestion flourish. This personal touch, this psychic appeal to the patient and his friends, is not to be neglected by the scientific; it is a part of the practice of medicine, and while it may be harder for the strictly candid physician to be all things to all persons, it is a part of his art, nor should it be overlooked, if he would extend his activities most widely. It is well to possess the gifts, without the demerits, of the professional artist.

#### THE CAMP AT TOBYHANNA.

Dr. Joseph C. Bloodgood, lieutenant in the medical reserve corps of the army, contributes his impressions of the recent camp of instruction for officers of the army medical reserve corps at Tobyhanna, Pa., to the *Military Surgeon* for August, 1915. As the government furnished the location, he writes, the only expense of the officers was for uniform, transportation, and mess. The routine life under courteous discipline was healthful, the sleeping arrangements were comfortable, the tent space was large, the hours were regular, the daily setting-up exercises were valuable, the meals were admirable—everything was better managed than would have been possible in a civilian camp. Familiarity with field, drill, and surgical routine lent a new interest to the manuals on these subjects furnished by the Government. The daily contact with officers of the National Guard and of the regular army stimulated thought, and undoubtedly led to improvement in the subsequent civil practice of the physicians of the reserve. Witnessing maneuvers and gathering up the wounded stimulated latent brain centres. Doctor Bloodgood suggests that when the wounded have been gathered together in a first aid station, there should be a clinic. He recognizes that it is as essential to train physicians for military work in time of peace as it is to instruct raw recruits for the line; familiarity with army surgical work teaches economy, simplicity, and the performance of difficult things in a trying environment. The writer compliments his instructors on their high degree of efficiency as teachers and their admirable qualities as comrades.

## A HORRIBLE BOOK.

Among curiosities of erotic literature the work entitled *Gamian* is certainly one of the most mysterious and horrible. It is ascribed to the French poet, Alfred de Musset. The question of authorship is, however, not quite clear; it is the subject of a long monograph by Iwan Bloch in the *Zeitschrift für Sexualwissenschaft*, ii, 141, 1915. As the book is not accessible to readers here, we can only judge by the extracts which the learned professor gives us that it is a particularly naked record of the life of a young poet of great genius and strange moral callousness. Such a glimpse at the *ventre* of human nature may be useful; we are willing to take it for granted that problems of sex, as they are fashionably called, are worth study, but for ourselves, we think the whole thing is mischievously overdrawn. Such science reminds us of boys throwing mud at each other, and making faces at the policeman from behind the corner. Professor Bloch's method is a kind of literary morgue dissection. The infinite number of scraps of poetry and biography that make it up are curious in the extreme. We are enabled to look at the errors of youth, but the learned doctor descants on them with a gravity which it is difficult for his readers to preserve.

## WAR AND THE SEXES.

Henri Coupin, doctor of science, writing in *Presse médicale* for July 26, 1915, on the various theories that have been advanced concerning the origin of sex, particularly that which attributes to war an increase of males, states that recent dispatches from the eastern front aver that of 559 children born to fugitives from Galicia and Bukovina, there were 314 boys and only 245 girls. In Vienna, where usually 108 boys are born to 100 girls, since October there have been 140 boys to 100 girls; there has been also a very large number of twin births. Doctor Coupin writes apparently with his tongue in his cheek, and demands that these figures be verified.

## News Items.

**Poliomyelitis in Baltimore.**—Dr. C. Hampson Jones, of the United States Public Health Service, has reported twenty-one cases of poliomyelitis in Baltimore since June 1st, of which seven occurred between August 1st and 7th.

**New Orleans Postgraduate Medical School to Affiliate with Loyola University.**—Announcement is made that the New Orleans Postgraduate School of Medicine will begin its second year as an affiliated institution of Loyola University. The board of directors of the school is composed of Dr. Homer Dupuy, president; Dr. William Kohlman, vice-president; Dr. Joseph A. Danna, secretary; Dr. Oscar Dowling, Dr. A. Nelken, Dr. C. G. Cole, Dr. Joseph M. Elliott, Dr. O. L. Pothier, and Dr. T. J. Dimitry.

**Cholera in Austria-Hungary.**—According to reports of the United States Public Health Service, cholera has been reported in Austria-Hungary as follows: Austria, May 23 to June 5, 1915, 206 cases with 44 deaths. Bosnia-Herzegovina, May 16 to 29, 1915, 12 cases with 5 deaths. Croatia-Slavonia, May 24 to June 7, 1915, 47 cases with 15 deaths. Hungary, May 31 to June 13, 1915, 305 cases with 110 deaths. During the period from May 23 to June 5, 1915, 6 cholera carriers were found in two districts of Bosnia-Herzegovina.

**American Aid for Belgian Physicians.**—Dr. F. F. Simpson, of Pittsburgh, treasurer of the Committee of American Physicians for the Aid of the Belgian Profession, reports that during the week ending August 14th the following contributions were received: Dr. W. L. Keller, of Hot Springs, Ark., \$5; Dr. E. C. Ellett, of Memphis, Tenn., \$10; Dr. David W. Cheever, of Boston, Mass., \$20; total receipts for the week, \$35; previously reported receipts, \$7,779.84; total receipts, \$7,814.84.

**Fewer Births in England.**—Official figures show that the number of the births recorded in England and Wales during the three months ending June 30th was the lowest on record; it was 12,973 below the number for the corresponding period in 1914. The number of deaths in the same period was the highest in ten years, the figure being 14,445 above that for the corresponding period last year. The excess of births over deaths is given at 74,515, as compared with 101,933 the same period in 1914.

**Physicians of the Sixth Council District of Ohio Meet in Youngstown.**—The 160th session of the United Medical Association of the Sixth Council District of Ohio was held in Youngstown on August 10th. The seven counties included in this district are Ashland, Holmes, Mahoning, Portage, Richland, Stark and Summit. The officers of the society are: President, Dr. H. E. Welch, of Youngstown; secretary-treasurer, Dr. J. H. Seiler, of Akron; counselor, Dr. E. J. March, of Canton.

**Honorary Fellows of the Royal Society of Medicine.**—The following is a list of recently elected honorary fellows of the Royal Society of Medicine: Sir R. Douglas Powell, Lord Moulton, Sir John McFadyan, Sir Francis Darwin, Mr. Robert Bridges, Lieutenant Colonel Sir David Prawn, T. Prigdin Teale, Sir John Williams, Professor E. G. Brown, Professor S. G. Shattuck, Professor J. Babiniski, Professor A. Chauffard, Professor Jules Déjerine, and Professor M. T. Tuffier, of Paris, and Dr. Paul Heger, of Belgium.

**Oregon State Board of Medical Examiners.**—At a recent meeting of the board, the following officers were elected to serve for the ensuing year: President, Dr. Charles T. Chamberlain; secretary, Dr. L. H. Hamilton; treasurer, Dr. Herbert S. Nichols. The other members of the board are: Dr. Harry F. McKay, Dr. H. L. Henderson, and Dr. F. E. Moore. There were forty-nine applicants for State licenses to practice, and of these thirty-one were successful. Of eleven osteopaths who applied for licenses, two failed to meet requirements.

**Typhus Fever in Germany.**—According to reports of the United States Public Health Service, cases of typhus fever in Germany have been reported as follows: Week ending June 26, 1915, 13 cases occurring among German soldiers. The cases were distributed in the government district of Erfurt, Oppeln, and Schleswig, and in Saxony, Saxe-Weimar, and Lubek. Week ending July 3, 1915, 76 cases, occurring among soldiers in the government districts of Cassel, Erfurt, Stettin, and Posen, and in Brunswick and Saxe-Weimar. The disease was reported present among prisoners of war in prison camps.

**Personal.**—Colonel Alfred E. Bradley, Medical Corps of the United States Army, has been ordered to duty at the Plattsburg Barracks, as post surgeon, relieving Captain S. M. de Loffre, who has been obliged to go on sick leave.

Sir Victor Horsley is at present doing hospital duty in Cairo, Egypt.

Dr. John MacPherson, of the General Board of Lunacy for Scotland, has been elected president of the Medico-Psychological Association.

The Moxon Gold Medal, given every third year by the Royal College of Physicians of London for research in clinical medicine, has been awarded to Professor J. J. Déjerine, of Paris.

Dr. Alexis Carrel, of the Rockefeller Institute for Medical Research, and at present in charge of the American Hospital in Paris, has been made an officer of the Legion of Honor.

Dr. Elisha H. Cahoon, formerly assistant physician at the State Hospital for the Insane at Providence, R. I., on August 21st assumed his new duties as head of the psychopathic department of the Massachusetts State Hospital, Boston.

**Scarcity of Medical Officers in London Hospitals.**—

A resolution, offered by the British Hospitals Association, was adopted recently at St. George's Hospital, for consideration at the meeting of medical officers in voluntary hospitals, in the *Medical Journal and Observer*, is really serious. Sir William J. Collins, a member of the council, made the suggestion that increased numbers of qualified women should be employed and that qualified Colonial and Indian physicians should be permitted to practice. He stated that whereas the twenty-six London hospitals had in July, 1914, 104 resident doctors, they now had only eighty-one. One hospital with which he was connected had no resident medical officer at all. He suggested that there ought to be some cooperation between civil and military authorities on the question and a redistribution of the medical officers who were still available, as there might be an excess in some places and a deficiency in others. The problem is said to be affecting all hospitals.

**A Low Death Rate in New York Last Week.**—Despite the hot weather last week, the death rate was 1.42 per thousand lower than during the corresponding week of 1914. In other words had the death rate of the corresponding week of 1914 prevailed during the past week there would have been 1,480 deaths instead of 1,322, a saving of 158 lives. The death rate for the first week was 11.88 as compared with 13.30 for the week ending August 15, 1914. The following causes of death showed a decrease: Digestive diseases, heart disease, tuberculosis (other than pulmonary), Bright's disease, diseases of the nervous system, and violence. During the past week 348 infants under one year died. Exactly the same number that died during the corresponding week of last year, but when it is considered that there are a larger number of infants under one year in the present population, it is evident that a material reduction has been effected. The death rate for the first thirty-three weeks of 1915 was 13.75 as compared to 14.10 for the corresponding period of 1914.

**Gifts and Bequests to Hospitals.**—The Knickerbocker Hospital, formerly the J. Hood Wright Hospital, at Amsterdam Avenue and 131st Street, New York, will soon receive \$20,000 from the estate of the late J. Hood Wright, in whose will this hospital was named as a residuary legatee.

The will of Jacob Langeloth, who died in Riverside, Conn., on August 14th, contains bequests to charitable, religious, and educational institutions aggregating \$3,334,562, of which \$3,141,562, the residuary estate, at the death of the widow, is to be used for the establishment of a home as a memorial to Mrs. Langeloth, to be known as the Valeria Home. A trust fund of \$150,000 has been created to be devoted to the establishment and maintenance of schools, playgrounds, hospitals, etc., for the benefit of the residents of Langeloth, Pa. Other institutional bequests are: Mount Sinai Hospital, the German Hospital, the Manhattan Eye, Ear, and Throat Hospital, and Columbia University, \$5,000 each; the Charity Organization Society, \$2,000.

**American Association for the Study and Prevention of Infant Mortality.**—The sixth annual meeting of this association will be held in Philadelphia, November 10 to 12, 1915, with headquarters at the Bellevue-Stratford Hotel. All sessions will be held in this hotel, except that of the session on economic aspects of infant welfare, which will be a joint one with the Philadelphia County Medical Society and will be held at the College of Physicians. The subjects to be discussed include eugenics, effect of the economic standing of the family on infant mortality, infant welfare nursing in small cities, towns, and rural districts, institutional mortality, midwifery conditions, and the treatment and prevention of respiratory diseases. Mr. Homer Folks, of New York, is president of the association, and Dr. S. McC. Hamill, of Philadelphia, president-elect for 1916. Dr. Joseph S. Neff, 801 Weichtman Building, Philadelphia, is chairman of the committee on local arrangements. The sessions will be under the chairmanship of the following: Eugenics, Dr. William F. Snow, of New York; pediatrics, Dr. Charles A. Fife, of Philadelphia; obstetrics, Dr. Mary Sherwood, of Baltimore; economic aspects of infant welfare, Mr. Sherman Kingsley, of Chicago; nursing and social work, Miss Ella Phillips Crandall, of New York. Programs or other information in regard to the meeting can be secured from the executive secretary, Miss Gertrude B. Knipp, 1211 Cathedral Street, Baltimore, Md.

**Medical Reserve Corps of the Navy.**—At the preliminary examination, held recently in various cities of the United States for the examination of candidates for appointment as assistant surgeons in the Medical Reserve Corps of the United States Navy, with a view to subsequent examination and appointment in the Medical Corps of the Navy after a course at the Naval Medical School, the following candidates were found physically and professionally qualified: Dr. Virgil H. Carson, of New York; Dr. E. A. Gendreau, of Washington, D. C.; Dr. Francis De Armond Gibbs, of Washington, D. C.; Dr. John Harper, of Philadelphia; Dr. Forrest Martin Harrison, of Washington, D. C.; Dr. Richard Hagan Miller, of Providence, R. I.; Dr. John Paul Owen, of Kansas City, Mo.; Dr. John Floyd Pruett, of San Francisco; Dr. W. J. Rogers, of Cleveland, Ohio; Dr. George P. Shields, of Philadelphia; Dr. George W. Taylor, of New Orleans; Dr. Russell J. Trout, of New York; Dr. George B. Tyler, of Chicago; Dr. Walter A. Vogelsang, of Buffalo; Dr. Grover Cleveland Wilson, of Salt Lake City; Dr. Charles H. Weber, of the National Military Home, Indiana.

**National Medical Association.**—This association, which is composed of physicians, surgeons, dentists, and pharmacists, will meet in annual session in Chicago, August 24th, 25th, and 26th. An elaborate program has been prepared, consisting of the reading and discussion of scientific papers and a series of surgical, medical, and dental clinics. At the meeting of the pharmaceutical session there will be demonstrations of pharmaceutical preparations and the methods of preparation. The surgical clinics will be conducted at the Cook County Hospital by a number of the leading surgeons of Chicago, and the medical clinics at the Provident Hospital. Additional features of the program are public health meetings in the churches on Sunday, August 22d, a tuberculosis exhibit, under the direction of Dr. A. W. Williams, of Chicago, on Monday evening, a surgical clinic by Dr. John P. Murphy, in Mercy Hospital, on Friday morning, and a number of clinics at Wesley and St. Luke's Hospitals on Friday afternoon. The officers of the association are: F. S. Hargrave, M. D., of Wilson, N. C., president; R. C. Brown, D. D. S., of 624 North Twenty-first Street, Richmond, Va., vice-president; W. A. Jones, Ph. G., of Winston-Salem, N. C., second vice-president; J. R. Levy, M. D., of Florence, S. C., treasurer; W. G. Alexander, M. D., of 14 Webster Place, Orange, N. J., secretary; G. R. Ferguson, M. D., of 307 West Main Street, Charlottesville, Va., assistant secretary; H. B. Marble, Ph. D., of 601 Calhoun Street, Yazoo City, Miss., pharmaceutical secretary. Executive board—George E. Cannon, M. D. (1917), of 354 Pacific Avenue, Jersey City, N. J., chairman; E. T. Belsaw, D. D. S. (1915), of 500 Dauphin Street, Mobile, Ala., secretary.

**Civil Service Examinations.**—Among the positions for which the New York State Civil Service Commission will hold examinations on September 18th are the following:

Laboratory assistant in bacteriology, State Department of Health: Open to both men and women and to nonresidents and noncitizens; salary, \$720 to \$1,200 a year. Only candidates who have satisfactorily completed a systematic course in bacteriology and have also had not less than eight months' practical experience in laboratory work will be accepted. Candidates will be examined on the technical procedures used in the study of the pathogenic bacteria of infectious disease, and immunity and the standard methods used in the examination of milk, water, sewage, air, and soil. No sample questions will be furnished.

Assistant medical officer, Department of the Health Officer of the Port of New York. Men only. \$1,500. This position is in the Detention and Hospital Service of the Quarantine Station and involves residence and service at either of the quarantine islands in Lower New York Bay. It requires a knowledge of cholera, plague, yellow fever, smallpox, leprosy, epidemic cerebrospinal meningitis, and typhus fever. Examination open only to licensed medical practitioners of the State of New York who are certified graduate interns after a course of at least fifteen months in a general hospital. Subjects of examination and relative weights: Written examination relating to the duties of the position; 1, education and experience, particularly in the prevention, diagnosis, and treatment of quarantinable diseases; 2, in answer to questions on the application blank, candidates should be careful to give full details of their experience. No sample questions will be furnished.



## HEMADENOLOGY:\* A NEW SPECIALTY.

THE INTERNAL SECRETIONS—THEIR FUNCTIONS AND BEARING ON DISEASE AND THERAPEUTICS.

By CHARLES F. DE M. SAVIOUS, M. D., LL. D., Sc. D.

Philadelphia.

(Fourteenth Communication.)

## THE THYMUS (Continued).

In the preceding article (NEW YORK MEDICAL JOURNAL, July 8, 1915) emphasis was laid on the importance of recognizing as early as possible the signs of mental impairment in infants, to insure, where need be, the employment of measures calculated to arrest as far as possible, the morbid process. An outline of the clinical aspect of these cases and of the measures—those pertaining to organotherapy—was furnished concerning amaurotic family idiocy and cretinism. The prevailing practice being to administer thyroid gland in the latter disorder, a query was introduced concerning the advisability of the course.

In the light of the data previously submitted, the cretin is supplied with all organic bodies necessary for the development of his cerebrospinal system, excepting that which renders the cellular nucleins "inflammable" or oxidizable, the thyroid secretion. While the results of thyroid treatment are striking in these cases, the fact remains that they are not ideal in the sense that the mentality, even after thyroid has been administered for several years, does not even approach the normal level when psychological tests are employed. This is because the equipoise of cerebral nutrition has not been provided by compensating for deficient development of the other ductless glands by reason of the deficiency (during the child's life, if artificial feeding has been employed, or after weaning if the infant was breast fed) of the thyroid hormone which is necessary to that development. The remedial addition of thyroid to the child's deficient asset in this substance initiates nutritional metabolism in the nerve cells, but the thymus, the adrenals, and the sexual glands are soon rendered *relatively* deficient in that they fail to supply enough of their products to carry on the various functions of the process with due parallelism. If the thymic nucleins are deficient there is imperfect calcium metabolism and defective bone growth; if the adrenal secretion is adequate, the child remains anemic, flabby, etc. There persist, in other words, one or more of the original stigmata in addition to inadequate improvement of the mental status. Briefly, thymus and adrenal gland should also be administered in these cases, along with thyroid gland, the dose of each corresponding with the prominence of special stigmata that are present. When valgus develops, for instance, thymus is indicated; calcium lactate being also given to supply the needs of osseous growth; if the child remains pale, adrenal or pituitary is given, but along with iron to hasten the formation of hemoglobin; enhance the tone of cardiovascular musculature, etc. Treated

in this manner, not only does cretinism disappear earlier, but all the phases of development are caused to attain a higher and more perfect level.

Hypothyroidism, as its name implies, is the symptom complex of deficiency of the thyroid, but not to a degree sufficient to evoke the marked symptoms of cretinism. It is a mild form of myxedema, far more frequent than is generally believed, and is not recognized in most cases because the characteristic symptoms of typical myxedema, the cutaneous infiltration, the dry skin, etc., are not present. In the adult, it is often the underlying cause of painful disorders attributed to rheumatism, neuralgia, sciatica, etc., which resist the usual methods of treatment. In the child it is one of the commonest causes of defective development, physical and mental, and not a few of the backward children and the often punished lagards of the class room are but sufferers of hypothyroidism. If we trace the disorder to its original pathogeny, we are brought back to ancestral or parental alcoholism, syphilis, multiple pregnancies, gout, a febrile infection capable of causing degenerative changes in the thyroid, i. e., to one of the many causes to which idiocy itself has been traced.

The early symptomatology of these cases, as in cretinism, is materially influenced, as already stated, by the manner in which the child is fed during its first year. If the mother is in normal health, her milk supplies enough thyroid secretion to protect the child. Doubtless milk from goats or cows fed at once to the infant would afford the same protection. In most of the cases of hypothyroidism met with in practice, however, artificial feeding is found to have contributed its evil influence toward the development, mental and physical, of the child, and the time at which it would have been weaned, that is to say, when it is sufficiently old to warrant the use of foods other than milk, there occurs a temporary improvement, which, however, is unfortunately but fleeting. Briefly, in a breast fed child, no abnormal sign sufficient to attract attention appears in most instances, though it may perhaps be unusually fat, good, and apathetic. In some, however, as well as in artificially fed infants, phenomena which will be described under the next heading assert themselves.

The thymus, even in these mild forms of thyroid deficiency, is likewise involved in many instances. This is especially seen in negro children whose bone development is defective, the cause here being often insufficient nourishment, beside an inherited taint. The sensitiveness to cold, the hypothermia, and the myasthenia often witnessed in these cases, despite perhaps considerable adiposis, also point to adrenal deficiency. Yet, in most cases of hypothyroidism, both the thymus and the adrenals seem to recover without the use of the corresponding animal substances, when thyroid gland, iron, calcium, and a liberal diet, including fresh milk, are administered.

\*Hemadenology, from the Greek, *αἷμα*, blood, *αἰθήρ*, gland, *ἀγορά*, discourse, meaning thereby (as do ophthalmology, laryngology, and other terms applied to specialties) the aggregate of our knowledge on the subject.

Indeed, the quantity with which these children improve physically and mentally is sometimes as surprising as it is gratifying.

**The Backward Child.**—The foregoing remarks have prepared the way for a better understanding of the many grades of feeble-mindedness, the victims of which, thanks to the Binet and Simon method, are now being duly identified, and saved the brutalities which formerly were meted out to them when their defective work and slow progress at school were attributed to laziness, arbitrariness, and stupidity. The number of these more or less feeble-minded children is fortunately beginning to attract serious attention. Particularly is this the case since the investigations of the Russell Sage Foundation in thirty-one American cities have shown that over twenty per cent. of the children in their schools belonged to the "retarded" class, this proportion leaving out of all consideration the seventeen per cent. of subjects in whom the retardation was due to late entrance. In other words, approximately one fifth of all the children in the public schools of the United States are more or less feeble-minded.

In analyzing the pathogenesis of these cases, the multiplicity of causes which may prevent the development of the mind must not be overlooked, if the best therapeutic results are to be obtained. To attribute all cases of retarded mentality to deficient activity of the ductless glands is to err as gravely as to ignore these organs altogether. The nasopharyngeal cavity should be carefully examined for adenoids and hypertrophied tonsils. Not only do they interfere with respiration, both as to intake of oxygen and output of carbon dioxide, but they also compromise the hearing and thus interfere with one of the most important avenues through which the brain receives impressions. Diseased tonsils are detrimental also in that they are frequently the seat of bacterial colonies which, through the toxemia engendered, provoke a protective reaction which, owing to the excess of antibodies produced, exhausts the child (sometimes keeping up a persistent hemolysis with marked anemia, and even chlorosis) and interferes with its physical and, therefore, mental development. Excessive myopia, or errors of refraction, or any form of markedly defective vision, in fact, is also conducive to mental starvation in exogenous stimuli so necessary to the psychic development of the organ of mind. To remedy adequately these morbid conditions is imperatively necessary; in their presence organotherapy will prove useless.

That insufficient food is a prominent causal feature of backwardness, encountered with special frequency in our public schools, is well known. The functional relationship between the thymus and the brain, maintained through the continuous supply by the former of nucleins which constitute the essential dynamic agent of the cortical cell, accounts for this phenomenon. Organotherapy without an increase of nutritious food in half starved children is not productive of good, but in some of harm where thyroid is made the sheet anchor of the treatment. It is precisely in such cases that the untoward effects of thyroid treatment and osseous deformities resulting therefrom, especially genu varum, are most frequently observed.

Environment is another factor having considerable

influence over the result to be expected from organotherapy. The latter may endow the brain with the potentiality for development, and the neurons reach the maximum state of physical perfection of which they are capable; but if exogenous impressions to develop the psychic functions of the brain are missing, the organ lies dormant and little if any progress is made. In every instance, this phase of the child's every day life should be carefully scrutinized, and corrected, if need be. The company of other children, the school room, where the patient is old enough, and parental efforts to extend the vocabulary and develop understanding, are potent adjuvants when available. Under such conditions marked improvement is often obtained.

The subject of school defectives is too comprehensive to permit of satisfactory treatment here. Yet, a few of the main principles may prove helpful. An essential feature of the whole question should never be lost sight of, viz., that a mentally defective pupil when roughly urged to use his brain beyond its powers on the plea of laziness, truancy, etc., may readily be converted into a criminal. Goaded and punished, the child struggles along for a time to keep up with his normal classmates, but discouragement eventually replaces willingness; he becomes irritable and stubborn, and finally leaves school or is dismissed as incorrigible. Such weaklings readily yield to the promptings of evil doers, and not infrequently find their way to the reformatory or prison.

Fortunately, much is now being done in some States of the Union to remedy this situation, and considerable progress is being made. Briefly, the Binet-Simon system, or one of its modifications—one of the most satisfactory of which is that by Doctor Goddard, of the Vineland (New Jersey) Training School, is employed to establish accurately the degree of intelligence of the backward child. This being determined, the child is placed, where the municipality provides such, in a special class where studies are carefully adjusted to the degree of feeble-mindedness established by the Binet-Simon test in each case. Aided and encouraged, *but not goaded*, a backward child, thus working within the precincts of his abilities, often surprises his teacher by the progress shown, particularly when he is simultaneously treated organotherapeutically.

In the vast majority of communities special classes for backward children are not available. This is, indeed, poor economy, for while instruction and a trade suited to the degree of mentality present will in most instances enable a defective of the poorer classes to earn his or her living, such individuals, unprotected by such instruction, will ultimately become a charge on the community, as a pauper, an idiot or as a convict. Many years of total and therefore expensive dependence are thus substituted for a few years of inexpensive instruction. All communities capable of supporting a school should provide, singly or collectively, an ungraded class under a teacher specially trained in the management of the feeble-minded. The fact that the higher branches of study are not required simplifies the acquisition of the necessary knowledge by a lower grade teacher—if temperamentally suited and well endowed with kindness and patience. Such teachers are increasingly in demand, not only

for public and private schools, but also for families in which a defective requires competent training.

With our own profession well trained in the recognition of ductless gland stigmata and the scientific treatment of defectives, much will be done to mitigate, at least, a trend which the general public too greatly ignores. In the words of Dr. H. C. Kehoe, superintendent of the Kentucky Institution for Feeble Minded Children:

Through eugenics we are beginning to see the light, and if taken hold of at once by the medical profession and all those interested in stemming the tide of moral degeneracy, yet four hundred years will be consumed before statistics show much progress. This is lamentable, but true.

We are so busy contaminating the stream of human life that we will soon exist in a world *en masse* with feeble minded, lunatics, cranks, neurasthenics, idiots, alcoholics, syphilitics, nerve ends, and depraved and hopeless degenerates. To see an individual of natural poise, normal mind, and healthy body will be the exception and not the rule.

While such profound pessimism concerning the prospects of eugenics is hardly warranted, unless legislators continue to run it into the ground through ill advised laws, the fact remains that our own generation and that of our children demand our immediate attention. The recent petition of Dr. Thomas W. Salmon, medical director of the National Committee for Mental Hygiene, for an amendment to the Constitution which will permit the legislature to establish a special expert board to deal with the feeble minded, to provide institutional care or some form of guardianship in the community for the thousands of mentally defective persons who are now at large in the State, is certainly a move in the right direction. Yet, we should cease restricting our efforts to storing "damaged goods" and furnishing special training for which the petition justly provides. They will not stem the rising tide of degenerates. Eugenics may provide for the distant future, but hemadenology—the science of the ductless glands—alone affords the lever through which present day parents and degenerate infants may be swerved into the stream of normal men and women. The proposed board of experts for mental defectives would fail signally in its duty to the State and to mankind did it overlook expert study of the ductless glands in the pathogenesis and prophylaxis of the apparently hopeless burden in the form of mental delinquents which present day conceptions impose upon society.

(To be continued.)

#### Treatment of Genitourinary Tuberculosis.—

John D. Allen, in the *Kentucky Medical Journal* for January, 1915, states that gratifying results from the use of autogenous vaccines were obtained in tuberculosis of the genitourinary tract and mixed infection. The organisms isolated were the colon bacillus, the streptococcus and the pyocyanus. Of seven cases treated, six had tuberculous infection of both kidneys, bladder, and testicles. The patients all regained their health and normal weight in a short time, and though the urine of five cases still showed signs of a slight infection at the time of writing, the remaining two had become entirely well; one of these had already been bedfast and urinating every half hour at the time the vaccine was prepared.

## Piph of Current Literature.

### CORRESPONDENZ-BLATT FÜR SCHWEIZER AERZTE

**Bergonié's Method of Electric Muscular Exercise**, by Fernand Chatillon.—After some general remarks on the nature of this form of treatment, the writer devotes himself to its use for the reduction of obesity. The results obtained in twenty-two cases showed that the weight could be reduced by this means, though more satisfactory results were obtained when the diet was regulated at the same time. The reduction in some cases was quite marked, but in one patient no reduction could be obtained after a rather prolonged application of the treatment associated with a reduced diet.

**Vaccination Injuries, Then and Now**, by O. Naegeli.—In this long paper, which has extended over several numbers, the various incidental injuries that resulted from vaccination are considered, but among over 200,000 vaccinations performed in the modern way, not a single death resulted, though one patient died of an intercurrent pneumonia. No permanent injuries were caused, and only twelve patients suffered transiently from troubles that were seemingly of a serious nature. In these cases, two were of necrosis and albuminuria, one of ulceration, one of large abscess, three of cellulitis, three of erysipelas, and two of nephritis which cleared up perfectly.

### MEDIZINISCHE KLINIK.

July 18, 1915.

**Etiology and Treatment of Gynecological Conditions in the Insane**, by L. Fraenkel.—Two hundred insane women were submitted to a single or to repeated thorough gynecological examinations, and the observations are presented in abbreviated case records. In only eighteen of the two hundred were the findings normal, but the investigation of each case was so minute that it is probable that mentally normal women of similar age would give a similar small proportion of perfectly normal individuals under like conditions. Serious abnormalities were entirely wanting in the whole series. Nearly 150 of the women were single and in a large majority of these the hymen was intact, indicating virginity. One half were certainly virgins. Among these single women the diseases resulting from intercourse were far less prevalent than among mentally normal women of the same social status. This certainly speaks against the view that there is an etiological relation between gynecological and mental affections. Although anatomical virginity was so frequent among these insane women, a large number of them were very strongly erotic. Fifty-two of the total number showed evidences of masturbation, twenty-five of whom had intact hymens. This is not a greater proportion of masturbators than is found among normal women, and there seems to be no relation between this practice and insanity. The investigation of all cases showed, then, that there was no evidence of any relation between mental disease and acquired gynecological affections.

**Arsenic Poisoning**, by Paul Michaelis.—An account is given of a sudden outbreak of acute arsenic



poisoning involving a total of thirty-six persons in an industrial colony. The symptoms varied from acute vomiting followed by acute gastroenteritis to those of subacute enteritis. Five deaths occurred, all in children. From portions of the tissues of four of the children arsenic was isolated, an amount equal to sixteen mgm. arsenic trioxide having been recovered in one case. The cause of the poisoning was traced to single batch of flour, from which all of the affected persons obtained their supplies on the same day. The cause of the contamination of the flour was not discovered. A sample of bread made with some of the flour was found to contain 0.18 per cent. of arsenic in terms of arsenic acid. Michaelis calls attention to the fact that the cause of the outbreak would probably have eluded discovery had it not been for chemical examination of the tissues of the fatal cases because the symptoms were equally typical of several forms of food poisoning.

**Noventerol, a New Intestinal Astringent**, by C. Bachem.—The preparations of tannin in combination with albumin now in use are unsatisfactory. Their chief disadvantage lies in the fact that a considerable proportion of the tannin is split off in the stomach thus disturbing that organ and reducing the effectiveness of the preparation as an intestinal astringent. This disadvantage is partly overcome in the new compound—noventerol—which consists of an aluminum salt of tannin combined with lactalbumin. The tannin is but slightly liberated by the action of the gastric juice—only twenty per cent. as compared with forty-five per cent. given up by the official tannalbuminate of the German Pharmacopoeia. A second advantage of the preparation lies in the presence in it of an aluminum salt which adds its astringent action to that of the tannin when both are split off in the intestine. The constipating action of the drug was tested on cats and dogs and found excellent, while it was proved not toxic by administration in large doses to rabbits. It was used with good results clinically in a few cases of simple acute enteritis.

#### ZENTRALBLATT FÜR HERZ- UND GEFÄSSKRANKHEITEN.

**Radioscopic Diagnosis of Sclerosis of the Pulmonary Artery**, by Emil Savini.—The first striking feature of the picture is the great dilatation of the heart and its displacement to the right. The upper part of the left middle arch, which is formed of the pulmonary artery, is bent strongly to the left, is very convex, and pulsates alternately with the left ventricle; the lower part of the ventricle, which corresponds to the left auricle, is affected in the same way but not to such a degree. The movements of all the sections of the heart and of the great vessels are very brisk and of greater amplitude than usual. The fields of both lungs are rather dark because of the congestion of blood; the parts that appear brighter, especially below, are emphysematous, while very dark apices are tuberculous. The diaphragm moves well on both sides. The so called hilus shades are darker on both sides, and much more marked than normal. Chalky glands may be seen here and there. All pulsating hilus shades come from branches of the pulmonary artery.

#### BULLETIN DE L'ACADÉMIE DE MÉDECINE.

**Prognosis in Injuries of the Spinal Cord**, by Pierre Marie.—The prognosis in wounds of the cord, as shown in military practice, is less unfavorable than has hitherto been thought. Among five cases of injury of the cervical cord with paralysis of the four extremities lasting weeks or months and sphincteric disturbances, none succumbed. Of nine cases of cord injury in which the wound had been sustained no less than eight or nine months before, eight were living at the time of writing. In each of the five cases of cervical cord injury, progressive improvement took place, and in some recovery was almost complete. In the entire series of eighteen cases of cord injury, only five succumbed. That wounds of the cervical cord proved less serious than those of the dorsal or lumbosacral cord is ascribed to the greater size of the spinal canal in the cervical region, which renders squeezing of the cord less likely, and to the fact that wounds of the dorsal cord are often accompanied by injury to the lungs.

#### PRESSE MÉDICALE.

**Psychic Disturbances in Military Practice**, by E. Régis.—The mental disturbances noted in eighty-eight soldiers immediately upon their return from the fighting line are discussed. These disturbances, whether caused by emotion or physical traumatism, were observed to give rise to symptoms of exactly the same type as psychoses of toxic or infectious origin. More or less vivid dreams of experiences in battle were almost invariably complained of. In the waking hours, mental confusion was found the chief manifestation. It differed from that of acute infections in its sudden onset at the time of traumatism, its brief duration in most instances, and in the prominence of amnesia as a symptom. Complete amnesia, rare in civil practice, proved not infrequent in soldiers recently subjected to the shock of battle. Sometimes all recollections as to age, birthplace, residence, profession, single or married state, and military rank were gone, naught remaining in consciousness but the terrifying scene as a consequence of which the patient fell into his confused state. Nervous, impressionable individuals were found to be especially predisposed to this condition. The importance of differentiating military psychoses from ordinary insanities is emphasized, indiscriminate admission of military cases into asylums being unnecessary and harmful to the patients.

#### RIFORMA MEDICA.

**Primary Tumors of Vascular Sheaths**, by V. Marcezz. Two cases are reported, one of a small celled fibrosarcoma arising from the sheath of the left femoral artery and the other a fibromyxosarcoma of the left external carotid. The diagnosis is difficult, as these tumors may be easily confounded with those of organs adjacent to the bloodvessels, and it should be based on the situation, the mobility, and the relations. Some authorities maintain that a true vessel sheath tumor should show no adhesions to the surrounding tissues and should be easily enucleated. The capsule of the tumor should be composed of the

bloodvessel sheath. The histological structure may be that of fibroma, sarcoma, endothelioma, myxoma, and mixed forms—almost all the varieties of neoplasms to be found in other organs.

**Tonsillar Extract in Simple and Diabetic Glycosuria**, by G. B. Farmachidis.—Reports of eight cases show uniform improvement even after the patients were allowed to return to a carbohydrate diet. The tonsillar extract or amygdaline is hemopoietic and glycolytic and was first given intravenously with marked results in a case of diabetes. Then administration of two to four teaspoonfuls daily by mouth was tried with the same success. When given by mouth it is well tolerated by the stomach and produces no ill effects whatever. It seems justifiable to assert that according to both clinical and experimental researches of Farmachidis, this extract is of real therapeutic value in glycosuria whether of a simple nature or of diabetic origin. The oral administration simplifies the treatment.

*Brit. M. J.*

**Articular Transplantation**, by R. Falcone.—It has been demonstrated that articular cartilage has the power of ingrafting itself, that this transplantation can be done from one animal to another of the same species and also that this cartilage will not grow in the absence of synovial membrane. Experiments on animals by Falcone show that articular cartilage supported by a thin layer of bony tissue when transplanted becomes attached, and although modified, it goes on to form a new articular cavity. From a functional viewpoint there is obtained a moderate mobility which in man with mechanical aftertreatment should give an excellent end result. The best method is that of using a separate osteo-cartilaginous transplant for each resected bony surface.

ROUSSKY VRATCH.

*April 18, 1915.*

**Gunshot Wounds of the Abdomen**, by E. P. Frantske.—In the First Warsaw Red Cross Hospital were admitted 5,200 wounded, and only fifty-nine had suffered penetrating wounds of the abdomen. The small percentage is remarkable, yet, as the author points out, this probably does not represent the exact ratio, since many cases of abdominal injuries prove fatal on the battlefield, while many others are treated in the field hospitals. Of the fifty-nine abdominal wounds observed by the author, thirty-one were subjected to operation, with laparotomy in eighteen cases. Most of the injured already suffered from a well developed peritonitis, eight having died a few hours after admission. Of the total number, twenty-six, or about forty-four per cent., died, all from peritonitis, with the exception of one. Most of the fatal cases resulted from injury to the small intestines, next the bladder, liver, kidneys, and finally the colon. It was observed that an operation performed during the acute stage of peritonitis almost invariably proved fatal, and that waiting until the acute symptoms subsided was better surgery. The expectant treatment consisted of absolute rest, strict diet, administration of morphine or opium, ice or hot compresses to the abdomen, and saline infusions. In generalized peritonitis hot air proved more efficacious than any other form of heat. The author argues against conveying those injured in the

abdomen to distant hospitals, as it increases shock and occasions delay.

**Five Cases of Recovery from Tetanus Treated by Injection of Magnesium Sulphate**, by S. F. Deruzhinsky.—The author reports six cases of tetanus following gunshot wounds, in which magnesium sulphate was employed with favorable results in five. In all cases the disease was pronounced and did not yield to the usual treatment. Subcutaneous injections of ten c. c. of a ten per cent. solution of magnesium sulphate twice daily, soon brought about recovery in five of the cases.

BRITISH MEDICAL JOURNAL.

*Aug. 21, 1915.*

**Observations on 685 Cases of Poisoning by Noxious Gases**, by J. Elliot Black, Elliot T. Glenny, and J. W. McNee.—About 120 of the patients were in imminent danger of death by asphyxiation when they came under observation, and of these, thirty-three died. The remainder were less acutely and less seriously affected. Most of those who died succumbed within thirty-six hours. The subacute cases showed dyspnea and some cyanosis, but ultimately recovered. The most satisfactory method of treatment was found to be the immediate use of salt and water as an emetic to aid in clearing the respiratory passages. This was repeated when accumulation of secretions made it necessary. Fifteen grains of ammonium carbonate and as many minims of wine of ipecac were given at three hour intervals as a stimulant expectorant mixture. Where cyanosis and dyspnea were severe, oxygen inhalations afforded considerable relief. Very great restlessness was controlled by opium; pituitary extract and brandy were used to combat heart weakness. Warmth and an abundant supply of fresh air completed the measures. Many other drugs and measures were tried, but with results inferior to those obtained by this routine. Post mortem examinations in the acute fatal cases revealed intense congestion of the entire respiratory tract with bloody edema of large portions of the lung tissue and intervening small areas of acute emphysema. In view of the severity of the lesions, it was not surprising to find that treatment was not very satisfactory in the severe acute cases.

**Phlebotomus Fever**, by C. Birt.—The role of the sandfly in the causation of this disease has been proved by experiments on human volunteers. The incubation period occupies four to seven days, and the onset of symptoms is usually sudden, although there may be some lassitude for a few days before. Chilliness but rarely a severe rigor ushers in the disease and is followed by vertigo, severe frontal headache, pains in the back and legs and general muscular stiffness. There is drowsiness, but sleep is poor. The face is flushed, the conjunctivæ and eyelids are injected and swollen, and the eyeballs are sensitive to movement and pressure. There is complete anorexia with pain or discomfort in the epigastrium. Vomiting and diarrhœa occur in about one fourth of the cases. Fever develops rapidly and the temperature reaches 101° to 103° F. by the evening of the first day. The pulse is slow in proportion to the fever. Leucopenia is the only characteristic feature of the blood. The attack lasts from two to eight days—usually less than six—and is followed

by a week or two of prostration and dyspepsia. The disease is never fatal. One attack usually confers lasting immunity. The typical symptoms can be produced by the injection of a few c. c. of blood from a patient in the first twenty-four hours of his attack, and the disease can be produced by the bite of a sandfly which has fed on an infected person during a similar period. Immunity can also be conferred by the injection of blood of an immune person into a nonimmune. The virus will pass a Berkeley filter and has never been seen or cultivated. The disease is prevalent in the subtropical regions below an altitude of 7,000 feet, and especially in the dry hot season.—Three other papers dealing with this troublesome but harmless disease follow Birt's, constituting a symposium.

**A Further Contribution to the Diagnosis of Gout,** by J. B. Berkart.—The acute attack of pain, or pain and swelling, in the great toe or one of the finger joints, which follows the taking of a glass of wine in some individuals is usually considered as pathognomonic of gout. Berkart has found that such an attack occurs only in persons who have a particular type of lesion of the bones in the regions mentioned, and that it bears no necessary relation to true gout, although the latter may be grafted upon it. The lesion consists in a cystoid degeneration which begins in the epiphyses and finally extends to the articular cartilages of the phalanges. The cysts perforate the cartilage and discharge their contents intermittently into the joints. With each escape of their contents there is an acute attack. Little is known of the nature of the contents of the cysts. The involved bone is very vascular, and it is probably the vascular dilatation induced by alcohol which makes wine so often the provoking cause of an acute attack. The bony degeneration described may progress to the formation of decided deformity. The condition can be distinguished clinically from gout by the absence of swelling in the regional lymphatic glands. The causation of the condition is not stated by the author.

LANCET.

29, 1915.

**Persistence of Antibodies in the Blood of Inoculated Persons,** by Georges Dreyer and A. C. Inman.—The agglutinin content of the blood was estimated in seventy-four normal individuals who had at some previous time been inoculated against typhoid fever. All were inoculated on the last occasion between August, 1914, and March, 1915, and the tests were made during the last ten days of April of this year. Some received one dose, others two doses of the vaccine, and some had been inoculated similarly during the preceding six years. The results were reduced to a standard in terms of agglutinating power for comparison. It was found that after a single or double inoculation, the serum contained relatively large quantities of agglutinins for a period of at least eight months. The maximum activity found for any serum was 1,500 standard agglutinin units; no inoculated person showed less than thirty units a c. c. of serum; while serum from thirty normal not inoculated persons, who had never had typhoid fever, in no case gave over ten units a c. c. Half of those examined from four to six months after inoculation showed an agglutinin con-

tent of 130 units or over to the c. c. Two doses of vaccine usually, but not always, gave a higher agglutinin titre than a single dose. Persons not previously inoculated and who received only one dose of vaccine sometimes gave as high an agglutinin titre as those who received two doses, but after a lapse of time this always fell lower than in the latter persons. This is analogous to the findings in persons who recovered from typhoid fever without relapse and those who survived a relapse. The agglutinin titre maintained a high level for a longer time after inoculation in persons previously inoculated—within six years—than in those not previously inoculated. The importance of reinoculation is that the ensuing immunity is more persistent rather than initially higher.

**The Value of Turpentine as a Hemostatic,** by G. Grey Turner.—To check hemorrhage with this agent the wound should be carefully and firmly packed with gauze which has been soaked with turpentine and squeezed nearly dry. The method is likely to fail unless all blood clots have been removed from the wound before the packing, as the turpentine must be brought into immediate contact with the bleeding vessels. A secondary point of value in this use of turpentine lies in the fact that it is an antiseptic and wounds packed with it will remain sweet for a long while. Its special field of usefulness is in the control of secondary hemorrhage, but it has also proved of great value in hemophiliacs who have received injuries. Wherever it is not possible to catch the bleeding points, even if the hemorrhage is very free and from fairly large arteries, it may be possible to control it at once by turpentine packing. It may be used in hemorrhage from appendicectomy, prostatectomy, after vaginal hysterectomy, and in bleeding tooth sockets, Turner does not believe it is of any value as a hemostatic when given orally. (See the JOURNAL for August 14th, page 366.)

**The Signification of Acetone Bodies in the Urine,** by Benjamin Derham.—The great stress which is now commonly laid upon the discovery of acetone bodies in the urine is emphasized and the question is raised as to whether such stress is justified in fact. The cases of two children are cited to show the possible temporary appearance of considerable amounts of acetone bodies in the urine as the result of abnormal and irregular fermentation of sugars and starches in the intestine. Derham suggests that the acetone bodies were formed in the intestine, from which they were absorbed to be excreted in the urine. He also suggests that there is reason to believe that these bodies may not be very toxic *per se*, but that serious general disturbance of cellular metabolism in diabetes with acidosis is the cause of the gravity of the symptoms rather than the presence in the circulation of the acetone bodies. Two simple clinical tests are given for the discovery and estimation of acetone and acetoacetic acid and their separate identification.

BOSTON MEDICAL AND SURGICAL JOURNAL.

August 8, 1915.

**Treatment of Eczema, with Special Reference to the Use of Vaccine and the Part Played by Bacteria in Its Etiology,** by Leon S. Medalia.—Eczema in its primary stages is in reality a dermatitis,



the exciting cause of which may be an external or internal irritant. The necessary something, or unknown quantity responsible for changing the dermatitis into a true eczema, is the secondary bacterial invasion. The etiological relation of bacteria to this disease is fairly well substantiated by the absence of bacteria in the primary, or dermatitis stage of eczema, and the abundant growth obtainable from the secondary or true lesions, together with the clinical response to the autogenous vaccines. *Staphylococcus aureus* seems to be present always, sometimes mixed with *streptococcus*, rarely with *staphylococcus albus*. The general condition, food idiosyncrasies, habits and occupation of each individual patient should be studied carefully, to eliminate the exciting causes if possible. The use of large doses, 6,000 million organisms or over, of the autogenous vaccine seems to be necessary for the successful treatment of the disease, and when *streptococci* are present, a separate autogenous vaccine must be prepared and used in addition. This treatment in proper dose yields the best results yet obtained in the intractable disease. Ointments, powders, and other topical applications, are necessary adjuncts as they protect the raw skin and help to relieve the patient's discomfort.

**Variations in the Sensory Threshold for Faradic Stimulation in Psychopathic Subjects**, by G. Philip Grabfield.—The patients with manic depression insanity showed, in the depressed phase, a decided raising of this threshold to definitely pathological values, falling to normal with the return to a normal emotional state. The cases in the manic phase show a normal, or perhaps a slightly lowered value. The patients with hallucinations or delusions or both, show, when averaged, a markedly higher threshold than the average of even the depressed cases. In dementia præcox, pathological values are constantly obtained in only about a third of the cases of this disease, and hence are only of diagnostic value in that percentage. This test seems to show that the mechanism governing emotional tone in dementia præcox is not the same as that which governs this phenomenon in manic depressive insanity.

#### JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

August 7, 1915.

**Intestinal Obstruction**, by G. H. Whipple.—The symptoms in this condition are regarded by the author as being due to intoxication by a proteose which is formed within the intestinal mucosa rather than in the contents of the lumen of the gut. There is no conclusive evidence that bacteria are necessary for the formation of this poison. The poison can be isolated by suitable chemical means from the fluid above an obstruction or in an isolated intestinal loop and when injected into other animals gives rise to the typical symptoms associated with obstruction. The chemical procedures for the isolation of this poison are given and they are stated to be such as will yield a primary proteose with the elimination of practically all other substances. One hundred mgm. of this dried material will produce death in a fifteen pound dog. It is probable that this proteose is excreted in the urine and this would explain the beneficial effects of saline infusions in cases of ob-

struction. Associated with the presence of this proteose in the blood of experimental animals there is a marked rise in the incoagulable nitrogen which is proportional to the amount of proteose injected. A similar rise in incoagulable nitrogen has been noted in man with intestinal obstruction and the determination of this nitrogen may constitute a valuable prognostic sign.

**Botulism**, by Ernest C. Dickson.—Contrary to the generally accepted view, Dickson has been able to produce the typical poison from the growth of *Bacillus botulinus* in mediums free from animal protein. This was done in cans of string beans—the material which was responsible for a recent outbreak of this form of poisoning. It was also found that growth with toxin formation would take place in the face of an acidity of over three per cent. to phenolphthalein. Animal experiments further showed that the typical lesions of the intoxication were hyperemia and hemorrhages in the meninges and central nervous system and thrombosis in the arteries and veins of the same regions. The lesions in the nerve cells are secondary to these vascular changes.

**Bacteriotherapy in Typhoid Fever**, by James W. Jobling and William Petersen.—It was shown by clinical experience that therapeutic results could be secured in typhoid fever as well with vaccines made from certain other organisms as with those of *Bacillus typhosus*, thus suggesting that the action was not a specific one. No immediate changes in the antibody content of a patient's serum follow the injection of a vaccine. The authors suggest that there is a stimulation of nonspecific ferments of the body which in some way bring about a detoxication and the destruction of the infecting organism. Such a stimulation of nonspecific ferments was shown to occur in experimental animals from the injection of killed bacteria. On account of the dangers of harmful effects on the heart and an increase in peristalsis of the intestine which often follow the injection of typhoid vaccine in typhoid fever, it is suggested that the use of some of the various split products of the bacterium might be used to stimulate the nonspecific ferments. The secondary proteoses are nontoxic and a series of cases in which these have been used have shown good results. The injections were made intravenously; for selected cases the method has seemed safe.

**Lead Colic**, by Arthur D. Hirschfelder.—Intestinal cramps and colic have been shown clinically to result from the passage of a peristaltic wave down the intestine when already in a state of spastic or tonic contraction. If the rule holds good, it should also be true in lead colic, tabetic crises, and angina abdominis. Amyl nitrite was found to give temporary relief from the colic in lead poisoning, but this has always been held to be caused by vascular relaxation. Animal experiments made by Hirschfelder showed that the intravenous injection of lead acetate immediately induced marked increase in peristalsis, which could not be attributed to vascular spasm. Further, vascular dilatation induced by heat increased rather than decreased the peristalsis. The administration of amyl nitrite, nitroglycerin and sodium nitrite antagonized the increased peristalsis. The intensity of action varied in the order

given, while the duration was in the inverse order. The action of the nitrites in this respect was proved in the present case only, as the autonomic nerve fibres and had no relation to their vasodilator action.

**The Pineal Gland in Relation to Somatic, Sexual, and Mental Development,** by Carey Pratt McCord.—Experiments made by feeding or injecting guineapigs with pineal gland substance or extracts showed very marked increase in the rapidity of somatic and sexual development. The stimulation to growth was greatest in young animals and followed a normal course, not leading to gigantism. After maximum size was reached further administration was without effect.

**Proteolytic Ferments in Portal Blood,** by Frederick H. Halls.—Experiments on dogs showed that proteolytic ferments were demonstrable in both portal and peripheral blood after feeding and that they were more abundant in the former than in the latter. Such ferments were present in portal blood in the fasting state. This would seem to show that the ferments poured into the intestine during digestion were not wholly lost to the economy, but were absorbed with the partially digested food. Probably these ferments continue their actions in the blood for some time after absorption, or else in the liver by which organ they seem to be largely removed from circulation. The observations further seem to show that the intestine is the source of the so called diffusible ferments.

#### MEDICAL RECORD

**Lymphangioma and Radium,** by Robert Abbe.—In six cases of lymphangioma, in which two were of the neck, three of the tongue, and one of the leg, radium gave excellent results. The brilliant success of radium in such cases is because of its intense and efficient action on lesions lying on or near the surface. This superficial action is due to the emission by radium of beta electrons with enormous energy and short range.

**X Ray Treatment of Ringworm of the Scalp,** by G. M. Moore and John Renner.—Excellent results are obtained by means of the x ray treatment of ringworm. The hair is cut off close to the scalp and with a hard tube (at least No. 8 of the Benoist scale) guided by a Sabouraud pastille, the epilating dose is administered. The quantity is measured with a radiometer. The hair falls out after three weeks and begins to grow again at the end of three months. It is important not to use soft tubes and also not to use any irritant applications to the scalp for at least two weeks before the treatment. The treatment is practically devoid of danger in the hands of an experienced radiologist and the results show it to be decidedly the best means of combating both tinea tonsurans and favus.

**Tuberculosis in Children,** by W. W. Riha.—The startling revelation by Fishberg that 52.7 per cent. of five hundred and eighty-eight healthy children of nontuberculous parentage gave a positive tuberculin reaction shows the great prevalence of latent tuberculosis in childhood. Tuberculosis of the cervical glands is almost always of the bovine type of infection and is almost constantly seen in children who

have been fed raw cow's milk. Even pasteurization does not kill tubercle bacilli. The subcutaneous tuberculin test is the best and doses of one tenth mg. could be used. When von Pirquet's method is used only the gentlest scarification should be made, as otherwise a misleading traumatic reaction may occur. The only rational method of eradicating tuberculosis is to devote attention to the early recognition of the disease in children with great care as to their hygienic surroundings and nutrition.

**The High Calory Diet in Typhoid Fever,** by Kenneth E. Kellogg.—Formerly fourteen hundred calories a day were considered sufficient nourishment for typhoid patients, but it is now proved that these patients can readily take from 4,000 to 6,000 calories a day. In Coleman's series of over 100 cases, this high calory diet apparently modified the course of the disease, shortening the convalescence and lowering the mortality. There is no more danger of hemorrhage, perforation, or relapse when a solid diet is given than with the most stringent liquid regime. In 600 cases compiled by Kinnicutt there were even fewer hemorrhages and perforations than under the old method of treatment. The advantages are well marked, as the patient is protected from emaciation and consequently convalescence is shortened; bedsores and furunculosis which are due to underfeeding are also avoided. The required quantity of liquid being not more than two litres daily, there is less tendency to edema and heart oppression.

#### NEW ORLEANS MEDICAL AND SURGICAL JOURNAL.

**Dr. Karl von Ruck's Watery Extract of Tubercle Bacilli and Vaccine for Tuberculosis,** by B. F. Terry.—Terry maintains that the treatment and cure of bottle fed and ill conditioned babies by the watery extract of tubercle bacilli is successful, that the watery extract will prevent the accidents of the hemorrhagic conditions, and that latent tuberculosis is the underlying cause of every case of chronic rheumatism. The rheumatic symptoms yield to treatment with watery extract and vaccine.

**Purpura hæmorrhagica after the Subcutaneous Use of Horse Serum,** by Randolph Lyons.—A negro aged thirty-nine years, apparently in good health, manifested a severe hemorrhagic state. Nothing in the family history suggested hemophilia. Personal history of two or three nose bleeds a year which were readily controlled. Syphilis seven years before. Physical examination revealed nothing of note aside from thickened radials. The disease proper was afebrile, the hemorrhage mainly from the nose, although there was a slight oozing from the gums at times. No blood noted microscopically in urine or stools. Horse serum was given hypodermically on admission and repeated the next day. The injections led to subcutaneous hemorrhages, which became infected, so that an enormous abscess of the abdominal wall developed. The points made by the writer are that in all hemorrhagic conditions hypodermic medication should be watched carefully by the physician in charge, or an assistant, if he administers it, should be warned of the possible danger of subcutaneous hemorrhage. As small a needle as practicable should be employed. Pressure should be applied

over the puncture wounds and other suitable measures should be adopted if necessary. Examination of the blood and bleeding time should be made as early as possible.

## Proceedings of Societies.

### AMERICAN CLIMATOLOGICAL AND CLINICAL ASSOCIATION.

*Thirty-second Annual Meeting, Held June 18 and 19, 1915, in San Francisco, California.*

The President, Dr. HENRY SEWALL, of Denver, in the Chair.

**President's Address.**—Dr. HENRY SEWALL, of Denver, said it was the scheme of the founders of the association to bring together a band of workers systematically to investigate the physical forces of Nature as they influenced the physiological reactions of the body; but this did not seem to be sufficient to maintain the enthusiasm of the organization, hence it had extended its scope to embrace practically all conceivable disorders of the human frame. He dwelt upon the importance of the external environment reaction in its relation to the welfare of their minds and bodies. There was an internal environment which came definitely with the spirit and scope originally marked out for the activities of the association, food and its metabolism. If it was necessary to banish from the medical curriculum every subject but one, he believed that the practical usefulness of physicians would best be conserved if that one subject was dietetics. The recent conception of intermediary metabolism, and especially of the still mysterious activities involved in the reactions of anaphylaxis, had utterly transformed the meaningless and tiresome aspect which this subject had always presented. The extraordinary manifestations of idiosyncrasy to foods and drugs were only extreme illustrations of forces common to them all. The disorder of metabolism which transcended the analysis of the most expert pharmacologist could yet often be shadowed or diagnosed by the every day practitioner who made the simple test for the presence of acetone in the urine. Whatever its origin, acetone was an expression of a pathological condition which it behooved the clinician to recognize, for it showed the presence of a criminal agent in the peaceful community of cells. The practitioner who made a routine test for acetone in the urine, might see many obscure conditions illuminated to the improvement of his therapeutic aim. There seemed to be an epidemicity in the condition of acidosis, according to the reports from the medical press, which deserved definite investigation in order to determine the factors, seasonal, climatic, dietetic, or biological involved in its occurrence. The scientific study of diet had scarcely begun. The medical teaching on the subject was lamentably deficient. A review of the medical literature showed very little on acidosis and that only in connection with diabetes mellitus. Herein lay a rich field for investigation. The ideal of the association should be, not only to have happy social intercourse and intellectual uplift, but to radiate the influence of each and every member be-

hind the limits of the association. A happy criterion of the fitness for publication of a piece of work was to be found in the query, Did it advance medical science? The enormous output of pathological, bacteriological, immunological, and pharmacological research had supplied them with a therapeutic armamentarium of a complexity which no man understood. This made judgment difficult. Although it was justifiable, nay imperative, that they should daily resort to the use of remedial measures of whose agents and reactions they were profoundly ignorant, nevertheless critical judgment was never to be neglected. The self same therapeutics might in the one case be the choice of a master and in the other of a fool. They had been reared in the teaching that to help Nature should be the guiding motto of the doctor's practice. It was not always realized that Nature held as dear the pathogenic germ as the higher organism which it invaded. As physicians they must realize that their human endeavors were simply a modern addendum to the eternal forces of evolution. In evolution there was coordinated transformation of the mental and moral with the physical attributes of man, and the practising physician must be a mind doctor and in the end his chief service was to comfort.

No organization was likely to duplicate the task that was theirs, and it might be an advantage to appoint each year special committees for the consideration of definite subjects, such as, The Alleged Radioactive Properties of Natural Waters, The Relation of the Physical and Chemical Properties of the Air in Ventilation, The Relation of Immune Serums and Vaccines in the Treatment of Bacterial Infections, The Relative Value of Sensitized and Nonsensitized Bacteria in Treatment and Prophylaxis, and many other themes in which all were interested.

**The Personal Equation in the Treatment of Tuberculosis.**—Dr. WILL HOWARD SWAN, of Colorado Springs, presented this paper, which was read by Dr. G. W. HOLDEN, of Denver. While not questioning in the least the importance of exact knowledge as to the pathology, bacteriology, and scientific data that might be available now or later, what was evident in a body like this was, that until a specific agent for treating tuberculosis was discovered, their chief aim must be to raise the resistance of the patient. The individual must be studied and treated rather than the disease itself. The very infrequent incidence of tuberculosis in Colorado and other health resorts where there was an unusually large proportion of tuberculous population, was good proof of the reality of acquired personal resistance. This might be influenced by many factors in the person's make-up, physical, nervous, mental, and moral; by his circumstances as to proper living and by his adjustment to, and viewpoint of his environment, and much study was necessary to get at the real situation. One success in many cases would be in proportion to the care and accuracy with which this was done. Coexistent disease and lack of sufficient food were among the factors often overlooked when it was supposed that the patient was getting enough. The importance of obscure focal infections in the causation of various systemic and general diseases should be recognized: this had brought help to



of the victims of tuberculosis, and relief had often been brought about by the removal of diseased tonsils or the cure of accessory sinus disease. They often failed to appreciate how frequently weakened resistance was caused by lowered nervous and mental tone from fatigue, grief, discontent, homesickness, and unhappiness from whatever source. He cited a number of cases in which these factors had played the decisive part in the progress made by the patient. Worry in any shape might do harm. The histories of 740 cases of tuberculosis treated during the past fifteen years showed 129 giving reasons for believing that some form of nervous depression was at least an important and causative factor, and he felt sure that it was much more commonly a cause than these figures indicated, because some of the earlier histories gave no data on this point. Prolonged physical and mental rest and the limitations necessarily imposed during a cure, sometimes became so irksome as to be a real detriment to the patient. In such cases finding out and making available suitable mental diversion might be a means of changing failure into success. Such considerations showed the need of personally taking case histories and getting into close confidence with the patient in order that they might know all the factors in their lives which had to do with their powers of resistance.

Dr. J. N. HALL, of Denver, had often found that an associated appendicitis was the cause of failure properly to digest the necessary amount of food; perhaps too much stress had been laid upon that possibility. At one time he believed the trouble was that these tuberculous patients had tuberculous appendicitis, but he had found that they suffered from an ordinary appendicitis and they never did well until the appendix was removed. In an ordinary case of tuberculosis complicated by appendicitis, it was worth while taking the risk of an operation in order to get the improved digestion which usually followed the relief of the appendicular condition. Dr. Philip King Brown, of San Francisco, had said it had been their experience at the Arequpa Sanatorium that about ten per cent. of the patients had to have some attention directed to the digestive function and about five per cent. had to have an appendicectomy performed; at the same time it was their practice to take as conservative a position as possible. This operation, since it could now be done under gas anesthesia, did not present such a serious problem for the tuberculous patient as formerly. In the tuberculous patients the condition of the teeth and tonsils should be considered, and operation performed if deemed necessary. In only one instance had they found a tuberculous appendix at operation.

Dr. W. J. BARLOW, of Los Angeles, believed that individualization was the keynote of the treatment of these patients. It was much easier to carry out the home treatment than in a sanatorium. Too much exercise on the part of a patient who should have been at rest might interfere with digestion; so soon as the patient took a proper amount of rest the digestion improved. Five years ago he hesitated to operate for appendicitis in a patient suffering from tuberculosis, but he had found that those patients passed through the operation as well as did otherwise normal persons.

Dr. JOHN M. SWAN, of Rochester, N. Y., con-

sidered the most important point in the paper to have been the emphasis placed on the importance of securing a proper mental attitude on the part of the patient, and that was true not only of tuberculosis, but of every other disease. The physician was apt to spend so much energy in reaching a diagnosis in tuberculosis that he had little energy left to work out the details of the case. The duty of the physician should be to help the patient adapt himself to circumstances, and that often required considerable psychological treatment.

Col. GEORGE E. BUSHNELL, U. S. A., of Fort Bayard, N. M., said that it was not so easy to individualize in treating tuberculous patients in the army as in civil life. Their ideal in reference to diet need not necessarily be to get as much weight as possible, but to get the patient into good condition so that he digested his food better, had better health and perfect metabolism. It should be remembered that a patient might sometimes gain in weight and yet be doing badly.

Dr. G. W. HOLDEN, of Denver, recalled that the mental attitude of the patient was a very important thing, but it frequently was difficult to control parents and other relatives of the patient, who persisted in relating or writing the family troubles, financial or other, to the patient. In institutions where there were a large number of patients, it was difficult to carry out the details of diet.

**Coccidioidal Granuloma.**—Dr. PHILIP KING BROWN, of San Francisco, presented a patient with scalp lesions due to coccidioidal organisms. The symptoms presented were those typical of pulmonary tuberculosis. This condition was rare in California, though Doctor Dickson had reported nine cases which he intended to present before the Pan-American Congress; the lesions were somewhat like those of pellagra. It had been stated that no cases of coccidioidal infection had been known to end in recovery, with the exception of one in which the ankle was involved and prompt surgical intervention had prevented the extension of the infection.

Doctor DICKSON, of San Francisco, said that the types of coccidioidal disease were all classified according to the primary lesion. He recalled a case that ended in recovery; in this instance a resection of the elbow was done and a diagnosis made after, but not before the operation. He recalled another case in which a diagnosis had been made of carcinoma of the stomach; this patient died of bronchopneumonia, and after death the coccidioidal bodies were found. Infection could not take place unless the spores were injected. Many of these cases went undiagnosed. The test for these organisms should be made in every case of clinical tuberculosis in which the bacilli could not be found.

Dr. WILLIAM T. CUMMINS, of San Francisco, had seen a number of such cases clinically and had studied them histologically, and that it was interesting to compare the condition with blastomycosis. One patient of his had apparently typhoid fever; at autopsy he appeared to have had acute miliary tuberculosis, but the lungs, spleen, liver, adrenals, and kidneys all showed lesions of the disease. In another case the organisms were found in the fourth and fifth lumbar vertebrae, and different viscera were involved as well. In a case of an abscess over the left

kidney, they found the organisms of the disease. They should take cognizance of the fact that there were more cases of this disease in this part of the country than were being recognized. With reference to the difference between a coccidioidal infection and blastomycosis, an article in the *Journal A. M. A.* well brought out the uncertainty in the minds of many in regard to the difference between the two conditions.

Dr. HENRY SEWALL, of Denver, believed that many of their theories held well in the test tube, but clinically could not hold water. No subject was apparently so simple as that of blood pressure, yet it presented many puzzling questions. It appeared that all the affairs of blood pressure in man had been determined before he assumed the erect posture, and it was difficult to explain the return circulation from the lower extremities on their theories of blood pressure. Physiologists were making extracts of various organs and all seemed to have a depressor effect. Howell said that there was kinase in every living tissue, and perhaps that had something to do with blood pressure. He would ask Doctor Swan whether by the term dysthyroidism he meant hyperthyroidism or hypothyroidism, and whether the position of the body had much to do with the perception of sounds.

Dr. JOHN A. LICHTY, of Pittsburgh, could scarcely reach the same conclusions as to the effect of operation on blood pressure. The operation of hysterectomy, for instance, might be accompanied by a high blood pressure, yet after a year or so the pressure would swing back to its usual condition. Again, frequently at the first consultation the blood pressure would be found high; but after the patient had become acquainted with the physician and the new régime, the pressure would be found to be lowered. It was dangerous to draw definite conclusions.

Dr. W. JARVIS BARLOW, of Los Angeles, agreed with what Doctor Lichty had said regarding the finding of high blood pressure on first examining a patient and that it came down later when the patient gained confidence. Pressure findings in operations on the thyroid were not necessarily due to the operation *per se* because that was found in other operations as well. In reference to dysthyroidism and high blood pressure, it seemed to him that the high blood pressure was due to secondary cardiovascular changes rather than primarily to the dysthyroidism.

Dr. JOHN M. SWAN, of Rochester, N. Y., for the past three years had been living in a thyroid country and had noticed many women with pyramidal necks indicative of thyroid abnormality, and had thus been led to make a study of that condition. He had come to the conclusion that there was no such thing as separating hyperthyroidism from hypothyroidism. Those conditions bore the same relation to each other as tuberculosis did to consumption. A patient was said to have tuberculosis for many years before he was said to have consumption, and the same analogy might be applied to thyroid disease; it seemed to him that the better name was dysthyroidism, though the term thyreosis had been suggested. He had had no trouble in reading the diastolic pressure; he read the manometer when the sounds had disappeared. There were two methods of reading. When the blood pressure fell there was first a tap, then a murmur, then the murmur disappeared and the tap came back.

There was a point at which the tap became muffled and then disappeared altogether. Doctor Warthin, of Ann Arbor, Mich., first said they should heed when the sharp tap became muffled; others stated they should heed when it disappeared entirely. He took the point where the tap disappeared entirely and he found no difficulty in making it. The study was made systematically, with patients in the recumbent position and the cuff on the bare arm. The question as to the part played in the fluctuations of blood pressure by the results of ether, of the operation *per se* or both, was interesting. Perhaps in the operation of hemithyroidectomy, the handling of the thyroid and the possibility of squeezing some of the secretion into the circulation, might have had something to do with the changes in the blood pressure. His study had convinced him that the tendency of dysthyroidism was to produce high blood pressure. In women of the better class he had been observing cardiovascular disease where infection and the excesses of tobacco and alcohol could be excluded; he had found evidence of thyroid disease that had been coming on slowly for years, so that its effects on the cardiovascular system were similar to those produced by alcohol, tobacco, and excesses.

**Lung Involvement Secondary to Suppurative Abdominal Disease.**—Dr. J. N. HALL, of Denver, declared that the frequency of subphrenic abscess was probably not appreciated by the majority of physicians, and certainly the less common instances in which a suppurative process burrowed through the diaphragm and gave rise to either empyema or perforation into the bronchus or the pericardium, were frequently overlooked. An ascending infection from suppurating retrocecal appendicitis was a common cause of subphrenic abscess. He had reported nine in a series of 500 cases of appendicitis, and that probably did not overstate the frequency of this complication. Diffuse subphrenic suppuration was much less often found in that type than in any of the others. Gastric and duodenal ulcers frequently caused subphrenic abscesses, but those rarely perforated the diaphragm. With that condition in amebic dysentery there was frequently involvement of the pleura with infrequent subphrenic abscess. Left sided subphrenic abscess usually developed from an ulcer, although suppurative appendicitis, acute pancreatitis, suppurative cholecystitis, and amebic liver abscess might have been the starting point. The mere presence of subphrenic abscess must not be taken to establish its abdominal origin. The most frequently found bacterial infection in subphrenic abscess was that of the colon bacillus. The diagnosis of this condition often depended upon the recognition of some possible cause in the abdomen. When one obtained a history of appendicitis, amebic dysentery, gallbladder disease, or similar affection, symptoms such as irregular fever, irregular chills, sweats, leucocytosis, perhaps cough, dyspnea, pain, and in neglected cases bulging, redness, and edema of the chest were to be noted. The heart might be displaced. Tenderness and pain and discomfort were common. Diaphragmatic movements were abolished. Pushing downward of the liver in right sided involvement, or of the spleen upon the left side should be noted. There would probably be present muscular rigidity below

the costal arch. The higher line of dullness over the liver and pushing upward of the diaphragm behind was suggestive of pleural effusion and gave reliable evidence of the presence of an abscess. The x ray plate demonstrated the shadow of the effusion and might prove it to be subdiaphragmatic in location. The fluoroscope revealed the absence of respiratory excursions of the diaphragm. Feeble respiratory sounds, a lessened vesicular murmur, and even slight dullness might be detected. Pleural friction was occasionally to be heard, less frequently pericardial friction. Splashing was decidedly less frequent in subphrenic pyopneumothorax than in the usual form above the diaphragm. Increased area of dullness in the lateral region of the chest was to be found if the abscess was of much size.

(To be continued.)

## Letters to the Editors.

### DOCTOR BEEBE'S ORIGINALITY.

NEW YORK, August 16, 1915.

To the Editors:

It is with considerable reluctance and perhaps a feeling of disappointment that we deem it necessary to point out the mistakes that occasionally permeate the work of investigators that are endeavoring to throw more light upon the intricate subject of cancer. Nevertheless, a man who has accomplished some vital discovery and is able to blaze a path in scientific research, is worthy of every investigator's profound consideration; we, as truth seekers, should all be willing to give that man credit for his efforts. This, unfortunately, has been overlooked by two supposedly scientific men, Dr. James B. Murphy and Dr. John J. Morton, associated with the Rockefeller Institute, their results upon rat tumors having recently been published through the Academy of Science at Washington. Some statements made in this article are unquestionably true, but the findings so obtained were not original with these investigators, and it is for this reason that we feel that credit for the important results cited should be given to the man who first indicated what possibilities might be obtained by bringing them about for the relief and benefit which might follow in the treatment of malignant disease. This man is Dr. Silas P. Beebe, of New York. Exception is taken to an article that appeared in the *New York Evening Journal* for August 16th, in which the title was, "Hope of Cancer Cure in New Discovery."

Whatever agent was employed to obtain the results found, must be based upon the well known contention of Doctor Beebe's, that it is necessary for some activating medium which possesses the power of increasing and stimulating the activity of the white blood cell and the lymphocyte, in order that the abnormal malignant cell may be inhibited in its growth or entirely disposed of. This fact has been taken bodily and used as a basis for the theory evolved which has been given out by Doctor Murphy and Doctor Morton in their description of what has been accomplished upon rat tumors, a paragraph of which taken from the lay article in the foregoing journal is as follows:

"A great increase of the white lymph corpuscles—an increase either natural or brought about by injection of lymph tissue—gives absolute immunity from the dread disease. Where such an increase does not take place, the cancer grows at once and proceeds with virulent rapidity."

If this was original with the two investigators just mentioned, it would indeed be worthy of the highest praise that the medical research workers could give, but it is not due to their labors that such a fact has been demonstrated, but due to the original, careful work of Dr. Silas P. Beebe and his associates, which has made it possible for him to give the scientific world a method of treatment for malignancy that is based upon this fact; this principle being confirmed by the findings of Professor J. W. Vaughan, of Detroit, with his cancer residue and the split proteins that

he uses to increase the white leucocyte and lymphocyte count in malignant disease.

In the issue of the *NEW YORK MEDICAL JOURNAL* for May 15, 1915, page 982, is cited what the role of the white leucocyte in cancer does. In a paper read before the North Carolina State Medical Society at its annual session in Greensboro, North Carolina, on June 18th, by Dr. William E. Fitch, a further indication was given with a careful summary of the role of the white leucocyte and lymphocyte in cancer. Again, in an article in the *Western Medical Times*, Denver, Colo., it was once more cited at considerable length. While in the address delivered by Dr. Homer Axford at the annual State meeting of the New Jersey Medical Society held at Spring Lake in July, he gave the action of the white leucocyte and lymphocyte in cancer, and how by its activation through a medium employed under the direction of Doctor Beebe proved of great value in the treatment of this condition. All these articles have given to Doctor Beebe the credit for indicating the necessity of activating and increasing the leucocytic supply in all malignant conditions wherein an effort is made to overcome their progress.

And it is the purpose of this letter to briefly show that Beebe is the man to whom this credit should belong and not to the two investigators, Doctor Morton and Doctor Murphy of the Rockefeller Institute.

Trusting that there has been perhaps an oversight on their part in not giving the work of Doctor Beebe pre-eminence, we respectfully submit this statement.

W. E. FITCH, M.D.  
J. WALLACE BEVERIDGE, M.D.  
W. HOMER AXFORD, M.D.  
ELMER A. MILLER, M.D.

## Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*Local Anæsthesia.* By Dr. ARTHUR SCHLESINGER (Berlin). Translated by F. S. ARNOLD, B.A., M.B., B.Ch. (Oxon.). Illustrated. New York: Rebman Company, 1914. Pp. viii+211. (Price \$1.50.)

It would be difficult to find fault with the author's knowledge of his subject; it is exact and free from uncritical bias. Doctor Schlesinger has studied his materials at first hand; he has practised on real patients, not on the pages of books. It is impossible to read this book without realizing the truth of his own words, "as regards technic, I have throughout endeavored to put before my readers what I have found by experience to be the simplest and most practical methods." His success is rare. This is therefore a very remarkable little book recording the experiences of a careful observer in cases of local anesthesia. He has an eye for what is overdrawn in surgery and significant to convey a vivid impression to the reader. His remark that "operations for appendicitis are, in some clinics, frequently performed under local anesthesia; whether always painlessly I should not like to say," is prudent, and likely to please the well informed. Such operations often entail a good deal of pain. In such circumstances, Doctor Schlesinger does not consider them justified. The portions of the book dealing with the anesthetics to be used are particularly sensible. In these matters he is an excellent guide, and an uncommonly safe and informative one.

*Die nasalen Reflexneurosen und ihre Behandlung.* Eine kurze kritische Studie. Von Dr. ALBERT BLAU, Privatdozenten an der Universität Bonn. Bonn: A. Marcus & E. Webers, 1915. Pp. 32.

Seldom has any problem in medicine created so many fantastic ideas and so many often fanatical discussions as the question of nasal reflexes. Any laryngologist who can look back twenty-five years in his experience, will verify this statement. Besides, many will remember that in that period there was hardly a practitioner in New York or elsewhere who did not possess a galvanocautery apparatus, using it indiscriminately in the nose often without seeing



what he was burning away. That has quieted down to such a degree that nowadays one hardly hears of nasal reflexes, which surely do exist, only not as frequently as some of their advocates formerly thought.

It is interesting to read Blau's views on different diseases and their nasal origin. The most important of these is bronchial asthma, and its connection with pathological conditions in the nose. According to Blau, therapeutic activity in the nose is indicated only in cases in which such affections are found as would in themselves require our attention even without asthma being present; or in cases in which a connection between the nose and the reflex asthma is at least probable. In the therapeutic part of this chapter there is nothing new, nor are some of the author's histories surprising. We find many more such reports in a book written some fifty years ago by a homeopathic physician of unusual clearheadedness and experience, Henry Hyde Salter. It will interest the reader to find in Blau's monograph a good description of many other reflexes originating in the nose, a description that gives evidence of good and clear judgment.

*The International Medical Annual: A Year Book of Treatment and Practitioner's Index.* 1915. Thirty-third Year. New York: William Wood & Co., 1915. Pp. xii-760. (Price, \$4.)

The 1915 edition of this excellent annual contains 760 pages. The editor pays a well deserved tribute to his assistants in noting that the annual is fully up to the standard of former editions in spite of the great war, which has taken up much of the time of British practitioners and medical writers; in fact, the annual is improved by the very practical articles on surgery in the army and navy. There is an excellent discussion of the new *British Pharmacopœia*, and the drugs throughout the volume have been unified to conform with the official changes. A synoptical index of the past ten volumes of the annual is promised. Seventy-one fine plates and ninety-six illustrations in the text add to the beauty and utility of the work, and there is a useful glossary of new words. The general practitioner may well feel grateful for this work, even if he has been a fairly diligent reader of the medical periodicals.

### Interclinical Notes.

There has been a steady and sensible evolution in men's clothing for some thirty-five years. The unfortunate New Yorkers of 1879 wore black cutaway coats and top hats throughout the summer. Nothing has been sillier in recent years than the attacks of newspaper and stage humorists on the wrist watch and the sport shirt. Of the wrist watch we may say that it is almost universally worn by the army officers of the world, including our own, which fact seems to dispose of jokes based on the supposed effeminate qualities of its wearers. Golfers, not necessarily an effeminate class, are also partial to the wrist watch.

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The sport shirt is nearly an ideal garment for our tropical summer. We have been contending in this JOURNAL for many years for just such a shirt. Along with the new suits of light colored material, shantung and other, it should save many lives in the dog days. Probably some small town populations, which get their ethics and general *savoir faire* from funny pages and vaudeville sketches, would not allow one doctor alone to wear a sport shirt on his rounds. If we were a general practitioner, however, in an ordinary town, we should certainly try to get all the regulars to adopt two such common sense, hygienic, scientific, and beneficial inventions as the sport shirt and the wrist watch; as butts for humor we find them no funnier than the fountain pen.

\* \* \*

In *Outrageous Voice* in the *August Century*, R. C. Brown pays so beautiful and so affectionate a tribute to editors in general that we cannot refrain from reproducing the stanza complete:

Always my soft heart has beat with adulation  
For people who edit and criticize writing.  
Worthy folk, going about wiping the noses of croupy  
phrases;

Fucking exclamation points into strange beds,  
Picking moth webs out of warm, fur bearing sentences,  
And on top of that splitting cords of infinitives,  
To get up an appetite for a book review.  
I hold my breath when I come into the presence of these  
people.  
I feel highly humble.

\* \* \*

Dr. J. D. Rolleston, of London, has issued in booklet form his admirable *Study of Lucian and Medicine*, published in *Janus* early in 1915. We read with interest how closely the practice of medicine in the second century of our era resembled that in the twentieth, save that there was apparently no syphilis to complicate pathology in those days. Quacks flourished, despite the high reputation of the regular practitioner. The great vice seemed to be gluttony, and malarial fevers played a great role.

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One way of meeting delightful and perfectly bred people is to read the stories of Mrs. Humphrey Ward; one can be sure that every gesture, every vocal stress by these persons is exactly correct and may be safely taken as a model. The people are of flesh and blood, however, and act and react always in a manner to constitute a good story. A Great Success in the *Red Book* for August is no exception to the rule; in getting ready for the conclusion in September, the dramatis personæ are becoming fiery and energetic, but always in the most perfect taste.

\* \* \*

The Young Doctor, in *Wild Youth*, by Sir Gilbert Parker, is beginning to get mixed up with some desperate villainy in the August issue of the *Red Book*, and, we regret to say, he seems to share in the admiration of all the bachelors and widowers of Askatoon for the young and lovely wife of the octogenarian Mazarine. Sir Gilbert, being now an Englishman, ought to drop the h from *bronchas*—strange animals that inhabit some of our newspapers and magazines. In this same *Red Book* are several excellent short stories, by some of our best American specialists in that line.

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Mr. Gelett Burgess, who writes the maxims of Jepheth in the *August American Magazine*, has burlesqued the King James Old Testament long enough to have learned how and why italics were used by the translators. His own method is absolutely meaningless.

### Official News.

#### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending August 1, 1915.*

Anderson, John F., Surgeon. Directed to proceed to Norfolk, Va., for the diagnosis of a suspected case of plague. Cummings, H. S., Surgeon. Granted fifteen days' leave of absence from September 1, 1915. Currie, D. H., Surgeon. Directed to report to Senior Surgeon C. C. Pierce for duty in charge of the San Francisco Plague Laboratory. Foster, A. D., Surgeon. Granted seven days' leave of absence from August 5, 1915. Fox, W. F., Assistant Surgeon. Relieved from duty at the Marine Hospital, San Francisco, Cal., and ordered to report to the commanding officer, United States Coast Guard Cutter *Unalga*. Fricks, L. D., Surgeon. Detailed to attend a conference of health officers of the State of Washington, at Seattle, August 17, 1915. Keating, T. F., Assistant Surgeon. Relieved from duty on the United States Coast Guard Cutter *Unalga*, and ordered to report at Immigration Station, Angel Island, Cal., for temporary duty. Upon receipt of transportation, directed to proceed to Manila, P. I., and report to the Chief Quarantine Officer for duty. Pierce, C. C., Senior Surgeon. Relieved from duty in the Bureau, and placed in charge of plague eradication measures, San Francisco, Cal. Schwartz, Louis, Passed Assistant Surgeon. Relieved from duty at Philadelphia and the Marcus Hook Quarantine, and will proceed to Gloucester, N. J., to take charge of the medical inspection of arriving aliens.

**Simpson, French**, Passed Assistant Surgeon. Relieved from duty at the Hygienic Laboratory, Washington, D. C., effective July 31, 1915, and continued on duty in plague eradication measures, New Orleans, La. **Slaughter, W. H.**, Assistant Surgeon. Relieved from duty at Ellis Island, N. Y., and ordered to report to the director of the Hygienic Laboratory for duty, effective August 11, 1915. **Sprague, E. K.**, Surgeon. Leave of absence for one month from August 1, 1915, amended to read "one month's leave of absence from August 4, 1915." **Sweet, E. A.**, Passed Assistant Surgeon. Granted one month and seven days' leave of absence from August 10, 1915. **Wayson, N. E.**, Assistant Surgeon. Relieved from duty at the Plague Laboratory, and ordered to report to the medical officer in charge of the Marine Hospital, San Francisco, Cal. **Young, G. B.**, Surgeon. Granted two days' leave without pay, July 28th and 29th, and three days' annual leave from July 29th to August 1st, 1915.

Surgeon R. W. Brown and Assistant Surgeon M. V. Safford designated by the Secretary as members of a coast guard retiring board, to meet at the Marine Hospital, San Francisco, Mass., August 10, 1915.

### United States Army Intelligence:

*Changes of assignments in the various and duties of officers in the United States Army, August 10, 1915.*

**Anderson, J. B.**, First Lieutenant, Medical Corps. Relieved from duty at Fort Sam Houston, Texas, and ordered to sail on the *Buford*, August 26th, for duty in the Philippines. **Ashford, Mahlon**, Captain, Medical Corps. Upon being relieved from duty at Fort Hunt, Virginia, by Lieutenant E. W. Patterson, Medical Reserve Corps, will proceed to Fort Sam Houston, Texas, for assignment to temporary duty in the Southern Department. **Beaven, C. L.**, First Lieutenant, Medical Reserve Corps. Relieved from duty at Fort Washington, Maryland, and ordered to the Philippines on the *Buford*, sailing from Galveston, August 26th. **Blanchard, R. M.**, Captain, Medical Corps. Relieved from duty at Fort Strong, Massachusetts, and will proceed to Fort Sam Houston, Texas, for assignment to temporary duty in the Southern Department. **Canning, A. J.**, First Lieutenant, Medical Corps. Relieved from duty at Douglas, Ariz., and Plattsburg Barracks, New York, and ordered to the Philippine Islands on transport sailing October 5th. **Davenport, W. P.**, First Lieutenant, Medical Corps. Relieved from Fort Sam Houston, Texas, and ordered to proceed to the Philippines on the *Buford*, sailing from Galveston, August 26th. **De Loffre, S. M.**, Captain, Medical Corps. Relieved from Plattsburg Barracks, New York, and will proceed to Fort Sam Houston, Texas, for assignment to temporary duty in the Southern Department. **Guthrie, W. G.**, First Lieutenant, Medical Corps. Relieved from duty at Fort Riley, Kansas, and ordered to proceed to the Philippines on the *Buford*, sailing from Galveston, August 26th. **Hallett, H. J.**, Captain, Medical Corps. Relieved from duty at Fort Crook, Nebraska, and ordered to sail on the *Buford*, August 26th, for duty in the Philippines. **Hardaway, R. M.**, Captain, Medical Corps. Relieved from duty at Texas City, Texas, and ordered to sail on the *Buford*, August 26th, for duty in the Philippines. **Herbert, W. D.**, First Lieutenant, Medical Corps. Relieved from duty at Fort Sam Houston, Texas, and ordered to the Philippines on October 5th transport. **Jones, G. I.**, Captain, Medical Corps. On August 5th, relieved from temporary duty at Fort Terry, New York, and reported for duty at Fort H. G. Wright, New York. **Koerper, C. E.**, Major, Medical Corps. Relieved from duty at Texas City, Texas, and will report to the chief of the Division of Militia Affairs, for instructions and assignment to duty with sanitary troops of organized militia. **Meraux, L. A.**, First Lieutenant, Medical Reserve Corps. Upon arrival of First Lieutenant H. F. Lincoln, Medical Reserve Corps, at Jackson Barracks, Louisiana, will proceed to his home and is relieved from active duty in the medical reserve corps upon expiration of his leave of absence. **Miller, E. W.**, Captain, Medical Corps. Relieved from further treatment at the Walter Reed General Hospital, Washington, D. C., and will

proceed to Texas City, Texas, for temporary duty, with permanent station at Fort Caswell, North Carolina. **Munson, E. L.**, Lieutenant Colonel, Medical Corps. Upon arrival in the United States, and expiration of leave of absence, will report to the Surgeon General of the Army for duty in his office. **Reynolds, C. R.**, Major, Medical Corps. Left San Francisco, Cal., on August 5th en route to Honolulu, H. T. **Reynolds, Royal**, Captain, Medical Corps. Relieved from duty at Fort Niagara, New York, and ordered to Fort Sam Houston, Texas, for temporary duty in the Southern Department. **Roberson, H. M.**, Captain, Medical Corps. Relieved from duty at Fort Terry, New York, and ordered to proceed to Fort Sam Houston, Texas, for assignment to temporary duty in the Southern Department. **Scudder, J. H. H.**, First Lieutenant, Medical Corps. Relieved from duty at Fort Bliss, Texas, and ordered to the Philippines on October 5th transport. **Sherwood, J. W.**, Captain, Medical Corps. Relieved from duty at Fort Bliss, Texas, and ordered to the Philippines on October 5th transport. **Souter, W. N.**, First Lieutenant, Medical Reserve Corps. On August 4th reports relief from active service; mail address, New Castle, N. H. **Thode, E. F.**, First Lieutenant, Medical Corps. Relieved from duty at Fort Porter, New York, and ordered to proceed to the Philippines on the *Buford*, sailing August 26th. **Von Kessler, W. C.**, First Lieutenant, Medical Corps. Relieved from duty at Fort Niagara, New York, and ordered to the Philippines on the *Buford*, sailing August 26th. **Waring, J. B. H.**, Captain, Medical Corps. Relieved from duty at Fort Logan, Colorado, and will sail on the transport sailing October 5th from San Francisco for duty in the Hawaiian Islands. **Webb, L. W., Jr.**, First Lieutenant, Medical Corps. Relieved from Madison Barracks, New York, and ordered to the Philippines on the *Buford*, sailing August 26th. **Wilds, R. H.**, First Lieutenant, Medical Corps. Relieved from duty at Fort McPherson, Georgia, and ordered to the Philippines on the *Buford*, sailing August 26th. **Williams, A. W.**, First Lieutenant, Medical Corps. Relieved from duty at the Washington Barracks, D. C., and ordered to the Philippines on the *Buford*, sailing August 26th.

## Births, Marriages, and Deaths.

### Born.

**Hurd**.—In Waterville, Me., on Saturday, August 7th, to Dr. and Mrs. Benjamin P. Hurd, a daughter.

### Married.

**Dion—Bryan**.—In Quincy, Mass., on Tuesday, August 3d, Dr. Thomas J. Dion and Miss Anna Beatrice Bryan. **Folger—Whitford**.—In New York, on Monday, August 2d, Dr. Rupert Folger, of Whitestone, L. I., and Miss Bertha May Whitford.

### Died.

**Cox**.—In New Castle, Pa., on Sunday, August 8th, Dr. Joseph R. Cox, aged forty-eight years. **Fitzgerald**.—In Esperanza, Md., on Saturday, August 7th, Dr. Delano S. Fitzgerald. **Gourdeau**.—In Ishpeming, Mich., on Wednesday, August 4th, Dr. Athanasie E. Gourdeau, aged sixty-three years. **Kenny**.—In Wilkesbarre, Pa., on Friday, August 6th, Dr. John A. Kenny, aged forty years. **Lundholm**.—In Rochester, Minn., on Thursday, August 5th, Dr. Eric M. Lundholm, of St. Paul, Minn., aged fifty-seven years. **McDermott**.—In Louisville, Ky., on Sunday, August 1st, Dr. Thomas L. McDermott, aged seventy-two years. **Oberlin**.—In Oshkosh, Wis., on Monday, August 2d, Dr. Emily Oberlin, aged forty-eight years. **O'Malley**.—In Scranton, Pa., on Friday, August 6th, Dr. John O'Malley, aged fifty-nine years. **Palmer**.—In Kansas City, Mo., on Sunday, August 1st, Dr. Philip C. Palmer, aged sixty-three years. **Perkins**.—In Norwich, Conn., on Saturday, August 7th, Dr. William S. C. Perkins, aged seventy-eight years. **Taylor**.—In Beaver Dam, Ky., on Monday, August 2d, Dr. Simeon D. Taylor, aged fifty-five years. **Vandenberg**.—In Grand Rapids, Mich., on Monday, August 2d, Dr. John Vandenberg, aged forty-five years.

# New York Medical Journal

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### Original Communications.

#### THE BONE GRAFT WEDGE.

*Its Use in the Treatment of Relapsing, Acquired, and Congenital Dislocation of the Hip.*

By FRED H. ALBEE, M. D., F. A. C. S.,

New York,

Professor of Orthopedic Surgery, Post Graduate Medical School, and University of Vermont.

Acquired dislocation of the hip, such as paralytic luxation, was described as early as 1877 by Reclus, since which time a number of writers have set forth the nature, etiology, and treatment of the deformity; but up to the present time no unanimity of opinion has been reached in regard to these points.

There are two kinds of paralytic luxation of the hip, the *iliac luxation*, from paralysis of the abductors and external rotators; and the *pubic luxation*, from the paralysis of the adductors and internal rotators. Dislocations of this nature are not infrequent, but are usually diagnosed by associated contractures, adduction in the case of posterior luxation, and abduction of the thigh with flexion in the pubic luxations. The iliac dislocation is believed to be more frequently met with. The pubic displacement is difficult to confirm by roöntgenogram, because of the obscurity rendered by the neighboring bony parts, whereas the iliac luxation is readily revealed by the roöntgenogram. Clinical examination is rendered somewhat difficult by the atrophy of the muscles and altered direction and shape of the femoral neck, as well as by the presence of contractures.

These luxations may be due to muscle contraction, or extreme paralysis of hip muscles and a stretching of the unsupported capsule in patients unable to walk, but they also occur from static causes, even where paralysis is slight and there is an otherwise perfectly useful limb. Among the important physical signs of luxation are adduction and abduction contractures, with or without flexion of the thigh. An iliac luxation lordosis is to be looked for, and if the luxation is unilateral, a tilting of the pelvis out of proportion to the atrophy and shortening of the leg, and due directly to the paralysis, is appreciable.

The use of external appliances in treating these cases beyond the immediate correction of deformity is unsatisfactory, and in order to control these re-dislocating paralytic hips, the author has applied the autogenous bone wedge to deepen the overhanging rim of the acetabulum, which, in conjunction with reefing the ballooned portion of the joint capsule, furnishes a stable and satisfactory hip joint.

The indications for an open operation in paralytic

dislocations of the hip are the inability to replace the head of the femur, owing to contractures of the soft parts; faulty displacement of joint structures; or such relaxation as to permit of redislocation after repeated reductions.

Contracted structures are thoroughly stretched and the dislocation is reduced, if possible, by the closed method. Failing in this, or succeeding only to have a redisplacement, the open method devised by the author may be resorted to when it is found that the redisplacement is due to a relaxed capsule and a shallow acetabulum. The difficulty in paralytic dislocations of the hip, as a rule, is not the reducing of the dislocation, but the retaining of the hip in position after the reduction. The wearing away or flattening of the rim of the acetabulum results from the head slipping in and out repeatedly. In some cases this occurs with every step the child takes.

This open method for retention of the femoral head applies both to paralytic and congenital dislocations. In congenital dislocations, it has been applied only in cases where the acetabulum is shallow and the hip will not stay in place after a reasonable trial by the bloodless method. An open operation for the reduction of hip dislocation must be considered a major operation and should be undertaken under the strictest aseptic precautions. The result to be expected is a stable joint with the widest range of motion, without pain, and with the least shortening possible.

In many cases of hip dislocation the acetabulum is found to be too shallow and with superior rim insufficient to retain the femoral head. To obviate this defect, Hoffa, in 1890, did his first successful operation, which consisted chiefly in deepening the acetabulum by scooping out the contained fat, articular cartilage, and bone, to furnish an adequate concavity to receive and hold the head of the femur. By this method, he was enabled to produce a stable joint, but in many instances with little or no motion associated with pain, and in many others producing a stiff hip with a varying amount of shortening of the leg, depending upon the amount of excavation made in the superior portion of the acetabulum to receive the head of the femur. In cases where motion seemed free shortly after the operation, a later examination showed it to be slight, if any; and at a still later period a proliferative arthritis which completely locked the joint, frequently occurred.

The author's method, which has been performed successfully in a number of instances, obviates the above mentioned disadvantages and produces a stable joint, with full and free motion and without pain



or shortening. The most important feature is that it preserves the entire acetabulum and joint cartilage, thus guarding against any later joint change. It may be described as a bone wedge graft remodeling operation for paralytic and congenital dislocation of the hip. The important points of advantage which it possesses over the Hoffa open operation are:

1. It is an operation of less magnitude, producing less shock and mutilation of the anatomical joint structures.
2. There is a preservation of the synovial membrane and hyaline cartilage of the joint as well as of the ligamentum teres.
3. The operation is performed without the disarticulation or extensive trauma of the head of the femur, a most important factor in avoiding shock and subsequent traumatic degenerative change in the joint.

4. There is no shortening of the limb by the operation, as no portion of the existing articular structures is removed or scooped out as in the Hoffa operation.

5. There is a restoration of joint stability and a reinforcing of the joint structures, and an actual addition to the joint anatomy by the insertion of these bone grafts, to be described.

6. The author's method minimizes any possibility of limited motion of the remodelled joint, or subsequent production of osteoarthritis to limit motion or produce painful motion.

#### AUTHOR'S TECHNIC.

The technic of the operation is as follows: All existing contractures having been overcome by forcible manipulation or opened division, and the dislocation made easily reducible by weight and pulley, traction, or manipulation under ether, an incision is made from the anterior superior spine of the ilium to the great trochanter, then backward one to two inches in the direction of the ischiatic tuberosity; the

skin and subcutaneous structures are dissected back, and the trochanter is exposed; the tip of the trochanter is developed with its muscle attachments, and sawed off with the motor saw. This trochanter tip, with its attached muscles, is turned upward, giving a free exposure of the superior and poste-

rior portions of the capsule of the joint, together with its attached portion of the superior and posterior acetabular rim; this portion of the capsule is seen and felt to be lax if the head is in the acetabulum, and if the head of the femur is disarticulated it distends the capsule by pressure from beneath, and further displacement of the head is resisted. Upon manipulation of the femur the head is readily felt as a rounded hard surface slipping about beneath the capsule.

The amount of deficiency of the acetabular rim can be very easily determined at this stage by direct palpation and manipulation of the thigh, as well as the amount of laxity of this portion of the capsule. Above the capsule attachment to the acetabular rim, the bone surface is cleared of soft tissue, and with a narrow, thin osteotome the bone is incised just above the insertion of the capsule in a semicircular line in this posterior-superior-anterior surface, to conform to the natural curvature of the superior rim of the acetabulum. This semicircular bone incision produces a strip of the superior curved bone margin of the acetabulum with its at-

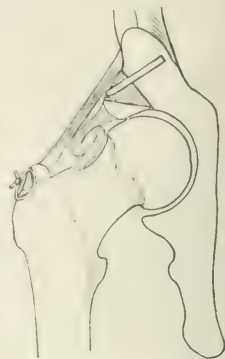


FIG. 3.—Anteroposterior view of remodelled hip joint with wedge bone graft pinned in position, depressing the superior rim of the acetabulum, the superior portion of the capsule, reefed and the tip of the trochanter with its attached muscles restored to its position and fastened with kangaroo tendon.

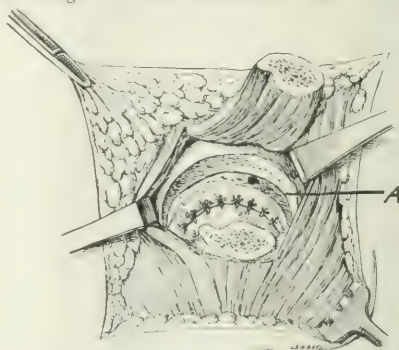


FIG. 4.—Author's technic of operation for paralytic and congenital dislocation of the hip, illustrating the division of the tip of the great trochanter with its attached muscles lifted upward to expose the joint capsule. The supraacetabular curved bone incision and reef sutures in the capsule are shown after depressing the curved bony superior rim of the acetabulum, and A indicates the semicircular cavity, with cuneiform cross section, thus formed.

tached and undisturbed capsule segment. This curved superior acetabular bone segment is pried outward with the osteotome to deepen the acetabulum sufficiently to offer an obstruction to displacement of the femoral head, i. e., this superior curved rim of the acetabulum is made to overhang and more securely grasp the head of the femur when

placed in its socket. (Fig. 4.) The prying downward and outward of this curved superior bony rim segment produces still more laxity and wrinkling of the attached portion of the capsular ligament. The slack is taken up by reefing this portion of the capsule by a row of mattress

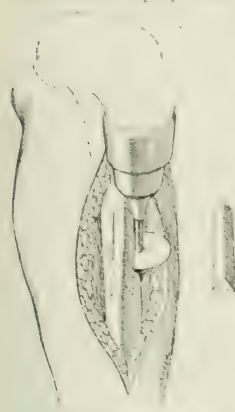


FIG. 5.—The method of the removal of the bone from the crest of the tibia to be divided into segments with the motor saw and used as bone graft wedges in paralytic and congenital dislocation of the hip. (See Fig. 4.)

sutures of kangaroo tendon placed at right angles to the long axis of the neck of the femur. The stitches are so placed as to make the reef of the capsule lie equidistant from the two ends of the capsular bone insertions. This reefing avoids entering the joint, takes up the slack of the capsule, and at the same time holds the newly formed or placed acetabular rim in position.

To fill in the bone gap produced by the prying downward and outward of this curved bone rim segment, and further to secure the permanent fixation of this newly formed acetabular rim, a segment of bone having

a triangular cross section is removed from the crest of the tibia, long enough, when cut into three or more portions, to fill in this gutter. Before disengaging this graft from the tibia, six drill holes are made in this bone segment, so placed that when this long graft is cut into three portions

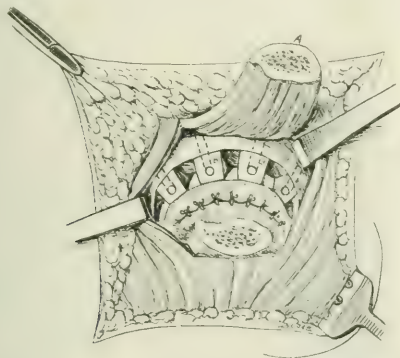


FIG. 6.—Technic of operation for paralytic and congenital dislocation of the hip, illustrating four autogenous bone graft wedges, *A*, held in position in the supraacetabular curved bone gutter by autogenous bone dowel pegs inserted through drill holes extending through graft wedges into the adjacent bony shell of the acetabulum. A strap of trochanter turned up with its attached muscles.

prior to being placed in position there are two holes in each portion. Fig. 5 shows the direction in which the saw cut is made in the crest of the tibia to produce the wedge graft.

Bone pegs, if used, are made from additional strips of bone obtained from the tibia just above where the bone graft is obtained, and these are

turned to fit the previously formed drill holes in the graft segments. This is quickly accomplished in the motor driven surgical lathe. The long wedge graft is removed from the tibia and cut into the three portions mentioned, which are placed in position and pegged to the pelvis. As a rule, the cancellous bone structure of this portion of the pelvis is satisfactorily penetrated by the cortical bone pegs without further drilling. These pegs should extend through the graft and into the pelvic bone for one half to three quarters of an inch. In certain cases it has been found that bone pegs to hold the graft in position are unnecessary, and that sufficient fixation is produced by drawing the soft tissues over the graft with kangaroo sutures.

The tip of the trochanter with its attached muscle insertions is returned to its normal position and sutured with kangaroo tendon through the periosteal structures. The skin is closed with continuous sutures of No. 1 chromic catgut, without drainage. The limb is placed in an abducted position and fixed by a long plaster of Paris spica reaching from the thorax to the toes, which remains on for six weeks, and is then replaced by a short spica for an additional six weeks, when the cast is removed and passive and active exercises are instituted, together with massage and guarded functional use of the limb.

40 EAST FORTY-FIRST STREET.

## PITUITARY TUMOR WITH IMPROVEMENT AFTER PUNCTURE OF THE CORPUS CALLOSUM.\*

BY WILLIAM M. LEBANSKY, M. D.,  
New York,

Neurologist, Lebanon and Harlem Hospitals, etc.

CASE. Isidor B. was admitted to my service at the Lebanon Hospital, April 5, 1914, with the following history: He was born normally at full term, and was now a school-boy seventeen years of age. His mother had one miscarriage, and two infants died within a few days after birth. Two other children reached puberty, and were in good health. He had measles at the age of five years, but no other illness during childhood. At his twelfth year (five years ago), he began to increase in weight, and this continued with frequent attacks of severe headache. One year ago, he first noticed that his vision was failing, and six months later, the right eye became blind. At about the same time, he had difficulty in walking and frequent vertigo with a tendency to fall toward the right side. There were also general asthenia and mental confusion. On account of diminishing power of attention, he discontinued school work. Formerly he was bright and intelligent; now he was stupid, and there was a mental retardation of about four years. His condition had been getting worse, and for the last three months there had been increasing general weakness, so that he was obliged to lie down the greater part of the day. Of late he had been very thirsty, drinking large quantities of water and urinating frequently. He ate large amounts of food and much candy, and seemed to have an inordinate hunger. He yawned continually, and at one time dislocated his jaw. He slept from twelve to fourteen hours daily, and fell asleep at inopportune times. Several times during the day he had attacks of laughing or crying without adequate cause. Five weeks ago, enlarged tonsils and adenoids were removed.

Examination: Height four feet nine inches, weight 152 pounds; there was pronounced adiposity with a feminine

\*Read at the New York Academy of Medicine, New York Association, May, 1914.

The child's mother said that the skin was dry and that there was hair to the axillae and only a very small amount of pubic hair. The external genitals were undeveloped, the labia tapering and of infantile type. Radiographic picture through parietal foramina of the ossified base of the skull in the supine position was slow, and the gait was of a shuffling and stumbling character. He yawned frequently, and would not fall asleep, unless aroused. Retardation of mental development corresponded with the third month for his actual age. The skull was of normal shape and size.

In the opinion of the radiographer, Dr. William H. Stewart, the x ray picture demonstrated the gross enlargement of the sella turcica, but the base of the pituitary fossa was irregular, and had a worm eaten appearance. The anterior clinoid process was markedly eroded and the floor of the sella seemed to be undergoing calcareous changes. (April 25, 1925.)

Pain was complained of on pressure over both supraorbital foramina, suboccipital regions, sternum, and ribs. Pulse 72, systolic blood pressure 110. Heart, aortic second sound accentuated. Thoracic and abdominal viscera normal. Pupils unequal, right larger than left; right, no reaction to light, consensual +, left, reaction to light normal, consensual O. Both reacted normally in convergence. Slight horizontal and vertical nystagmus. Ocular motility otherwise normal. Vision, right, perception of light, left, 20/100, with normal field for white. Bilateral primary optic atrophy, more pronounced on the right side. Incom-

plete bilateral anosmia. Fifth nerve, facial innervation and tongue normal. Tremor in outstretched hands, no ataxia, otherwise normal. Venous stasis over both legs,

the skin being cold, purplish, and blotchy. Arterial pulsation was normal. Muscular power and sensibility intact. Knee jerks equal and moderately exaggerated, with ankle



FIG. 2. Base of the skull; irregularity of the pituitary process; erosion of the clinoid process.

clonus. Achilles reflex normal. Bilateral plantar response of the Babinski type. Blood: Hemoglobin 90 per cent., red corpuscles 4,882,000, white 6,400 (polynuclears 46 per cent., lymphocytes, 48 per cent., eosinophiles five per cent., basophiles one per cent.). Serum, Wassermann, negative. Cerebrospinal fluid, Wassermann negative, globulin 0, lymphocytes 8 per c. mm., Fehling +. During his stay in the hospital, urine, 20 to 40 ounces in twenty-four hours, specific gravity 1.020, occasional trace of albumin, no glucose, no



FIG. 3. Femoral type of fingers; no atrophy.

casts, urea seven per cent. Temperature was usually normal, but occasionally subnormal. Pulse ranged from 90 to 100. Blood pressure, systolic 140, diastolic 90. Carbohydrate tolerance: After taking 250 to 300 grams of levulose, no trace of sugar was found in the urine.

As a result of hospital discipline, regulation of diet, and attention to the intestinal tract, the somnolence gradually disappeared. The daily subcutaneous administration of

plete bilateral anosmia. Fifth nerve, facial innervation and tongue normal. Tremor in outstretched hands, no ataxia, otherwise normal. Venous stasis over both legs,



one c. c. pituitrin (posterior lobe extract) for fourteen days, produced no relief. The headache, vertigo, and occasional vomiting, the exaggerated knee jerks, ankle clonus, and Babinski plantar response persisted, and the vision

were withdrawn. In the course of ten days, the headache, vertigo, vomiting, exaggerated knee jerks, ankle clonus, and the Babinski plantar reflex had

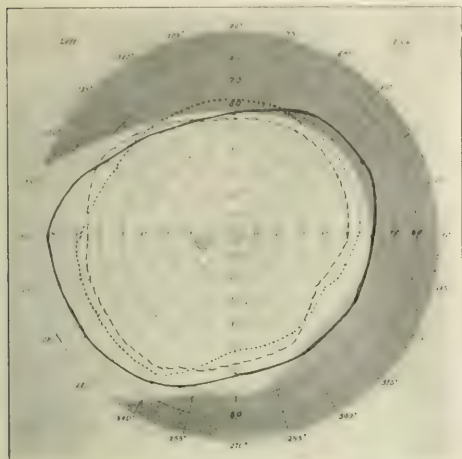


FIG. 4. November 1, 1914, V 10/100; right.

was unimproved. On May 12, 1914, the left field for white was moderately contracted, the fields for red and green were 20° and 25° respectively.

The intracranial pressure symptoms were attributed to internal hydrocephalus. The visual disturbance was as-

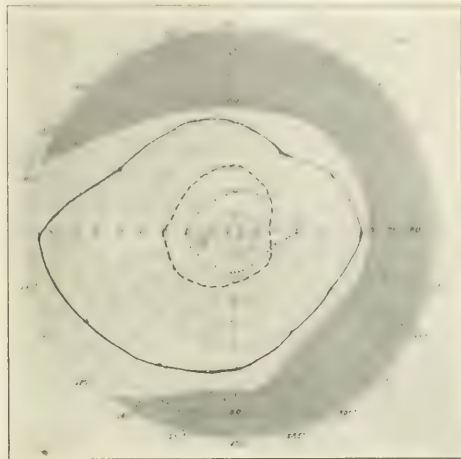


FIG. 6. May 12, 1914, callosal puncture; V 20/100; contracted fields.

entirely disappeared. One month after the operation, the vision had improved to 20/70, and the color fields had increased in size. He was discharged from the hospital in good condition, June 14, 1914.

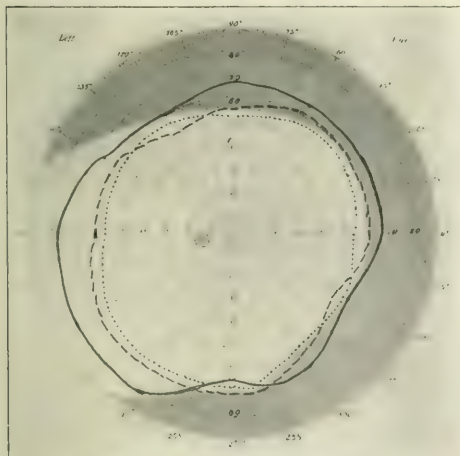


FIG. 5.—April 15, 1915, V 20/100; right.

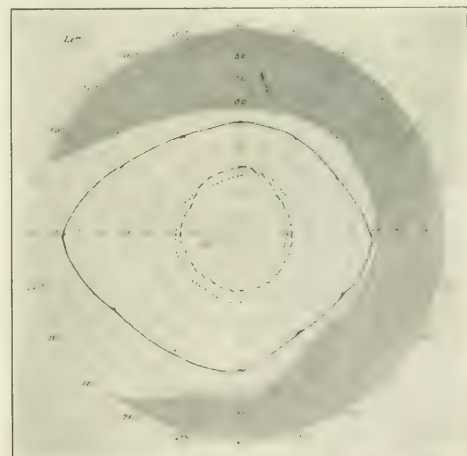


FIG. 7.—June 13, 1914, left eye, V 20/100; improved vision. Fields for red and green, 20° and 25°.

sumed to be the result of pressure upon the optic nerves, either from a distended third ventricle or from a hypophyseal tumor. The diagnosis was Fröhlich type of hypopituitarism resulting from a tumor of the hypophysis.

May 13, 1914 (about six weeks after admission), Dr. Henry Roth punctured the corpus callosum for the purpose of establishing permanent subdural drainage, and about sixty c. c. of cerebrospinal fluid

Records of central vision and perimetric charts up to the present time are herewith appended.

April 5, 1914: Vision, right, perception of light; left, 20/100.

May 12, 1914: Vision, right, perception of light; left, 20/100 contracted fields.

May 13, 1914: Callosal puncture.

June 13, 1914: Vision, right, shadows at one foot; left, 20/70 improved fields.

May 27, 1914: Vision, right, shadows at five feet; left, 20/70+.  
 May 18, 1914: Vision, right, shadows at ten feet; left, 20/30.  
 November 1, 1914: Vision, right, shadows at three feet; left, 20/30, fields normal.  
 March 13, 1915: Vision, right, perception of light; left, 20/70+.  
 April 25, 1915: Vision, right, shadows at three feet; left, 20/30, fields normal.

Since his discharge from the hospital, eleven months ago, none of the symptoms of intraventricular distention has returned. The mental condition has improved. He has remained in good health, and is employed daily carrying baskets containing heavy weights without unusual fatigue. The objective signs of hypopituitarism, such as hypotrichosis, infantile genitalia, and obesity have remained unchanged.

145 WEST SIXTY-SEVENTH STREET.

## GREEK PHYSICIANS AT THE PERSIAN COURT.

By W. B. KONKEE, M.D.,  
 Montoursville, Pa.

"Who are these Lacedæmonians?" in wrath and scorn exclaimed Cyrus the Great, when a Spartan envoy dared to warn him, conqueror unmatched and unchecked, not to harm any city of Hellas. "The Athenians, who are they?" contemptuously inquired Darius I, passing from amazement to rage when he was told that people thus named had burned Sardis, one of the proudest of his capitals. To their utter sorrow and humiliation the Persians, ere long, in the shock of combat on land and sea, made proof as to who were the Spartans and the Athenians. Marathon, Thermopylæ, Salamis, Platea—to the queries of Cyrus and Darius, these are the glorious answers.

Thus in hard schools the Persians were taught the might and valor of the Greeks. But in other ways, too, indeed in all other ways, these selfsame Greeks rapidly and progressively attained and maintained preeminence. In no particular or exclusive domain, but virtually in every realm of thought and art and enterprise the Hellenes won among their contemporaries commonly accorded primacy—rose to a position of authority and influence implying hegemony, if not suzerainty. How noble, how lustrous the age when little Greece was the leader and arbiter of the great world!

And yet the older civilizations were the teachers and trainers of younger Hellas. To achieve a paramount place in the forward march it is necessary to start from the vantage point of farthest prior progress. Knowledge and discipline should be gained from every available source. One should eagerly learn from even one's enemies. The ability to do this largely gave to Rome her magic of victory; the failure to do it was the ruin of Rome's barbarian foes. To conquer Carthage Scipio studied Hannibal—according to Michelet it was his own tactics turned against himself that overcame the son of Hamilcar Barca. Plutarch tells how Antisthenes said of the Thebans at Leuctra, that they

looked like schoolboys who had beaten their teacher. After Pultowa's day, at a banquet he gave the Swedish officers, his captives, Czar Peter proposed to them this toast: "To the health of my masters in the art of war." Voltaire chronicles the incident. Heine insists that Napoleon was finally the victim of his own martial genius—he was crushed only when he was imitated. Greece appropriated and utilized the valuable, the worthy, the true, found anywhere and everywhere. All climes she gleaned for ideas, facts, methods, processes. To the highest pinnacle of the past she mounted, and thence took her transcendent flight.

This general truth finds full and marked confirmation in the province of medicine. Medical historians largely agree that Greek physic embodied the best in synchronous world physic—that in the healing art Hellas took heavy tribute from Egypt, Phœnicia, Mesopotamia, even India. A distinguishing quality of the Greek intellectual movement, the element which made it so greatly superior, which lifted it so high and carried it so far, was the independence and freedom it allowed to individual thought. The right of criticism, of examination and proof, of objection and dissent, such right was common to all. The Hellenic mind appreciated and cultivated the past, but was no slave to it. Allegiance and homage were yielded to truth rather than to authority. A doctrine is sacred only for being true. For being old and deep rooted and widely disseminated and generally accepted, it may be respectable or dignified or venerable or majestic, but *not* sacred. And so the Greek thinker bowed to no despotism—disdained *ex cathedra* dictation from any throne of intellectual power. On his own chosen way he went without bond or shackle.

The exercise by the individual of *le droit d'examen* does in a certain sense tend to heterogeneity, even to confusion in the world of thought. Multiple analysis surely on one side impairs unity. But for such result there is overcompensation in gains in the opposite direction. The process admits of, and invites to an advantageous and prolific synthesis. To challenge and investigate means ultimately to select and combine. And thus even out of separation and variation themselves are brought forth harmony and homogeneity. No one system of thought or philosophy, ay, no one exposition of science, is truth all, nor all of truth. Expressions of the eternal verities must be partial, fragmentary, amalgamated. The ratio of chaff to wheat is always large, and much wheat is constantly missed in the harvesting. But by adding the fraction of truth in one collection of thought and opinion to the fractions greater or smaller in the instances of another and another collection is constructed in the long run, a whole, or approximately whole truth. So that school, sect, faction may serve the promotion of truth and right, even while at war with each other over their errors.

Of the freedom and independence which constituted at once the rock base and the sun kissed summit of Greek civilization Greek medicine was a loyal exponent. Just what such a condition signifies to medical progress and to the dignity and grandeur of the healing art, may be strikingly indicated by a contrast of this situation with the state

of absolutism trammelling and paralyzing the medicine of certain other peoples and of certain other periods. In Egypt, for example, a physician could not by so much as a hair's breadth digress from the cramped, beaten track of authority except at the peril of his life. Way down the after centuries, at the date A. D. 1545, the celebrated Biondo, of Venice, wrote, "It is more praiseworthy to deceive one's self with Galen and Avicenna than to acquire renown with innovators."

Another characteristic quality of Hellenic thought was its lucidity. The Greek thinker was a clear thinker. Now clearness of perception and conception demands and determines clearness of expression. Says Boileau:

Ce que l'on conçoit bien s'énonce clairement,  
Et les mots pour le dire arrivent aisément.

So it silently appears that Hellenic art in all its forms and modes is clean cut, pure, direct, forceful. No mere vain racial boast is the assertion, "what is not clear is not French." But however justly France may advance such a proposition, beyond controversy Greece with title supreme might have proclaimed that what is not clear is not Greek. In literature the principle in question has extraordinary significance. To announce truth is imperative, and any exposition of it will be meritorious. But the superlative merit attaches to the utterance of truth so strongly, so impressively, so luminously that people must pause and hear and heed. In this regard Hellenic medicine again reflects a distinctly Hellenic trend and trait. By virtue of their vigor and perspicuity, even more than by their accuracy and reliability, the Greek medical writings were for two thousand years the fountain head of medical erudition.

Thus, in brief, sensitively responsive to the general spirit pervading and quickening the entire Hellenic world of mind and endeavor, Hellenic medicine was cosmopolitan and progressive, intolerant of domination and constraint, luminous, and energetic. Through these qualities the healing art representative of the land of Hippocrates rapidly advanced from pupilage to leadership. Soon, marvelously soon, after the early Persian Kings propounded their inquiry as to who were the Greeks, at the Persian court itself Greek physicians were being welcomed and patronized.

Democedes was perhaps the first of the illustrious Hellenic physicians whose careers embraced a sojourn at the capital of the great Eastern empire. He lived almost a hundred years before Hippocrates. He belonged to the Pythagorean school of Crotona of which the medicophilosophical members, upon their banishment as constituting a too powerful political factor, became itinerant doctors, the noted *periodeutæ*. In such capacity Democedes resorted to Ægina, where, though handicapped by lack of means and appliances, he speedily won distinction, soon being granted an allowance from the public treasury. Thence he went to Athens, there too receiving a salary from the State. He then repaired to Samos upon solicitation of the tyrant Polycrates, who gave him annually two talents. This is the despot celebrated in legend for his unprecedented run of good fortune, a final incident of which Schiller has so masterfully interpreted in his *Der Ring des Polycrates*. But the gifts of the gods will not be

forever unmingled—of every Greek that was a fixed idea. Schiller makes the tyrant's friend, Pharaoh Amasis, speak to him in these lines:

Noch keinen sah ich trüblich enden,  
Auch den mit immer vollen Händen  
Die Götter ihre Gaben streuen.

The ruin foretold is not long delayed. The fatal stroke falls. Oroetes, satrap of Sardis, entraps Polycrates and sends him to the cross. As to Democedes, he was carried captive to Sardis. Unidentified, unknown, in fetters and in rags, he remained for an unstated period at the Lydian capital. By rarest chance he was here sought out by the king or kings, Darius Hystaspis. Herodotus delightfully tells the story. In dismounting from his horse Darius had injured his ankle. He failed of cure or relief at the hands of the Egyptians of high repute in the healing art whom he was wont to have about him. Upon the suggestion of an informed courtier he urgently sent for Democedes, who, fearing permanent detention, feigned ignorance of medicine. His dissimulation, however, yielded to threats of torture, and he reluctantly confessed to some slight acquaintance with medical procedures. The affair, though of graver hue, has yet somewhat the color tone of Molière's *Le médecin malgré lui*. Democedes effectually cured Darius, who in return showered upon him honors and riches. Afterward he treated with equal success a tumor of the breast imperiling the life of Atossa, the queen. Nor did he overlook his professional confrères. His intercession procured grace for the Egyptian physicians whom Darius in true Eastern despotic style had commanded to be crucified for being outmatched by a Greek doctor. He also saved a physician of Elea who had been forgotten amid a throng of other slaves. But Democedes never for an instant relinquished his aim to get back to the homeland in the west—to breathe once more the free air of his native Hellas. His Greek wits standing him in good stead, he finally set foot again upon the soil of Crotona, a Hellene among the Hellenes, in the enjoyment of which proud birthright he recked little of the loss of Persian dignities and Persian gold.

Another distinguished Greek physician who figured conspicuously at the court of Persia was Apollonides. He occupied an eminent position in the royal establishment of Artaxerxes Longimanus. He hailed from Cos, belonging to the generation immediately prior to Hippocrates. With his other state functions he was physician to the household of Megabyzus, a Persian lord married to the sister of Artaxerxes. Few facts concerning him are known; and for his fame it were well had there been at least one other episode buried in oblivion. His destiny chimes with the plaint in Shakespeare's lines:

The evil that men do lives after them,  
The good is oft interred with their bones.

According to Plutarch, the career of Apollonides terminated ingloriously. He was discovered guilty of criminal relationship with princess Amytis, the widow of his patron, Megabyzus, and for his baseness was put to ignominious death. The turpitude of his conduct is accentuated by the consideration that he probably had taken the "oath," the sublime, the sacred, the immortal oath. He had sworn, "with purity and with holiness I will pass my life



and practise my art," further swearing specifically that he would not do the very thing he *did* do. Nevertheless, over the memory of Apollonides let the mantle of charity be thrown. In passing judgment upon individual character, temperament and temptation should be taken into account. In any case it is only fair to judge the act by the man as much as the man by the act. And then, too, times and customs and prevailing morals must be reckoned with if accuracy and equity are the chief end of the estimation of personal worth. Not over-fragrant are the traditions of the manners of the ancient East. Indeed, the old oriental centres were notorious for their voluptuousness and debauchery. Apollonides's *faux pas* likely reflects without exaggeration the moral conditions of his class and station. He merely rolled as a leviathan in a common sea of corruption, which tinctured and tainted all that it touched. For the healing art in general more may be said. It may be confidently affirmed that at any epoch and anywhere the level of medicine will be found higher than the level of its environment.

Two other Greek physicians of renown who attained prominence at the Persian court, were Polyocrates of Mende and Ctesias. It is stated that both were prisoners of war, having with the heroic ten thousand accompanied Cyrus the younger, on his march against his brother, Artaxerxes Mnemon, in which ill advised undertaking Cyrus lost both his cause and his life. These doctors were retained by Artaxerxes at his capitol for many years, being assigned to important employment of various kinds. Polyocrates and Ctesias, were later contemporaries of Hippocrates. Both were of Cnidos. Parenthetically it may be noted that of the four Hellenic physicians cited as having been received with distinction at the court of the great king, one was a Crotonan, one a Coan, and two were Cnidians, which goes to prove that of the medical schools of Greece none had a monopoly of vogue.

Of the Mendeian the biography is extremely meagre. Enough is mentioned of him, however, to indicate that he was held in high esteem and confidence. A significant circumstance is that in the selection of an intermediary in the process of negotiations between himself and Artaxerxes the Athenian admiral, Conon, named Polyocrates as his first and Ctesias as his second choice.

Of Ctesias more is recorded. He was retained in captivity at Susa for seventeen years. He was a special favorite of Artaxerxes whom he had healed of a serious wound, and whose representative he became on a mission to Greece. He was a widely known and voluminous writer; his works were largely preserved to the time of Galen, and fragments thereof still remain. In medicine he wrote a treatise on hellebore, and a commentary on some of the teachings of Hippocrates in which he antagonized certain tenets of the great Coan himself. The most important of his literary efforts pertain to the geography and history of Persia and India, for the gathering of materials for which he had enjoyed exceptional opportunities through his connection with the court and with various State expeditions. As a geographer and historian, however, he was largely discredited by the ancients, who, indeed, set

him down for a fabulist and falsifier. Even Plutarch, the upright, the moderate, the finely poised, the broadminded Plutarch, quotes him with undisguised disparagement and contempt. He speaks of him as being excessively vainglorious, and charges him with forging documents, and with "filling his books with a perfect farrago of incredible and senseless fables." But time, research, investigation, exploration have wrought for Ctesias. He has come into his own. Like many another author temporarily distrusted and banned, he has been justified, vindicated by the onflowing years. The tale of his stony path as a writer and his triumph after ages illustrate vividly how right can be mistaken for wrong. Surely truth is stranger than fiction. In any event it were best not to assume the attitude of the rustic who at the circus turned in disgust from the cage of the hippopotamus with the categorical remark, "there ain't no such animal."

A sketch of the Greek physicians who went to the Persian court would be incomplete without mention of one who did *not* go. Hippocrates had won world fame. The great king desired to see him, and to have him near his person. The story is told of how the haughty despot sent to him a brilliant and august embassy with munificent gifts and with promises of rare honors and rich emoluments if he would resort to Susa. A celebrated picture shows the grand Sage of Cos seated, on his left numerous Persian lords casting at his feet their treasures and importunately entreating him to go with them, on his right various patients, the diseased, the deformed, the maimed. Calm, dignified, with a gesture rejecting alike the wealth and the proposals of the former, he turns his face toward the latter. Tradition makes the illustrious Coan reply to Artaxerxes thus: "I have in my own land food, clothing, a house. It is not permissible for me to possess the riches nor the honors of the Persians, any more than it is to devote my art to barbarians who are the enemies of my country." Whether apocryphal or canonical, the narrative at any rate entirely comports with the noble nature of the prince of physicians. Let the crown be on the brow of Hippocrates forever! He is the doctor *par excellence*—as to who may be second doubt will arise; but beyond dispute he is first. He is the true father of medicine. He divorced it from priestcraft, and brought it forth from its temple prison into the clear sunlight under the broad skies. He is the organizer of medicine. He made it a genuine science and a pure art. He is the largest contributor to medicine. Even yet he is our schoolmaster. As a thinker and a writer he has no superiors and few peers. He was a foremost man among a group of men unequalled irrespective of place and era. Plato, the rightful Zeus of the Olympus of Hellenic intellect, Plato himself ranks Hippocrates side by side with the brightest and mightiest of his fellow Olympians.

But the worthiest of Hippocrates was Hippocrates—the elemental material and fibre of him. All his superb, majestic powers were grounded in sterling, spotless, steadfast character. Ay, to lofty achievement in the healing art such condition is essential. To refute the preposterous proposition that a bad man may be a good doctor, it is necessary

only to bring into play the logical process of *reductio ad absurdum*. The great physician must above and beyond all else be great of soul. They who would interpret and apply the laws of life as established by the Giver and Upholder of life, must have clean hands and pure hearts. The ambassadors of God must be godlike men. And of Heaven's envoys to afflicted humanity throughout the ages none has arisen greater than Hippocrates.

## THE INITIAL STRAIN IN WEAK FOOT.

*Its Mechanics, and a New Method of Treatment.*

By PERCY WILLARD ROBERTS, M.D.,

New York.

In the various excellent studies on the mechanics and treatment of weak foot which have appeared from time to time, notably those of Whitman, Walsham and Hughes, of London, and Lovett, the effect of the more or less globular shape of the inferior bearing surface of the os calcis has escaped consideration.



FIG. 1.—Posterior view of skeleton of foot resting on a mirror, showing rounded under surface of os calcis and small bearing area.

From a mechanical point of view the os calcis, because of its firm union to the anterior part of the foot and its rounded bearing surface (Fig. 1), is one of the most important single factors in the production of lateral instability of the foot. While it would be an overdrawn statement to say that with the os calcis in proper position, the greater the amount of weight the foot is called upon to sustain, the less likelihood is there of flat foot; nevertheless, up to a certain point this is true, and the reason is purely a mechanical one, to be demonstrated presently.

All writers on the subject of weak foot naturally refer to the inward rolling of the os calcis. It has been treated, however, as an incident of pronated feet, not as a cause, and the basic reason for the rotation of the bone on its long axis has not been discussed.

To appreciate the importance of the role played by the os calcis in the production of weak foot, it is necessary to understand the strong bond between the heel and the bones which lie anterior to it. A glance at the deep anatomical structure of the plantar surface of the foot shows that the ligaments of greatest size and strength are those of the outer half, extending from the os calcis forward, binding this bone firmly to the cuboid, the cuneiform, and the proximal ends of the metatarsals (Fig. 2). Ligaments on the superior, external, and internal aspects add to the strength of the calcaneocuboid joint and still others pass to the scaphoid and the internal cuneiform. Obviously, then, when the os calcis is rotated, the rest of the foot must rotate

with it—an elementary observation well illustrated on any normal subject.

It is a self-evident mechanical principle that a body with an arc for its base will bear a superimposed weight without tilting, only when the thrust of that weight is applied at the centre of balance of the arc (Fig. 3). If the weight is tilted to one side or the other of the centre of balance, the body will tilt in proportion to the thrust applied and the distance from the centre at which it is received. If a cross section of the os calcis is made at the point of contact of its globular bearing surface with the plane on which it rests, the arc of the mathematician is reproduced, and the principle of balance just noted applies with equal certainty. If the thrust of the body weight above is directly over the centre of balance, the os calcis and the anterior part of the foot with which it

is so firmly bound, bear the strain without tilting. If, however, the thrust is to the inner side of the centre of balance of the os calcis, the bone tilts, carrying the rest of the foot with it, and produces a lowering of the longitudinal arch, or, in other words, pronation of the foot. Vice versa, if the thrust is applied to the outer side of the centre of balance, the arch is raised. The greater the weight to be borne, the greater the tilting of the os calcis, and hence the more pronounced is the deviation of the arch. Therefore it follows that with the thrust to the outer side of the centre of balance, the greater the weight borne, the less likelihood is there of producing flat foot until the point is reached where stretching of the ligaments permits anterior tilting of the os calcis.

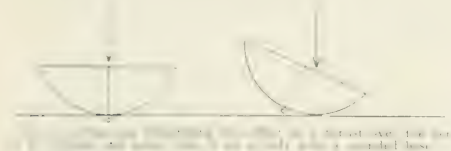
This principle has a familiar illustration in the simplest form of steam engine. If the engine is stopped on dead centre, no matter how high the pressure of steam admitted to the cylinder, it will not start. When the crank shaft is just over the centre, it goes forward or reverses, as the case may be, on the admission of sufficient pressure to overcome inertia. So it is with the os calcis. With the weight above applied at dead centre, no tilting occurs. Shift the weight to the inner side and rotation with the production of a pronated foot takes place. Shift the weight to the outer side of dead



FIG. 2.—Diagram of the deep anatomical structure of the foot (Gray's Anatomy).

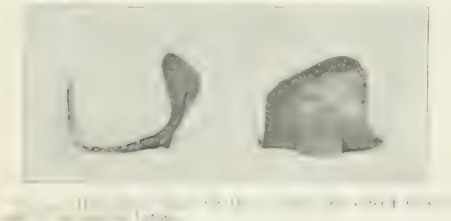
centre and the tendency is for the bone and the whole foot to tilt in the opposite direction, relieving the arch of strain.

In forming weak feet due to subnormal tone of the leg muscles, it is a tenable theory that the initial strain which starts a foot on its course to permanent pronation occurs during periods of standing. As has often been pointed out, in the attitude of rest the leg muscles are relaxed and the foot depends chiefly upon its mechanical structure and the strength of its ligaments to bear the burden it is called upon to carry. Under such conditions the normal play at the calcaneastragal joint allows the astragalus to slip downward and inward, thus



shifting the thrust of the body weight just a trifle to the inner side of the centre of balance of the rounded under surface of the os calcis. With the thrust so applied, the under surface of the os calcis rotates slightly outward, carrying the front of the foot downward at its inner border and bringing strain upon the relatively weak ligaments of the calcaneoscaphoid joint which support the head of the astragalus. Thus a process of stretching begins at this joint which, after frequent repetition of the strain, allows sagging of the head of the astragalus and the scaphoid, producing the classical weak foot.

For a time the tibialis anticus, in spite of the stretched ligaments, may support the longitudinal arch when the foot is in action, but unless specially developed, it eventually yields and the static pronation becomes a permanent deformity with the



usual train of symptoms of pain, fatigue easily induced, and bulging at the astragaloscaphoid joint.

If this theory of the cause of pronated foot is correct, then by rotating the lower surface of the os calcis inward until the centre of balance is reached or passed, while the ball of the foot is held in a normal plane, the arch should be restored. This is exactly what happens. The bulging at the astragaloscaphoid joint disappears and the arch resumes its normal form.

Applying this theory in practice, the writer has been using for several months a plate (Fig. 4) which grasps the os calcis, tilts it, and holds it in an overcorrected position. The plate extends for-

ward only to the anterior border of the bone and it does not depend upon any crutch effect under the arch. The results obtained have been extremely satisfactory. The arch is restored, pain disappears, the stretched ligaments are relieved of strain and may consequently contract, and the muscles of the plantar surface of the foot are free to develop without the pressure incident to the usual plate. The device appears to have a real corrective value and has the advantage of relative lightness, which is a consideration of some importance when dealing with women and children. It is also far less destructive to shoes than the ordinary plate and much less bulky. Further experience will be necessary to demonstrate how far its field of usefulness will extend, but the heel plate has been sufficiently well tried out to demonstrate that it is a serviceable adjunct in the treatment of flexible weak feet.

40 EAST FORTY-FIRST STREET.

## UTERINE FIBROIDS.\*

### *Surgical Indications in the Treatment.*

BY GEORGE ERETY SHOEMAKER, M. D.,  
Philadelphia,

Gynecologist, Presbyterian Hospital.

There was a long period of almost Egyptian darkness in the surgery of fibromas, broken about 1882 by our townsman, Baer, who carried out the idea of the ligation of the four main vessels and dropping the stump. This procedure at once caused an enormous improvement in the mortality of the operation for the typical fibroma, though the complicated fibroma, then as now, was the cause of many deaths.

During this formative period of surgery there became deeply rooted in the minds of the laity and physicians the idea that, operation being most formidable, it was better to wait for the menopause, and that waiting till then would stop the bleeding and even cause the tumors to disappear at times. This fallacious idea slowly gave ground, but still crops up in the history of the individual patient. It gave rise to much wreckage of life and happiness, as by the time the individual patient found out for herself that the hopes were false, she was either a chronic invalid or faced death from some complication of the growth.

The electrical treatment of which Apostoli was the chief exponent then arose, and for a time men and women were deceived by false hopes of cessation of hemorrhage and shrinkage of tumor. Then came the period of skillful surgery, in which the mortality of hysterectomy was so low and the results were so satisfactory, that, especially in women no longer young, the removal of fibromas was the choice of intelligent physicians. We are now entering upon still another period of development, namely, when the x ray and radium are being tried out on fibromas as they have been experimentally on so many other lesions. This phase of the subject has been ably presented, especially with reference to hemorrhage. The surgery of fibroma still remains

\*Read before the West Philadelphia Branch of the County Medical Society, February, 1915.



the most certain method of treatment in our possession, and is likely to continue to be, for many types of the disease and in many individuals, the best method.

The mistake is sometimes made of considering hemorrhage the only injurious feature in this form of growth. It is sometimes the most prominent symptom and the one which oftenest brings the patient to the physician. If, however, there were some safe and sure method of arresting hemorrhage, the growth would still remain. No one can deal successfully with fibromas until he learns that the complications of the tumor are quite as important as the tumor itself. Therein lay the fallacy of the old Tait operation of removing the ovaries and leaving the tumor. Not only was it a difficult thing to do safely, but it did not permanently stop the bleeding always, and the secondary degenerations of the tumor still went on. The matter of necrosis, for example, is an important one. If the tumor remains, this important degeneration may still occur at any period owing to alterations in the blood supply of deep portions of the growth, to invasion by bacteria, to torsion or compression. Its incidence is variously given at five or six per cent.

In the case of large tumors, compression of the ureters may occur. I had one interesting patient admitted to the hospital with marked uremia, but with normal urine. Curiously the flow could be improved by putting the patient on her back, and was greatly diminished when she was on her feet. It was found that her large hard fibroid was movable; it exactly fitted the abdominal cavity at a definite level, and in the upright position acted as a pelvic wedge, compressing the ureters; I removed the tumor and the uremia did not recur.

Neglect of these tumors may sooner or later give rise to inflammatory complications or peritonitis, salpingitis, oophoritis, cystitis. The last is due to distortion and interference with drainage of urine from the bladder, and may result in ascending infection of the kidneys. So large a mass mechanically interferes with the bowel action and is one of the causes of chronic intestinal obstruction and toxemia. By microbic migration, peritoneal inflammations are caused, giving rise to extensive adhesions which further interfere with the onward fecal motion.

Another indication for surgical operation is the possibility of pregnancy with its subsequent risks of necrosis during involution, of imperfect drainage or sepsis, either after delivery or earlier. Staveland (Johns Hopkins *Bulletin*, March, 1894, page 33) collected 597 cases which were allowed to go untreated until labor came on. Of these thirty-seven per cent. terminated fatally.

The danger arises, first, from interference with the proper emptying of the contorted uterine canal after miscarriage, if this should occur (twelve per cent. of deaths in 307 cases). Second, many patients have lost their lives from obstruction to labor. Third, after delivery necrosis of the fibroma is a dreaded and not uncommon complication of the puerperium, with a high mortality.

When symptoms of any form of infection arise in the puerperal fibroid uterus, much anxiety should be felt, as the exclusion of involvement of the

fibroid is difficult, and unless early operation is done, the patient will probably be lost.

As to the mortality of operation by hysterectomy, it is variously given. In simpler noninfected cases it is not over two per cent. It is the complications which present the difficulties and which add to the mortality. If we could see all fibromas in their stages where nothing but hemorrhage was present, the surgical removal would be easy and almost entirely safe. As a matter of fact, however, many of the tumors we see are postponed cases in patients who have tried all manner of methods to avoid operation; or they are tumors which have remained in the body for years, of moderate size, without degenerations, without tubal, ovarian, or appendicular complications, without hemorrhage, until their period of innocuousness being past, the complication develops, they become a menace, and come under the observation of the surgeon.

The question is then presented, Shall such a tumor be treated by x ray or radium and be thus, if possible, put back into its quiescent state, there to remain until complications again set in? Or shall it be removed once and for all, as being a menace to the future health, comfort, activity, and life of the patient?

Should the promise of the x ray be fulfilled there will be a valuable field for it, especially in small tumors the size of a teacup, whose only complication is hemorrhage. Such tumors would probably not be removed by the surgeon if they caused no symptoms. Before making a decision to tide the patient over by treatment, necessarily expensive in time and money, to be given only by an expert hand, the possible role of the appendix must be considered. It would be an additional argument for operation if there had been recurrent attacks of appendicitis, because operation for acute appendicitis would be dangerous in the presence of an adherent tumor, while the tumor could not be operated on at the same time. On the contrary, during quiescence, if the abdomen is opened to deal with the tumor, the removal of the quiet appendix is an easy matter and is safely done.

It may thus be seen that the gynecologist who investigates the life history of his patients, will not look upon the fibroma as a mass of unstriated muscle which bleeds, but as a growth which, whether it stops bleeding or not, may at any time through complications seriously compromise the interests of the patient. The writer has reported hysterectomy for sarcoma of the uterus, the sarcoma developing in a fibroma which had received thorough x ray treatment more than five years before. (Trans. College of Physicians of Phila., 1915. *Journal A. M. A.*, 1915.)

Another point to be considered is the necessary uncertainty of diagnosis, as the patient is presented to the specialist. Pregnancy plus a tumor may be very puzzling. Or, again, given a small pelvis bound or fixed, a stony hard body in which the uterus is deeply imbedded, irregular in outline, quite tender, associated with pain and hemorrhage; while the impression will often be that there is a fibroma of the uterus, and while this may be in part correct, yet, especially in stout strong women, it is astonishing how easy it is to be mistaken as to

chronic organized inflammatory processes due to diverticulitis, or even to tubal and ovarian infections. Many and many a time will the most experienced men open the abdomen to find themselves dealing only with inflammatory processes. Fortunately the treatment is operation in any event. Indeed to the touch the conditions may be almost indistinguishable. This may account for some of the reported disappearances of tumors under nonoperative forms of treatment. If such masses were treated by any means, spinal nerve manipulation, x ray, electricity, or even by internal medication, they might diminish or disappear, by suppuration, emptying into bowel, or by absorption in the course of months. The x ray has shown such power over certain other forms of tissue, that its relation to these tumors when actually present and uncomplicated will be watched with much interest as the years pass. Bearing on the frequency with which the complicated fibroma appears, I would present four specimens, removed within the last few weeks.

One was in a woman, aged fifty-six years, a large subperitoneal fibroma, which could not be reached out of the pelvis until the cervix could barely be reached behind the pubis. The tumor reached well above the navel.

Another, bleeding seriously at the age of forty-six years, proved to be an ovarian cyst, which had not become infected, but which with the hemorrhage from the fibromatous uterus had greatly weakened the patient. The fibroma was very prominent in front of the cyst and could be felt near the navel. The treatment of such a condition by any other than operative measures, would soon have cost the life of the patient as she was toxic already.

Still another, aged thirty-nine years, had well marked salpingitis as a complication of her fibroma, and an irreducible femoral hernia. These conditions, including the removal of the appendix, were all corrected at the same time. An ovary remains.

A fourth patient, aged twenty-nine years, had active salpingitis with a large purulent collection calling for operation. An ovary was left after the tubes and uterus, including the fibroma, were removed. These patients were permanently cured.

If it be granted that the tumor is to be removed, the question of technic comes up. One advantage of surgery is that at least one ovary, usually two, can be left with enough of the lower segment of the uterus to allow a menstruation to continue. This is very important in the life history of young and middle aged women. I have had such patients menstruate for years, though somewhat scantily. In order to leave this ovarian tissue and the lower portion of the uterus intact, abdominal operation rather than vaginal is done. Any small fibromas, if they appear in the cervix, are enucleated. Total removal of the uterus, including the cervix, is sometimes indicated. It shortens the vagina, but does remove a possible danger of cancerous degeneration of the cervix. Many tumors can be removed entirely while leaving a functioning uterus unimpaired. This, of course, depends on the relation of the tumor to the uterine body.

Tumors reaching nearly to the navel may be removed by the vagina, and for cosmetic results this is ideal. The removal of so large a tumor requires that it be treated by morsellation or torn to bits as it is drawn down. It is surprising how large a growth may thus be safely delivered. Professor Wertheim, when visiting this city, beautifully demonstrated this method in our operating room, on a tumor reaching almost to the navel. Many of the

tumors which bleed copiously are pedunculated and lie in the uterine cavity. The uterus may contract upon them and go through a very long laborlike process which finally expels the still bleeding mass into the vagina. Such tumors when neglected often become necrotic, but should be removed as soon as discovered. This can be done by the vagina usually, without doing hysterectomy. If there is necrosis, the cautery should be used on the stem. I have reported a number so dealt with in this service.

In conclusion, it may be stated that where each patient is carefully studied, taking into consideration the probabilities as to permanent cure, the importance of present or later complications, the chances of the patient being willing or able to secure months of skillful x ray or radium treatment or observation, the mechanical problem of a tumor's presence, the dangers of pregnancy, the effect upon cancer probabilities of a tumor irritant, and all similar features of the situation; the decision for surgery will be made in a great many cases.

1831 CHESTNUT STREET.

## GONORRHEA IN THE MALE.\*

### *Practical Suggestions in the Treatment.*

By HERBERT SCHOENRICH, M. D.,  
Baltimore.

The subject of venereal disease is one of the most important and vital problems with which the medical profession, the armies of the various nations, and society has to deal. The subject is tabooed in polite circles and dealt with by society somewhat after the fashion of the ostrich seeking safety by burying his head in the sand. When gonorrhea or syphilis is mentioned, society covers her ears and hides her face with her hands, to conceal blushes not always innocent. Much has been done by a wider conception of our duties, both on the part of the profession and laity, toward the sufferers and unfortunate victims of venereal infection, but whether the past decade has brought about an appreciable lessening of its prevalence, is a question. In the army and navy, perhaps, since the initiation of mandatory prophylaxis and other measures calculated to prevent venereal diseases, the results are strikingly encouraging, while in civil life, the genitourinary specialist at least is inclined to believe that the disease still exists in proportion to the population. He not only sees the early and acute cases, but to him are referred such patients as have been subjected to diversified medication, many patients who have been treated and ill treated at the hands of practitioners, charlatans, pharmacists, and lay friends.

The issuing of General Orders 17, War Department, 1912, directing bimonthly inspection of troops for the detection of venereal diseases, the keeping of official records and immediate prophylactic treatment following exposure has, through the enthusiastic efforts and cooperation of the military surgeons, done much to lessen the frequency of a disease which in the past contributed so largely to inefficiency. As regards prophylaxis of gonorrheal infection, my

\* Read before the American Society of the Association of Military Surgeons of the United States, Cincinnati, September 10, 1913.

colleague, Dr. Sylvan Likes, has taught in his practice by the method of protargol instillation within the meatus since 1898 with the very best results, and we in our practice do not think our duty toward the patient is ended with a cure, unless we impart to him knowledge necessary to aid in preventing possible subsequent infections, and we are happy to state that the moral aspect toward this procedure has changed to such an extent, that whereas formerly we were compelled to do this almost secretly, now backed up as we are by the army and navy attitude on this subject, we can come out in the open without fear of the adverse criticism of the perhaps well meaning but mistaken moralist. While there has been much important and epoch making literature bearing on the subject of venereal prophylaxis by army and navy surgeons, I have been unable, even after careful inquiry, to find much of recent date from this source appertaining to treatment.

It is not my intention to attempt to startle the reader with the announcement of the discovery of a cure of the *sterilisans magna* type for this ancient and much prevalent malady, but rather to bring out some of the salient points and practical suggestions, the knowledge of which so often spells the difference between success and failure in the treatment of both gonorrheal and nongonorrheal urethritis. It is almost needless to say that in the treatment of a urethritis it first becomes necessary to ascertain the nature of the most important symptom, namely, the discharge, particularly if gonococci are the underlying cause. However simple this may be in the more acute cases, in the chronic forms greater skill and experience is often required to detect these organisms. Just how long gonococci will remain latent in the male genitourinary tract, and what most reliable means we have at our command to pronounce a case *absolutely cured*, are questions, even at this late date, that give rise to considerable controversy. We still see the physician who assumes more or less of a careless attitude toward venereal disease and who dismisses his patient as cured with the disappearance of the discharge. On the other hand, we have the doctor whose firm belief is, "gonococci, here, yesterday, today, and forever." A man's opinion must naturally be guided by the light of his experience, and he may be sincerely justified in assuming either an optimistic or pessimistic attitude, depending upon the nature and number of his cases, and his ability as physician or specialist, for it is true that some patients get well quickly even under indifferent treatment, while others with the best of treatment and observation follow a most obstinate course. Personally, I have seen patients get well within a few weeks, patients who have utterly disregarded the usual precautions and instructions during the course of the disease; and again, have seen cases linger on for months where from the very beginning the patients received the best attention, and faithfully followed every instruction; all which goes to prove that in this disease, as in typhoid fever, pneumonia, and many other infectious diseases, much depends upon the virulence of the organism, and the susceptibility, resistance, and habits of the individual.

The examination for the presence of gonococci is the fundamental factor, and, in brief, it includes a microscopic and bacteriological examination of the

urethral, prostatic, and seminal vesicular secretion, obtained by the usual method of stripping the urethra, massage of the prostate and seminal vesicles, and the examination of the urine and the urinary sediment, the details of which may be found in any modern textbook on urology. The possibility of the prostatic utricle and Cowper's glands harboring the infection must also be borne in mind. These examinations are to be made under favorable, and if found negative, then under unfavorable conditions; namely, after the drinking of alcoholic beverages, preferably beer, after exercise, and after the anterior urethra has been irritated by the passing to and fro of a bougie à boule, the largest which the meatus will admit. The procedure last mentioned is important, for it not only helps to reveal the condition of the anterior urethral mucous membrane, but after this procedure, gonococci which have become deeply imbedded in the mucous membrane, particularly in the follicles and infiltrated areas, and have there assumed a more or less latent state of activity, will again show their presence by the usual clinical manifestations and then may be detected by bacteriological examination. As the urethroscope reveals only the macroscopical picture, it is of little value for the purpose of this examination, although it may prove useful in certain cases. After thorough examinations and observations of this kind during a period of about four weeks without the discovery of the gonococci, one can feel reasonably assured that the case is free from gonorrheal infection. Based on an experience of many years, the writer and his colleague have seldom seen any recrudescence, after such examinations have been carried out.

The complement fixation test, a recent addition to our armamentarium to ascertain the presence of gonococci or their toxins, in the hands of the writer, unfortunately, has proved unsatisfactory. With most reliable reagents, I have succeeded in obtaining but a few distinctly positive reactions, these occurring in chronic gonorrheal prostatitis and gonorrheal arthritis, where there was enough other evidence present. Similar cases showed a negative reaction, and two cases previously inoculated with gonorrheal vaccine, failed to react positively. Perhaps in the future with better antigens this test may prove more useful.

In gonorrhea, while it is almost impossible to estimate accurately the extent of the infection, clinically we speak of the anterior and posterior as it affects these portions of the urethra respectively. The organisms rapidly penetrate the epithelium, the mucous glands, and follicles, also spread backward with more or less rapidity, involve the entire pendulous urethra, and give rise to an acute inflammation with its usual manifestations. The symptoms of the onset of gonorrhea are familiar and subject to but little variation, but the course which it is likely to pursue and its termination, in spite of all care and attention, is an "unknown quantity." The specialist appreciates only too well the truth of the aphorism of Ricord, "a gonorrhea begins and God alone knows when it will end," as well as the dictum, that a gonorrhea is without rhyme, rule, or reason. While anterior gonorrhea not infrequently pursues an obstinate course, it is by no means as disastrous as the possible complications, once the posterior urethra is affected.



Consequently, when an anterior case comes under observation, it should be our aim to eradicate the infection as quickly as possible from the anterior urethra, and thus lessen the danger of posterior extension. To help to bring this about, we have devised an apparatus which has proved very effective (Fig.). It consists of a prop for making perineal pressure, a platform with a notched extension, the latter regulating the height of the prop. The patient stands on the platform and places the prop in such a position that pressure is brought upon the perineum just anterior to the anus. This is about the region of the membranous urethra, and sufficient pressure will easily occlude the canal at this point. With the apparatus properly applied, thereby shutting off the posterior urethra, and the fingers closing the meatus, the injection fluid is within a closed tube and may be easily retained for an indefinite period,



FIG. 1. A simple device for the purpose of making perineal pressure and shutting off the posterior urethra.

for if one stops to consider the anatomical pathological condition in a case of anterior urethritis, it becomes evident that the prime essential in the treatment is prolonged contact of the medicament with the affected mucous membrane, and whenever possible, to have the urethral canal distended, and the injection fluid, as it were, under pressure so that it may penetrate the follicles and glands of the urethra, thus affording it a real opportunity to destroy the gonococci.

Strict adherence to the usual sanitary and hygienic directions given out in gonorrhea, regulations of daily habits, perfect action of the emunctories, daily urethral injections in the manner above described, and appropriate internal medication, will certainly help to hasten a cure and prevent posterior extension.

A practical point often neglected is to look for follicles around the meatus. These passages vary considerably in extent and size and frequently the lumen is small, barely admitting a fine wire probe. They may either be blind, or communicate with the urethral canal and are located within a few mm. of the meatus. These passages are often foci of infection, reinfesting the urethra when the latter is apparently cured. On gentle pressure, pus oozes from these openings, usually rich in gonococci. The most effective treatment consists in the injection of a one per cent. solution of potassium permanganate by means of a hypodermic syringe. Care must be taken that the needle follows the course of the follicle so that none of the solution enters the tissues. A few drops will suffice, and the treatment, if necessary, is repeated several times. This simple method I have found to give far better results than the more complicated methods of cauterization and slitting open the follicles.

When the urine in the second and third glass has become cloudy, it is conclusive that gonococci have invaded the posterior urethra, which almost invariably results in a subsequent infection of the prostate gland. Frank reports 100 per cent. of infections of the gland after posterior urethritis; other authors re-

port prostatic infections without even the most transitory symptoms of posterior urethritis, explaining the infection by the anastomosis between the lymphatics or bloodvessels, or as a symptomless posterior urethritis. Other observers record from twenty to eighty per cent. of prostatic infections, and my records show about eighty-five per cent. of prostatic infections following posterior urethritis. A posterior extension without prostatic involvement should respond rapidly to daily permanganate irrigations, but should the second urine fail to clarify after several irrigations, digital examination of the prostate should follow, an experienced finger seldom failing to recognize even the slightest involvement of the gland, which may nearly always be corroborated by the macroscopical and microscopical examination of the expressed secretion of the gland and the seminal vesicles. A perfectly clear second urine by no means precludes the possibility of prostatic involvement. This anomaly is evidently due to the fact that the pus from the prostatic infection does not reach the surface and drain into the urethra. These cases, however, fortunately present symptoms referable to the prostate, rectum, or constitutional disturbances, and should always prompt the surgeon to make the necessary digital examination to determine if the prostate is affected.

With a prostatic involvement, we meet a situation more difficult to cope with. It is a question whether any part of the human anatomy has been subjected to more strenuous and abusive treatment than the prostate. Practitioners are too hasty in always attributing the source of chronic urethritis to the prostate, and institute unnecessary medication and instrumentation which often does more harm than good. Even the layman today has become quite familiar with this complication and believes his case to be almost hopeless when his prostate, or as he calls it, his "prostrated gland," is affected. As the subject of prostatitis opens an extensive field for discussion, and to do justice to this broad subject would only mean a repetition of what is contained in the modern textbooks on urology, I shall limit myself briefly to but a few suggestions bearing on the local treatment.

We distinguish two pathological varieties of gonorrheal prostatitis, namely the simple, subacute, or catarrhal prostatitis (incorrectly spoken of as the follicular); and the diffuse or parenchymatous. This latter form may be further subdivided, depending upon the extent of suppuration. Bearing in mind the pathological picture, the treatment is directed in the mechanical removal of the inflammatory exudate by intelligent daily massage of the gland followed by intravesical irrigations, or what is even better, previous distention of the bladder with a weak nonirritating antiseptic solution which is evacuated after the massage and may be followed by a solution of potassium permanganate. Where the prostate is indurated it may not be amiss to mention the uselessness of strong injections, irrigations, or instillations, except in special cases to be hereafter mentioned, as they only produce unnecessary pain and irritation.

In the diffuse form, where the swelling and suppuration is considerable, and where there is a ten-

dency to abscess formation, good results will also be obtained from daily, gentle massage of the gland, followed by irrigations of gradually increasing strengths. Where the prostate is indurated to such an extent that the examining and massaging finger hardly makes an impression, here the employment from time to time of a fairly strong silver nitrate instillation or injection, by setting up acute inflammation, will make it far more amenable to treatment. It is only in this form of prostatitis that I believe strong injections are justifiable.

There is a class of cases in which the prostate, in spite of persistent treatment, remains somewhat indurated and swollen, although numerous examinations of the secretions will no longer show the presence of gonococci or other organisms. If all treatment is discontinued for a short period, and the patient is kept under close observation, it will often be found that the prostate returns to its normal size and consistence, and the urine becomes clear.

Regarding vaccines, the strongest advocates of their efficiency have never asserted much for their value in acute conditions, nor have we been able to obtain results sufficiently constant to prove to us their value in chronic prostatic infections. In gonorrheal toxemia and arthritis, we have, however, obtained apparently much more favorable results, and in these cases they should be given a thorough trial by the administration of large doses at frequent intervals.

There are many cases of so called chronic gonorrhea, which on analysis are found either never to have been gonorrhea, or the gonococci have entirely disappeared. Of this class I wish to call attention to but one variety, that due to granulations and infiltrations of the urethra. The usual symptoms of this particular form consist of nothing further than a more or less purulent drop which collects at the meatus from time to time or is seen only after stripping the urethra, particularly in the morning—the notorious “morning drop”—or when the patient has refrained from passing urine for some hours. There is little or no pain, except perhaps during periods of intense sexual excitement. There is no disturbance in micturition, but the urine in the first glass will invariably contain shreds, that in the second and third being clear; or, if the anterior urethra is first washed out, all glasses will contain clear urine. Trifling as these manifestations may be, it is just such patients who run from one physician to another and undergo the extremes of treatment. They are advised by some to let it alone, in the hands of others they go through the whole gamut of treatment, prostatic massage, irrigations, instillations, injections, vaccines, serums, and instrumental balsams *ad nauseam* for patient and doctor as well.

After thorough examination has proved the absence of the gonorrheal organisms or other infections, or of any involvement of the posterior urethra, prostate, and other annexa, we may be certain that the focus of trouble is in the anterior urethra. This may be found by the introduction of a bougie à boule of sufficient calibre to stretch the walls of the urethra, so that in contradistinction to the normal smooth mucous membrane, the granular and infil-

trated areas may be felt as rough spots or perhaps as actual obstructions. It is our belief that the distensibility of the normal urethra is far greater than is generally taught and accepted; consequently we find that to demonstrate these pathological lesions requires instruments of much larger calibre than commonly employed. While the calibre of the urethra may average 32 mm. F. (Watson and Cunningham), yet it varies in different individuals; so we cannot place the normal at any fixed number. Another point is that the meatus may be too small to admit the passage of the requisite sized instrument, as it is an anatomical fact that this is the narrowest part of the urethra. In this event one should not hesitate to perform a meatotomy. When the infiltrated areas of the urethra have been detected, their number, extent, character, and location should be noted, but the technicalities of the actual measurements with various instruments devised for this purpose, in my opinion, are entirely superfluous as they have no practical bearing on the future treatment.

The treatment of this condition which has been detailed in another article,<sup>1</sup> consists of adequately stretching the urethra by the introduction of bougies (preferably the straight), the sizes beginning with the corresponding number of the bougie à boule employed; then, slowly increasing the sizes at intervals of from five to seven days until the uniform elasticity of the urethral canal has been restored. One may feel almost certain that with the proper degree of stretching, differing in different individuals, a cure will almost invariably result when the treatment is carried out to a sufficient extent to restore all parts of the anterior urethra to normal calibre. It will rarely be found necessary to use any injection or internal medication, but it is suggested that occasionally smears be made, and if numerous organisms are found, mild nonirritating injections will not be amiss. By this simple method of careful and thorough exploration of the urethra, with subsequent systematic dilatation, a class of patients who are frequently a bugbear to the practitioner as well as to the specialist may be permanently cured. It is difficult to realize, unless we come in personal relation with the victims of venereal disease, how great are the mental distress and nervous manifestations which afflict many of these patients, and which often tend to unfit them for their occupation, civil or military.

Should those who have the opportunity avail themselves of these brief practical suggestions in the treatment of urethritis, it will not only be of benefit to them but the object of this paper will be realized.

1134 LINDEN AVENUE.

**Treatment of Chancroids.**—N. E. Aronstam, in the *Indianapolis Medical Journal* for March, 1915, states that the ulcer and the surrounding inflamed area should be washed with a hot solution of boric acid, one dram (4 grams) to the pint (500 c. c.), and anointed with a four per cent. scarlet red ointment by means of absorbent cotton wrapped on an applicator.

<sup>1</sup>Espriching-Wet, *Occurrence of Gonorrhea in the Urethra*, Sylvan H. Likes and Herbert Schoenrich, *Journal A. M. A.*, June 2, 1911.

## FRACTURES.\*

*Indications and Other Considerations in Their  
Operative Treatment,*BY JOHN E. N. JONES, M. D.,  
Philadelphia.

When surgical philosophers differ upon questions of treatment, the effect upon their humble followers in the profession is just as serious as the importance of the mooted point. When a member of a surgical society speaks with the obvious purpose of nourishing academic discussion, so that it can be said of him:

He could raise scruples dark and nice  
And after solve 'em in a trice;  
As if Divinity had catch'd  
The itch, on purpose to be scratched,

his auditor either praises his profound knowledge of generally accepted facts, or curses his irrelevant erudition—the effect in either event being unimportant and ephemeral. When, however, a surgeon of vast experience and conceded ability proposes a method of treatment differing boldly from all endorsed procedures, and when he, further, shows numbers of cases treated successfully by his new method—the effect upon his colleagues is serious and protracted.

Diversity of opinion among surgeons about such a vital subject as the treatment of fractures is disconcerting to the man at the bedside who is facing the real problem of how to mend a broken bone. Here, he is not defending a thesis before a society, nor is he compiling statistics for a journal; he is attempting to perform conscientiously a solemn duty to a patient. He is trying to restore a limb to the physiological and anatomical state which it possessed before injury. Now, his soul should not be harassed by contrary doctrines, and he should not be obliged to wrestle with such problems as, Shall I operate upon this simple fracture at once, or shall I manipulate the fragments into alignment, if possible, and apply splints and traction? Shall I drain this compound fracture at once, or wait in antiseptic (?) expectancy for it to turn into a simple fracture? Such, however, is the mental state of the present day surgeon who approaches a broken bone—a mental state engendered by this difference of opinion among men of the greatest repute and widest experience.

It is true, that we knew that certain compound fractures required wiring, and, in fact, we had read in the writings of Nicholas Senn that Lapeyode and Sicre, of Toulouse, in 1775, used silver wire in a compound fracture—although Agnew and Holmes state that fixation by wiring was first suggested by Horeau, in 1805. We had been told that Dieffenbach, in 1845, advocated drilling holes through ends of fragments of bone, and inserting ivory pegs, in order to excite inflammation and cause the formation of bony callus. We had also read that Flaubert, of Rouen, father of Gustave Flaubert, the novelist, used silk sutures in compound fractures of the humerus about 1810 or 1820, and that Kearney Rodgers, of New York, sutured bone in the treatment of pseudarthrosis, in 1826. We remembered

having heard that Pancoast, in 1857, drilled through both fragments, pinned them together, and left the drill in place until after the formation of callus. All these were occasional procedures with which we were familiar, but the proposition made in 1894, insisted upon in 1905 and 1910, and supported by the report of one of the most prominent societies in the world in 1912—the proposition to operate in every simple fracture—has placed our ideas about the treatment of fractures “in a riotous unrest.”

Similarly, our ideas about bone regeneration after loss by trauma or disease, have been disturbed by Sir William MacEwen, whose experiments have led him to state that the periosteum does not generate bone, but merely limits the growth of bone, the new bone being created by the activity of osteoblasts, derived from other bone. Thus the foundation on which rests the treatment of fracture, periostitis, necrosis, and osteomyelitis has received a severe shock, and, while John Hunter's experiment of inserting two leaden shot in the shinbone of a young pig still forms the basis of our present treatment of epiphyseal separation, the work of MacEwen would render untenable our long established theory of how Nature fills up the gap in the shaft of a bone after trauma or disease has caused a solution of continuity.

MacEwen made many interesting tests to support his theory. Among other experiments, he elevated periosteum a quarter of an inch broad and two inches long from the radius and, without disturbing its attachment to the epiphysis, he buried it in muscle. Eight weeks later, the fibrous band within the muscle showed not the slightest evidence of bone, and there was an outgrowth of bone from the area of the radius which he had deprived of its periosteum. He placed an excised strip of periosteum around the jugular vein of the same animal from which he had removed the strip, and the strip was absorbed. He took away subperiosteally the entire length of a bone and there was no regeneration in the gap. Then he reconstructed a new humerus out of bits of bone without periosteum in a boy who had lost the shaft from acute necrosis. He found that, although periosteal grafts in the neck do not make bone, thin sections of bone itself, planted into the neck, will increase in size. He secured osseous growth by placing bone chips into the omentum. A spiculum of bone from a fractured humerus, in one case, penetrated a traumatic aneurysm of the brachial artery, and the osteoblasts from the humerus penetrated the clot lining the aneurysm and formed an osseous wall.

If it is true that the sole function of the periosteum is to limit the production of bone, we can readily understand why in subperiosteal fracture, union occurs quickly and without callus, and why callus is formed when the periosteum is lacerated. The tearing of the periosteum, with the consequent escape of osteoblasts into the surrounding tissue, may also explain that condition known as traumatic myositis ossificans. In fact, according to this theory, exostoses or even universal myositis ossificans may be explained on the ground that there has been liberation of osteoblasts due to some slight trauma.

The facts fundamental to our old theory that bone is created by the periosteum are furnished by the

\*Read before the Northeast Branch of the Philadelphia County Medical Society, March 18, 1915.



manner in which bone often regenerates after acute periostitis. As is well known, the pus inside the bone travels out to a position between the periosteum and the shaft and strips the periosteum from the latter. Often, in such a case, new bone is created under the detached periosteum—on the periosteal side of the pus, so to speak—while the shaft is dying. MacEwen's reply to this argument is most plausible. He says that in such cases the inflammation is not great and the vessels in the bone, dilating, permit the osteoblasts to swim out through the Haversian canals and some of these osteoblasts lodge under the periosteum and form new bone there after it is stripped from the shaft. Meanwhile, those osteoblasts left stranded on the shaft, having no nourishment, perish.

What stimulates the osteoblasts into proliferation is not explained. MacEwen says that the relief from pressure does it. Some authorities believe that increased blood supply to the part is a factor, while other investigators assert that blood clot has a chemical influence upon the osteoblasts sufficient to make them multiply.

Whatever solution time will offer for this involved question, John B. Murphy seems to give us a most ingenious compromise, which we may as well accept for the present. He attributes osteogenic power to the medulla, the Haversian canals, the lacunæ, the canaliculi, and the periosteum. He says that the periosteum is an important factor in the production of bone early in life, but of little value for that purpose in old age. He asserts that when a bone is fractured, regeneration takes place from all of these five sources: At all times, most actively from the medulla; next, and most prominently in youth, from the periosteum; and then, in turn, from the Haversian canals, the lacunæ, and the canaliculi.

Whether either theory concerning regeneration of bone has been substantiated beyond peradventure or not, is scarcely of as much importance to the practical surgeon as the question of the actual management of fractures.

In considering the indications for the operative treatment of fractures, it is necessary, naturally, to separate the simple from the compound, and, as there is more unanimity of opinion among surgeons concerning the treatment of the latter, it may be discussed first and briefly. In compound fractures, it is always the safer plan to intervene at once, because it is impossible to tell the extent of destruction, either to the bone or to the adjacent soft parts, without exploring the seat of fracture. Whether it is necessary to insert drainage merely, or to perform a more formidable operation, we do not know until we cut down and investigate. There is ample and eminent authority for delaying in order that the compound may be converted into a simple fracture; but, this "consummation devoutly to be wished" being the exception rather than the rule, it is safer to place the drainage in advance of the very probable infection.

The indications for operations on simple fractures are far from fixed, and men of the greatest ability and widest range of experience differ radically on the question of the open treatment of simple fractures. In 1894, W. Arbuthnot Lane, in a paper

read before the Clinical Society of London, averred that the operative treatment of simple fractures possessed the advantages of at once relieving the pain caused by the movement of fragments upon each other, of relieving the tension and discomfort due to extravasated blood, of shortening the duration of convalescence by securing primary union, and of leaving the patient's "skeletal mechanics" as they were before injury. This paper started a discussion which lasted nearly twenty years, and, in 1910, the British Medical Association in London appointed a "committee to report on the ultimate results obtained in the treatment of fractures, with or without operation." The result of this committee's investigation, published in 1912, is based upon 2,904 cases of fracture treated operatively or nonoperatively in various clinics in Great Britain and on the Continent. The committee supports Lane's contention and warmly recommends operation in many cases, but it states in the report that nonoperative procedures are likely to remain for some time safer and more serviceable for those unable to avail themselves of the operative method. Robert Jones, however, in his brilliant analysis of this report, is far from conceding that the operative method "is to become the recognized routine." He seems to think that it is of more importance to improve the existing nonoperative technic and to know when the surgeon should operate at once.

It is the writer's opinion that nonoperative technic will not improve until the student spends more time in learning the mechanics of fractures and the physiology of attached muscles. Ashhurst, in a recent article, states his belief that the results of the treatment of broken limbs in general are not as good now as formerly, and he attributes this deterioration to a lack of interest in fractures between the years 1900 and 1910, when the student's mind was distracted from "dry bones" by the brilliant achievements of abdominal surgery. Nonoperative technic will not improve if we make use of the skiagraph in place of, instead of as an aid to other diagnostic methods. Nonoperative technic will scarcely improve if we adopt the attitude of a London surgeon who said, not many months ago: "I do not propose to say anything about the diagnosis of fractures, since it has resolved itself so largely into a question of obtaining perfect x ray photographs." Such a statement, the offspring of a scientific mind, can be explained perhaps on the hypothesis that its author has never suffered from a dearth of "perfect x ray photographs"; but what will such teaching do for us in the provinces where "perfect x ray photographs" are still considered brilliant exploits, and where we are still, occasionally, seeing fractures that do not exist and missing those that are present? And what is to become of the still more remote practitioner who never has access to skiagrams?

Nonoperative technic will not improve if we leave most of our simple fractures to the care of our resident physicians exclusively, as problems utterly beneath our dignity; if we do not make sure that thorough examination (under an anesthetic, if necessary) is made; that proper reduction is secured; and that traction and splints are applied intelligently.

How does the surgeon know when he should operate at once? For the lesson that Robert Jones

draws from the report of the British Medical Fractures Committee is that it will not do to resort to operation only after nonoperative measures have failed. The advisability of operating in such cases must be reconsidered and acted upon at once, if we would secure good functional results. No laws can be laid down that will cover this question. The surgeon in possession of the most mechanical resources will operate the least in simple fractures. Bardenheuer, after treating 10,000 fractures by extension alone, believes that it is rarely necessary to operate. There are, after all, but two indications for operating upon simple fractures: when we cannot reduce the fracture without operation, and when it will not stay reduced without direct fixation of the fragments. Even these two indications are relative, depending upon the man who attempts to set the bone. One man may be able to reduce the fracture which baffles the efforts of his colleagues; just as one surgeon may successfully operate upon simple fractures of the same type which suppurate in the hands of his confrères.

Again, what degree of reduction should satisfy us? Must we operate upon every simple fracture in which we fail by manipulation and traction to secure absolute anatomical alignment of the fragments? The experience of hundreds of surgeons who have obtained excellent functional results after fractures, does not justify this uncompromising position. It is not always necessary to restore the long bones to their original form exactly. Our object, of course, should be to secure as accurate approximation as possible; near joints, especially the elbow and the ankle, accurate alignment is very important, but in the middle of the shaft it is enough to obtain firm bony union without shortening, without interference with the normal axis of the limb, and without rotation of one fragment on the other. In order to have firm bony union without shortening, the fragments must approximate "end on" and not by lateral contact, nor must lateral displacement be over two thirds of the diameter of the bone. If such reduction cannot be accomplished because of muscle spasm (usually overcome by deep anesthesia or by extension); because of fascia, muscle, etc., between the fragments; because of buttonholing of the fragment in a joint capsule; because of complete rotation of a detached fragment; or because of undesirable impaction—then we must operate. If we have displacement unmanageable by external appliances—usually due to comminution, obliquity, muscular action, or a disobedient patient—then we must operate.

In the writer's opinion the best plan to adopt regarding the treatment of fractures is that followed by Robert Jones, John Chalmers DaCosta, and several other surgeons of broad experience and sound judgment. These gentlemen operate primarily for:

- Fracture of the patella;
- Fracture of both bones in the leg in the lower third;
- Most fractures of the os calcis;
- Some cases of Pott's fracture;
- Most cases of fracture of the upper third of the femur;
- Some fractures of the neck of the femur in the young and middle aged;

Some fractures of the surgical neck of the humerus;

- Fractures of the olecranon, especially those in which the fragment has rotated;
- Some fractures of the elbow joint;
- Some fractures of both bones of the forearm; (in order to preserve pronation and supination);
- Some fractures of the metacarpus;
- Fractures of the zygoma;
- Some fractures of the mandible;
- Fractures of the clavicle, when complete reduction is impossible, or when sharp pointed fragments threaten to pierce the skin or damage important structures;

In compound fractures, in many comminuted fractures, if an important nerve or bloodvessel has been divided;

Most children are manageable by conservative methods, and do not do as well as adults after operation.

If an operation is decided upon, the patient should be told in advance that he may not get a good functional result, because, too frequently the history of the postoperative career of one whose simple fracture has been cut down upon, justifies the criticism that "the last state of that man is worse than the first."

Unless he is convinced that, without operation, function will be bad, and unless he is in a position to avail himself of scrupulously aseptic technic, the surgeon who employs the open method of treating a simple fracture is subjecting his patient to an unjustifiable risk. Osteomyelitis, necrosis, multiple operations, amputation, death—these have been some of the results of infecting a simple fracture!

If it is true that in the past ten or fifteen years brilliant results have been achieved by a few operators on simple fractures, while many have failed with the nonoperative measures at hand, shall we jump to the conclusion that therefore all simple fractures should be operated upon? Or shall we be candid enough to infer that many of us have neglected our opportunities to perfect our nonoperative technic?

#### REFERENCES.

1. ALBEE, F. H.: *NEW YORK MEDICAL JOURNAL*, 1914, XCIX, 1026; *Am. Jour. Surg.*, xxix, 3, March, 1915.
2. ASHURST, A. P. C.: *Surgical Principles and Practice*, 1914, p. 1101.
3. *Jour. Surg.*, xxix, 3, March, 1915.
4. BECKMAN, E. H.: *Jour.-Lancet*, April, 1913.
5. BLAKE, JOSEPH: *Surg., Gyn., and Obs.*, April, 1912, p. 438.
6. COTTON, F. J.: *Am. Jour. Surg.*, xxix, 3, March, 1915.
7. DA COSTA, J. C.: *Modern Surgery*, 1914, p. 534.
8. EISENDRATH, D. N.: *Keen's Surgery*, 9, 1910, p. 125.
9. ESTES, W. L.: *Med. Times*, xlii, 353, 1913; *Amer. Jour. Surg.*, xxix, 3, March, 1915.
10. EVE, D.: *American Practice of Surgery*, iii, 1907, p. 91.
11. GIBSON, J. H.: *Annals of Surgery*, iv, 329, 1912.
12. GROVES, E. W. H.: *Brit. Jour. Surg.*, i, 428, 1914.
13. GUTHRIE, G. W.: *Am. Jour. Surg.*, i, 428, 1914.
14. HOWARD, R. C.: *Dissection of Surgery*, 1914, p. 418.
15. JONES, R.: *Brit. Med. Jour.*, Dec. 7, 1912, p. 1589; *Am. Jour. Orthop. Surg.*, xi, p. 314, 1913.
16. JUDD, E. S.: *Railway Jour. Surg.*, xi, 237, 1913-14.
17. KELLY, J. A.: *Jour. A. M. A.*, Jan. 24 and 31, 1906.
18. LANE, W. A.: *Surg. Clin.*, ii, 1913; *The Operative Treatment of Fractures*, 1914; *Amer. Jour. Surg.*, xxix, 3, March, 1915.
19. LATHROP, W.: *Internat. Jour. Surg.*, xxvii, 375, 1914.
20. MACEWEN, W.: *The Growth of Bone*, 1912.
21. MARCY, W. H.: *Am. Jour. Surg.*, xxix, 3, March, 1915.
22. MURPHY, J. B.: *Surgical Clinics*, 1, 2 and 4, 22. Report of Committee of British Medical Association in the Treatment of Simple Fractures.
23. *Brit. Med. Jour.*, Nov. 30, 1912, p. 1505.
24. ROBERTS, J. B.: *Med. Record*, Nov. 4, 1905.
25. SENN, NICHOLAS: *Practical Surgery*, 1901, p. 531.
26. SHORT, A. R.: *Neuer Physiology in Surgical and General Practice*, 1915, p. 56.
27. THOMAS, H. A.: *Principles of the Treatment of Fractures and Dislocations*, June, 1886, p. 4.
28. WALTON, A. J.: *System of Surgery*, iii, p. 611, 1915.
29. WHITE, J. W.: *Internat. Jour. Surg.*, xxvii, 273, 1914.
30. ZIMMERMANN, B. F.: *Amer. Jour. Surg.*, xxix, 3, March, 1915.

## MIDWIVES AND PHYSICIANS AS FACTORS IN PUERPERAL FEVER.

BY NAHUM KAVINOKY, M. D.,  
Buffalo.

The question of puerperal fever is one of the greatest importance from a medical as well as from a social standpoint. The disease is as old as obstetrics itself. The first reports of epidemics came in the fourteenth century from the Hôtel Dieu in Paris, one of the oldest hospitals having a maternity ward. In 1768, Doctor Denmann stated that, in his opinion, the disease was carried by midwives and physicians from one puerperal fever case to another. The real study of this infection was started when Oliver Wendell Holmes, in 1843, and Semmelweis, in 1847, demonstrated that the infection was carried to the women by others. Semmelweis blamed students who were attending autopsies at the same time that they were attending confinements. The theories and methods of disinfection proposed by Semmelweis did not find many followers among his contemporaries. About twenty years later, when Lister made his discoveries, the fight against puerperal fever was taken up on a scientific basis. Since that time, a large part of the medical profession all over the world has been making efforts to do away with this dread of obstetrical practice. As yet success is not complete.

In spite of all advance in obstetrics and modern asepsis, the best equipped lying-in hospitals in Germany still give 0.1 to 0.2 per cent. mortality from puerperal fever. Though statistics are not available, the percentage of mortality in private practice is much higher. Bumm gives the total mortality in puerperium as 0.5 per cent., 0.4 per cent. of which is due to infections—in other words, four fifths of deaths after labor are due to puerperal fever. In this country, 15,000 deaths have occurred after labor and still the laity and some physicians consider labor a physiological process.

Beside mortality, we must not overlook the question of morbidity. In well equipped maternity hospitals where accurate statistics are available, the morbidity rises to fifteen per cent. This includes all cases due to the genital tract, care having been taken to exclude all fever from intestinal and other complications. It is difficult to ascertain what part of these morbid conditions due to puerperal sepsis are of a temporary nature and what part result in permanent lesions. Every gynecologist and general practitioner knows how often in getting the history of a patient the fever in puerperium is given as the starting point of some chronic ailment, such as malposition of uterus or chronic pelvic inflammation.

Who is responsible for such a deplorable state of affairs? In order to answer this, we have to reach as clearly as possible an understanding of the etiology of puerperal fever. First of all, we have to consider labor as a surgical condition and infected labor as a surgical infection—simply wound infection. After any normal labor, the inner surface of the uterus represents a large open wound with the outer layer of the decidua undergoing necrotic degeneration, thus forming excellent culture media for the growth of bacteria. The placental site is presenting either wide open lumina of the

veins, or thrombi closing up these openings. The vagina and cervix also have small tears and abrasions. If the labor is abnormal and some obstetrical operation has taken place, there is much more damage and a much larger wounded area.

If bacteria are kept away from these wounded surfaces, the latter will heal like any other clean surgical wound without reaction. Unfortunately, bacteria are not always kept away and puerperal infection takes place. Professor Fromme divides puerperal infection from an etiological standpoint into two groups: Puerperal sepsis and puerperal fever.

The first group, puerperal sepsis, gives a dramatic picture of repeated chills, affected mentality, high fever, and frequent pulse, giving a large mortality. The etiology of those cases is clear. They are due to the streptococcus, *Bacillus coli*, and occasionally staphylococci, pneumococci, etc., being carried into the genital tract during or shortly before labor. This is done by the hands or instruments of the doctor, midwife, or other attendant. Occasionally, among the ignorant classes, infection is carried in by coitus shortly before labor. Metastasis from some other focus of infection not in the pelvis can also occur. These last two causes are rare enough to permit us to exclude them when looking for the actual cause of a case of puerperal sepsis. The person attending a patient who develops sepsis must therefore first put the blame upon himself or herself.

The second group of cases is called puerperal fever. This group includes those of sapremia, which clinically is often difficult to differentiate from puerperal sepsis, and the large number of cases of a mild type presenting no marked clinical picture. These puerperal fever cases show a slight elevation of temperature lasting from a few days to several weeks; headaches, loss of appetite, sub-involution, and other pelvic symptoms, with high morbidity, but practically no mortality. The milder cases are easily and willingly overlooked by the attending midwife or physician. The theories of the etiology of this second group, puerperal fever proper, has undergone considerable change since recent investigations. The previous theory, that these cases were of the same origin as the septic cases, that the microorganisms of different types and virulency were carried into the genital tract from the outside, could not satisfactorily explain the frequent occurrence of cases in well equipped maternity institutions with perfect asepsis and thoroughly trained men in attendance. The sterility of the genital tract came under suspicion and was the object of investigation by prominent men in the profession, like Bumm, Winter, Thomen, Döderlein, Menge, Walthard, Fromme, and others. The vaginal discharge of many thousands of normal pregnant women was examined. All gonorrheal cases were excluded. It was found that in thirty-five per cent. of normal women the discharge contained all kinds of bacteria, including staphylococci and streptococci which could not be differentiated by the usual methods of examination from the pathogenic forms. Döderlein tries to establish some relation between the presence or absence of bacteria and the character of the vaginal discharge of preg-



nant women. He considers as a normal discharge one which is acid in reaction, due to the production of lactic acid, and thick—this type does not favor bacterial growth and bacteria, especially streptococci, are seldom found in it. As abnormal he considers an alkaline fluid discharge which is a good culture medium. During and after labor, when the amniotic fluid and uterine lochia pour down the vagina, the reaction changes to a strongly alkaline one, and with this change the amount of bacteria increases. In a number of cases examined by Bumm and Sigwart, the lochia showed the presence of cocci in seventy-five per cent. As to the uterine cavity, Döderlein, Walthard, Franz, Ott, and others found that in normal labor the uterus was free from bacteria up to the fourth day, but after that the percentage of positive findings increased each day.

What effect, if any, has the presence of these bacteria upon the health of their carriers? In cases of normal labor they have no effect whatever. These bacteria are of a diminished virulency; they are not capable of invading healthy living tissues; they live a saprophytic life. We have to deal in all probability with the same phenomenon as diphtheria bacilli being present in many a throat without causing reaction, or with the presence of streptococci and staphylococci in the mouths of many people without giving rise to stomatitis. But when the labor is abnormal, when, for example, pieces of membranes are hanging down from the cervix into the vagina, or a piece of afterbirth is left in the uterus, keeping the cervix patulous, or where there is poor drainage, or when by the hand of the obstetrician or by instruments, the contents of the vagina are carried into the uterus during labor, in other words, when the bacteria from the vagina are given a good chance to develop inside of the uterus during the first days after labor, then puerperal fever occurs. We occasionally strike a case beginning as puerperal fever which, with the addition of virulent bacteria from the outside, becomes puerperal sepsis.

What conclusions may we draw from these facts and theories? Various conclusions may be reached. Some physicians may say: Why, we are not responsible for this case of puerperal fever; that woman probably had the streptococcal infection before we ever touched her, and if that is the case, what is the use of being strictly aseptic? What would you say of a surgeon who, in going to perform an abdominal operation, neglected asepsis because he expected to find infection in the abdomen? The conclusion a conscientious obstetrician or practitioner should reach from these facts is as follows: When a man is going to perform any obstetrical operation, or even make a simple vaginal examination, he has to bear in mind that the field of operation is two-fold: The uterus, perfectly aseptic at the time of operation, and the vagina, suspected of mild infection.

Just as the good surgeon will take all possible precautions to pack off his wound so as not to carry the contents of an infected area, even mildly infected, to the sterile area, so must the obstetrician avoid everything that might bring the contents of the vagina into the uterus during labor. This means, not to push the fingers on the slightest provocation into the

uterus, to put the hands and instruments in the uterus only when there is absolute indication for such interference, and then to do so under all possible aseptic and antiseptic precautions. Thorough scrubbing of the hands, the use of boiled gloves and instruments, and a really antiseptic douche of the vagina are available everywhere. Experiment with vaginal douches proved that an antiseptic douche, while not producing absolute sterility of the vagina, does diminish considerably the amount of bacteria for a short period. We come practically to the same old teachings of the good conservative obstetricians. All that is new, is the more scientific explanation, based on recent investigations. Summing up, the requirements of a person attending a case of labor in regard to puerperal infection are:

1. Strictest asepsis of hands, instruments, and the parts of the patient.
2. As few as possible and as careful as possible internal examinations of the patient.
3. Operative interference only under absolute indications and positive diagnosis.
4. Immediate repair of all damage.

Now, having these requirements in view, let us look into labor as it is conducted by our midwives and physicians.

#### MIDWIVES.

In 1914, there were in Buffalo eighty-four registered midwives—fifty Polish, eight Italian, twenty-two German, two Jewish, two of unknown nationality; out of these, only from fifty-five to sixty were in active practice. Out of 23,458 labors at full term registered at the department of health for two years, 1912 and 1913, 10,128, or forty-three per cent., were taken care of by these sixty midwives. The number who died officially from sepsis is ridiculously small—fourteen in 1911, eighteen in 1912, and twenty-one in 1913. These small figures go to prove that puerperal infections as such are not officially recognized; the physicians called by the midwives are either not competent, or do not wish to diagnose cases, and death certificates are signed giving pneumonia or typhoid fever as the chief cause of death.

The statistics collected by the committee for the prevention of blindness in New York State, show that Buffalo does not differ greatly from other parts of the country. On an average, forty per cent. of all births throughout the United States are attended by midwives. Some cities give a higher percentage, such as New Orleans, seventy per cent.; St. Louis, seventy-five per cent. The largest part of the midwife's work is done among the foreign population. The cause is the poor economic condition of these people, both in this country and in the country from which they come. The medical help that is available to these people in their home countries, especially Russia, is so insufficient that they cannot dream of having a physician or even a midwife for their confinements. An old grandmother (*babka*) is the attendant in most cases.

During a congress of Russian physicians, in 1910, statistics from some districts were reported, and out of 100 labors, only three were attended by midwives and two by physicians; ninety-five were attended by unskilled women. Physicians were called only in very serious complications. In five per cent. of these,

embryotomy, etc., had to be performed. This habit of being delivered by midwives and plain women was brought over to this country and is maintained by the economic conditions of the immigrants here. They represent here the poorest class of workingman—pick and shovel men and other laborers whose average wage is ten dollars weekly for the support of from five to eight people. That poverty and ignorance, which always go hand in hand, play an important part in this question, is shown by the fact that among the American born people, the midwife finds favor mainly among the colored natives in the South.

In criticizing the conduct of labor by midwives, I shall limit myself to Buffalo. Here they are divided into three classes: 1. Those who came from countries which demand two years' hospital training. These are well trained in asepsis and are usually careful. 2. The younger midwives of local training, who have a good theoretical knowledge of asepsis and midwifery, but are lacking in the practical application of their knowledge. 3. The group consisting of the older women of poor training, who know little and care less about antiseptics and asepsis. This is their main fault, though not their only one. This last group have the most practice, the younger midwives not having been in the profession long enough to have many patients. With these midwives the question of asepsis is strikingly answered by the dirt on the person. I was once called to a case where a version had to be performed. The midwife's hands were very dirty and her apron was filthy. When I was ready to make a vaginal examination, the midwife came to assist me and wanted to hold the labia apart. Upon my remark that her hands were not clean, she rubbed them on her greasy apron and showed them to me saying, "now they are all right." I asked her not to assist me. Some midwives know about antiseptics and asepsis and practise them during the first few years of their work. As the number of their patients increase, they become more and more careless and gradually sink to the class of the dirty, ignorant midwife.

The members of the board of examiners in midwifery recently had a very instructive experience. A midwife who had good training in Italy, grew careless with the increase of trade and finally had six cases of infection inside of eight weeks—two cases ending fatally.

The majority of the midwives are utterly incompetent to make an obstetrical diagnosis. Some of them know the symptoms upon which a diagnosis can be made theoretically, but they have little or no practical experience during their training. Up to 1915, they were required to see ten cases with a physician or midwife. Of the ten mothers, only from two to four would permit the midwife to make a thorough vaginal examination. It is the common experience of physicians who are frequently called by midwives, that they call very late. In cases of prolapsed cord, they call when the pulsations have stopped. They are called in neglected transverse positions, neglected mentoposterior, etc. I was once called by a midwife of good training and five years' experience, who had a face case; as she had attended several face cases which ended normally, she waited. When I asked her whether it was a mentoanterior

or posterior, she looked at me much surprised and asked what difference that would make. That case had to be finished by craniotomy on a living child. If she had called a few hours earlier, there would have been some chance of the child being born alive. The mother would not have been less exposed to infection and would have suffered less shock.

When the midwife gets very busy, she not only neglects asepsis, but she hurries up her cases. She is too busy to wait for the placenta, so immediately after labor she begins the Credé manipulation or goes in with her hand to remove the placenta quickly. A very convenient method of finishing a case is to call in an accommodating physician to deliver the child. She is free to go to another case, and besides, it frequently means a few dollars' commission from the physician. Twice I have been asked, What do I get?

A very annoying and often harmful habit of midwives is their assumption and display of authority. Many of them assert that they know not only everything in obstetrics, but nearly everything in gynecology. They can treat pelvic inflammations and malpositions of the uterus. They can care for any kind of an abortion—some of them certainly know how to induce abortions. They do this sometimes with disastrous results to the patient.

#### PHYSICIANS.

Before speaking about the conduct of labor by physicians, I wish to state that all the faults and mistakes which the average general practitioner makes in his practice of obstetrics, I have made myself and have been taught to correct them by my own bitter experience. I hope my readers will take this as a heart to heart talk and not feel bad if some of my remarks sound harsh. The principal fault with the medical profession in regard to obstetrics is that the work is not done by men who like it and are specially trained for it. The majority of the cases are attended by general practitioners, some of whom are not well trained in obstetrics; most of them do not like this work, but are doing it, partly for the small fees, but mainly to hold the family trade. The physician who delivers a woman of two or three children usually becomes the family physician.

In asepsis, some physicians are utterly careless. I know of two cases where a physician made vaginal examinations after washing his hands only with soap and cold water. Such cases are, of course, exceptions. Usually the average physician does take care of the asepsis of his hands and instruments, but he is not as strict as a surgeon during an operation.

Even in the case of a man who is doing both surgery and obstetrics, you will find that in attending an obstetrical case he will be a little lax in his asepsis. He will be indifferent in the question of using gloves and changing them when he has touched something that is not absolutely sterile. Some men will make a vaginal examination and repeat it in an hour or two without again sterilizing their hands, merely rinsing them in an antiseptic solution. These are small details that escape our attention, but which sometimes unexpectedly bring bad results. The next fault of the average general practitioner is his relative incompetency and carelessness in making an obstetrical diagnosis—by the way, I wish to ex-

press here my opinion, that this is the hardest and at the same time the most important part of the science of obstetrics. Every experienced obstetrician knows that we cannot base a diagnosis on only one of two symptoms; we have to make accurate pelvic measurements; then try to make out the approximate size of the child; then make the diagnosis of position and presentation; then consider the general condition of the mother and child. By analyzing all these symptoms, we come to a conclusion about the probable clinical course of our case, whether it be normal or abnormal. We then decide whether or not operative interference will be necessary and what method of interference is needed. We know what awaits us and we are ready. Does the average general practitioner, especially in his first years of practice, proceed in this manner? In the majority of cases—no. He has not had much training in pelvimetry, especially internal pelvimetry; therefore pelvic measurements are very often omitted. When he is called to attend a labor case, he starts with an internal examination; he will undoubtedly diagnose correctly the presentation, head, breech, face, or transverse, but when it comes to the detailed diagnosis of presentation—for example, occiput anterior or posterior—in many instances many will fail. What is the attending physician to do in such a case? Of course, the proper thing to do is to call in another man with more experience. But this creates an undesirable situation for the attending physician, which may scare the people and excite suspicion as to his competency. Besides, he knows that many a case of occiput posterior ends favorably without interference. So he decides to try his luck—and the luck of the patient, of course—and waits. When he gets an obstinate occiput posterior he does not know—at least is not sure—why the labor did not come to a normal end. The case has to be finished by forceps. How to apply them? Even if he was sure that he has an occiput posterior, it would be a hard question for him to decide. But he is not sure. So all he can do is to apply the forceps to the sides of the pelvis, lock them as best he can, and then call physical force to help. After some hard work, the child is out; whether it will stay alive or not depends upon the amount of force used. Very often the children die in a few days from compression of the brain; but in such a case the woman's parts are badly damaged, we may expect fever in few days, and the patient may remain an invalid for years after. This picture is a little diagrammatic, but resembles closely cases I have had occasion to witness, and, on one or two occasions, to manage myself.

These faults can be considered trifling in comparison with the next to be discussed. This is the hustling of cases by many general practitioners. This part of their activity has to be pointed out, as the criminal record of a certain part of the medical profession who know better. They will finish up a case in haste, whether it hurts the patient or not, merely because they are in the hurry to return home to keep their office hours or to attend another case.

For the past few years I have had under my

women who were needlessly damaged by hasty deliveries. They usually suffer for many years. An operation brings some of them relief, but this is not always the case. In some of the cases mismanagement and haste were so shockingly evident that it made me doubt whether those poor women in remote Russian villages with no medical care were not better off than these women, who in a civilized centre of half a million population are left to the care of hasty obstetricians. To finish my criticism of the conduct of labor by physicians, I wish to mention the fact that we general practitioners usually do not provide our patients with the mental rest that is needed so much during labor. We usually do not spend much time with them, and leave them too much alone—which makes them more restless. That fact has some, although a remote, influence upon the development of certain cases of puerperal fever.

I want to say a few words about the relation between the midwife and physician. The worst cases of puerperal sepsis I met with in my practice were the product of team work between a dirty midwife and a hustling physician. The midwife first carries the infection to the patient and the physician adds the open wounds, often by unwarranted operative interference. The principal wrong in this relation between midwife and physician is the fact that the midwife does not depend upon the physician in her efforts to get trade; she gets it through her own efforts and through her own friends. The physician is dependent upon the midwives for his consulting trade. Thus the physician, if he wants to be on good terms with the midwife, has to accommodate her; that is usually done in two ways; first, by paying her money as commission for calling him; second, by doing not what he considers best in the particular case, but what the midwife wants him to do, in order that the case shall be finished promptly and that she shall not lose her prestige. If the physician does not comply with these requirements he will not be called again by that midwife. I was once called by a midwife to a case of normal labor. As soon as I opened the door the midwife said, "Doctor, it is a case for forceps delivery." I told her I'd examine the patient first. She blushed and in an excited tone said: "Why, doctor, I am in practice for seventeen years. Do you think I would call you if there was no real necessity for your interference?" I examined the patient and came to the conclusion that it was a case of slow, but normal labor. I told the midwife that I should be back in an hour. I came in an hour and a half. The child was already there. The midwife was still excited; she never called me again. Another midwife called me to a case of normal labor—three fingers' dilatation, told me that the patient was very nervous, and asked me, if possible, to finish the case. I gave a hypodermic injection of morphine and atropine and told her that I should be back in two hours. I came back a little later. The child was born. The midwife was not pleased. The people refused to pay the amount I charged because I had done nothing. How far an accommodating physician will go in order to please the midwife depends upon the character of the man. Some physicians will do anything the midwife wants; another man will not risk too



much, but when he finds, for example, four fingers' dilatation, he argues: Well the cervix is not fully dilated, but it looks dilatable; I will dilate it some more and finish the case; probably I shall not do much damage to the case and at the same time I'll please the midwife and, maybe, the relatives of the patient. If that woman develops a mild infection, nobody pays much attention, and nobody will think of giving a name to it. If, later on, that same woman does not feel perfectly well, that can be explained in not different ways, avoiding any reference to the labor.

In concluding this paper, I wish to put this question: Is there any possibility of doing away with bad obstetrics and replacing it with scientific good work, and if it is not possible to do away with it entirely, are there any means that the medical profession can try, at least, to correct the evil? Let us stop a minute and reason it out. What is actually necessary in a city like Buffalo to have good obstetrical work in every case of labor? The statistics of births collected by the health department shows a yearly birth rate (including premature labor), of 12,000 to 12,500; that means an average daily birth rate of thirty-three to thirty-five. These cases could be easily taken care of by fifty or sixty good men and women, who would devote their time exclusively to that work. I am sure that this number of good men could easily be selected among the medical profession in this city, and if such men are not available now, it would not take long to prepare the number wanted. We have or can have the supply on the one side, and we have the demand of the masses of people on the other. The difficult problem is to bring those two together, to supply the people who need the service. In other words, it is a question of faulty distribution. It would be an easy matter if the practice of obstetrics was arranged by the community with the sole aim of benefit to the community. But, as we all know, such is not the case. Obstetrics, like any other human activity, is carried on in our society by private individuals with the aim of satisfying their own private interests and ambitions, and those private interests and ambitions are only too often incompatible with the interest of the community, especially of the poorer classes. A good obstetrician is willing to render his good services for good pay or in many instances for nothing. The majority of the people who need the services of a good obstetrician, cannot afford to pay his fee, and the majority of these people hate to get services for nothing. They are poor, but they are not paupers, and they dislike charity. They distrust charity and want good work for little money, but do not get it in the majority of instances. The result is that some small part of good obstetrics is done for good pay, another small part is done for nothing, but most of the work is left to men and women who are willing to do it for a fee within the means of the poor; among them there are plenty of physicians and a few midwives who are doing good work and of whom the profession may be proud; but those form a minority, even a large minority. Many of these poorly paid physicians, working in bad circumstances among poverty and ignorance, in competition with friends, pretty soon forget all professional principles and

turn evil. Personally I am firmly convinced that the time is coming when the people will understand that our system is based on a wrong principle of private enterprise and will change it to the effect that the activities of the members of a community shall be managed by the community for the interest of all. Then we shall have good medicine and good obstetrics. But that is for the future. Can anything be done now at least to palliate these evils? I think that something can be done and it is up to the medical profession. In the first place, we ought to try to educate the women. Some practical measures were suggested to me by the splendid work that has been done in our city for the last five years by the milk dispensaries. Before those dispensaries were open, the offices of many of our practitioners working among the poorer classes would be packed in the summer time with sick children suffering mostly from intestinal disorders. The mortality among them was great. Since that time, we have considerably less work along that line. I am convinced that this good result was accomplished, not only by the quality of milk that is being dispensed, but to a great degree by the education of mothers in the proper care of infants. I am sure that, in some manner, instruction could be given to a future mother in the matter of taking proper care of herself during pregnancy; the importance of cleanliness during and after labor, the great value of hospital care, the importance of avoiding operative interference, and so on. Since the writing of this paper, the department of health of this city opened a maternity dispensary, which promises to do good work. That might do away with a part of the ignorance of a certain class of the population and in this way prevent a part of the infections after labor.

About the midwives, the question was raised. Whether or not it is advisable to prohibit practice by midwives. I do not want to discuss the question of the possibility or impossibility of such prohibition. Of more interest is the question, would it do any good to the population? Who will take the midwives' place? There is no doubt in my mind that a great number of mothers would be delivered by untrained women—the rest would be taken care of by the hustling general practitioner, who would have to hustle still more. I think the proper line of reform is to raise the standard of the midwife, by eliminating the old dirty midwife and replacing her by a well trained clean midwife. Special legislative measures should be adopted in regard to training, licensing, and supervision. Up to 1915, there were some regulations about licensing midwives in New York State, but training and supervision were not taken care of. Some new law was enacted lately and went into effect about January 1, 1915. It is too early to form any opinion as to the effect of this law. In my judgment, a midwife ought to have at least two years' training in a well established school with a large number of maternity cases. That regulations of practice by midwives do have some effect in the decrease of mortality is shown by statistics from England, where, in 1905, a special law was enacted, regulating the training, licensing, and supervision of midwives. Before the act was passed, the mortality from puerperal sepsis was 118 to the million of women living; in 1907, it came down

to eighty-one, and in 1911 to seventy-two. The same is being demonstrated by statistics of Robinson, in Rotterdam, namely, they show that the death rate of women attended by unlicensed untrained persons is twice as high as the death rate of women attended by midwives.

As to the medical profession, preaching ethics will not help—the hustlers usually do not care to spend time visiting the places where the preaching is being done. Doctor Van Peyma was the first man to start in the right direction. His idea was to found the free maternity beds in Harrington and get a number of men who would receive special training in obstetrics, and would afterward devote their entire time and energy to the practice of good obstetrics. I would only add, that if those men are to do real good to the masses of people, they should not stick to the principle—high pay for good work. They should charge within the means of the poor people for best services.

The municipal authorities could help very much if they offered the people a good maternity hospital with good obstetricians in attendance. Medical inspection of every parturient woman, say on the eighth or ninth day after labor, would also help materially.

If all these measures are put into practice, we may hope that puerperal infection will become a rare occurrence, to the satisfaction of the medical profession and the benefit of the people.

576 JEFFERSON STREET.

#### VACCINE THERAPY IN DERMATOLOGY.\*

By A. STRICKLER, M. D.,  
Philadelphia,

Associate Dermatologist, General and Samaritan Hospitals; Instructor in Dermatology, Pediatrics, and Venereal Diseases in Medicine and Temple University Medical College.

To any student of bacterial infections, the most striking phenomenon is that some individuals pass through a lifetime unscathed by any microbic infection, while others are pursued by bacteria from the cradle to the grave. We see them as children with staphylococcal infections of various types, such as furunculosis and abscess, as young men with severe acne, and as adults with chronic eczema.

The factors which protect us against bacterial invasion are the development of antibodies, the phagocytic action of the leucocytes, and the presence of unfavorable soil for the development of one or another type of organism. If certain bacteria will not grow on certain culture media in a test tube, or fail to grow under certain conditions of temperature, why is it not possible for the body juices, owing to their altered composition, to inhibit or prevent the growth of certain microorganisms?

The rationale of vaccine therapy rests upon the following facts, to-wit, that at the focus of disease there is a condition described by Wright as one of "lowered bacteriostatic pressure," in other words, a local deficiency of immune bodies. Wright has found that the fluid from the pus of a staphylococcal abscess contains little or no staphylopoisons, but a full complement of streptopoisons or other bac-

teria. The real object of vaccine therapy is "the determination of the advent to infected foci of adequate antibodies and efficient phagocytic cells."

The vaccine therapy of diseases of the skin is applied in this communication to diseases due to the schizomycetic group of affections, which may be subdivided into acute and chronic.

1. The acute schizomycetic group includes such conditions as furunculosis, carbunculosis, impetigo contagiosa, eczema, seborrheic eczema.

In furunculosis vaccines constitute the most rational and successful method of treatment. We usually begin with 100,000,000 staphylococcus aureus, or mixed staphylococcus emulsion. Weekly injections should be given, the dose being increased until 500,000,000 or 1,000,000,000 organisms is reached. One to ten injections will usually effect a cure. When the furuncles have gone on to suppuration, or a necrotic centre has already formed, surgical intervention is required in addition to vaccines. Gilchrist in his paper on Vaccine Therapy in Skin Diseases, records twelve cases of furunculosis cured by staphylococcal vaccines.

In carbunculosis, vaccine therapy gives very gratifying results. H. P. Towle and George P. Lingenfelter report a number of cases all of which were cured in from seven to thirty-five days, by injections of 100,000,000 to 200,000,000 staphylococci given at intervals from one to three days.

Erysipelas, a disease due to a streptococcus, has been successfully treated by vaccines. Ross and Johnson, during 1908, treated fifty cases of St. Anthony's fire with streptococcal vaccines. Their conclusions impress one favorably. They state that the most striking effect of the inoculation method of treatment is the rapid subsidence of the toxemic symptoms and even the very severely affected patients felt different in about thirty hours. Locally, as a rule, there is some extension of the process which, however, shows a loss of virulence by the fact that the margin of the skin is not elevated, the tissues are brown, not a bright red, and the affected area is not painful. In severe cases the initial dose was less than in the mild cases. The doses in subsequent inoculations were determined by general conditions. Their statistics speak favorably for the vaccine therapy of this affection.

Impetigo contagiosa is unfavorably influenced by vaccines. Eczema, as a catarrhal inflammation of the skin, is uninfluenced by vaccines, but when there is an associated pyogenic infection, the latter condition clears up under vaccine therapy.

In the eczematoid dermatitis infections very favorable results are often obtained with staphylococcal vaccines. The dose is 50,000,000 staphylococci at six days' interval. Seborrheic eczema, particularly the acute type which begins in the scalp and spreads, covering almost the entire body, and is attended with marked redness and swelling, will often give brilliant results with staphylococcal vaccine. Both Engman and Gilchrist report cures of this disease accomplished by vaccine therapy.

Numerous observers have reported cures or marked improvement to follow the use of vaccines in numerous dermatological affections. For instance, Gilchrist reports some favorable results in erythema multiforme, in chronic urticaria, in pem-

\*Read before the Dermatological Section of the Philadelphia Con-

phigus, and other diseases from vaccines, but their use in these diseases is only experimental and can be recommended only as a last resort.

2. In the chronic schyzomycetic group may be included acne, sycosis vulgaris, and lupus vulgaris. Although the acne bacillus was first described in 1893 by Unna and his assistant, by Sabouraud in 1894, and by Gilchrist in 1899, it remained for Fleming in 1900 to first make use of acne vaccine in the treatment of this affection. There seems to be little doubt that the acne bacillus stands in causative relation to acne, and yet the results with this vaccine are not very brilliant.

Allen in his treatise, *Vaccine Therapy and the Opsonic Index*, suggests that in order to obtain results from the use of vaccines, not only must there be an increased elaboration of the necessary antibodies, but also their advent to the infected focus must be assured, and in the diseases where the lesions are situated in the superficial layers of the skin or the glands, improvement can come only slowly. Under these conditions, prolonged use of vaccines and great attention to detail are necessary for success. In that type of acne vulgaris which is characterized by superficial pustules, staphylococcal vaccines give rapid and brilliant results, but in the other varieties they fail completely.

In using the acne vaccine, the initial dose is never over 3,000,000. The first dose should be given two to three days after manipulation of the face, be it for the purpose of removing comedones or for the obtaining of material for cultural work. If this precaution is not observed, harm may result from the dose of vaccines; within forty-eight hours after the injection one or two lesions will appear. If more than three appear the dose is too large. On the third day, the comedones are expressed and all lesions opened. The manipulations at this time bring the immunizing blood to the part. The patient is also instructed to apply hot towels to the face for five minutes twice a day. On the fifth to the seventh day new lesions will appear, signifying a new stage of depression. Another dose of 3,000,000 to 5,000,000 is given. Small doses sufficient to cause a short negative phase seem to be the best method of treatment. After several doses new lesions cease to appear. If after a few doses new lesions appear after the third day, a large dose, 7,000,000 to 10,000,000, should be given. Small doses at five to seven day intervals, with methods employed to produce local hyperemia, in the larger majority of instances are sufficient. Both Engman and Gilchrist report favorable results by this method of treatment. In our own work we have used acne vaccine in twenty-five cases and have secured eighteen cures, three patients discontinued treatment, and four cases we have failed to cure. We must agree with Engman that in some cases the acne lesions seem to melt away almost as rapidly as a diphtheritic membrane, while in others the process is much slower.

In sycosis vulgaris vaccine therapy gives varying results, which in the main are disappointing. The staphylococcal vaccine is employed and acts more favorably in the acute cases than in the more chronic ones. The treatment of this affection by vaccines is best summarized by Doctor Schamberg when he relates his experience, which consists of

one brilliant cure which was permanent, after only two injections, and a whole host of failures.

With regard to the use of tuberculin in lupus vulgaris and other tuberculous skin affections, we can state that the remedy has not been sufficiently tried out; it appears, however, to give some favorable results, but only after prolonged use. Jones summarizes the results obtained in St. Mary's Hospital in a series of twenty-one cases thus: Cured, three; much better, nine; better, eight; unchanged, one. Relapses occurred in five instances. His conclusions are that in the treatment of tuberculous skin affections dependence should be placed on well established surgical measures, and the application of radium or Finsen light, tuberculin being either a last resort when these fail or a useful adjuvant.

Dr. George M. McKee in a recent article summarized his results from the use of tuberculin over a period of four years, as follows: He treated fifty-two cases in all; lupus vulgaris, 12; tuberculosis verrucosa cutis, three; tuberculosis of buccal mucosa, one; scrofuloderma, 4; tuberculous dactylitis, two; papulonecrotic tuberculide, twelve; and lupus erythematosus, six; tuberculous adenitis, four; Bazin's disease, eight.

Of the twelve cases of lupus vulgaris, seven were cured and have remained so; one showed improvement and four failed to respond to treatment. The three patients who were afflicted with warty tuberculosis failed to respond to tuberculin after four, six, and nine months' treatment with tuberculin. The single case of tuberculosis of the mucous membranes, failed to improve after one year's treatment. The four cases of scrofuloderma disappeared before four months of treatment had passed by, so no definite conclusions can be drawn. Of the eight patients with Bazin's disease all recovered. One showed relapse; one showed a relapse which yielded promptly to tuberculin therapy. The twelve patients with papulonecrotic tuberculide all failed to respond to tuberculin treatment in spite of two years' trial in some cases. Of the six patients with lupus erythematosus, none yielded to tuberculin treatment.

Recently A. Ravogli reported two deaths to have followed the use of tuberculin in disseminated lupus erythematosus, and he warns the reader to be cautious in the use of tuberculin.

The conclusions which can be drawn in reference to the use of tuberculin are that great reliance cannot be placed on it *alone* in the treatment of tuberculosis of the skin, that it may be used as an adjuvant or held in reserve as a last resort, and that its use is not entirely free from danger.

4037 GIRARD AVENUE.

**Treatment of Late Hemorrhage in Typhoid Fever.**—Braillon and Bax, it is stated, in the *Journal of Tropical Medicine and Hygiene* for November 16, 1914, report that bleeding persisted in spite of saline hypodermoclysis, calcium chloride, ergot, and emetine hydrochloride. Slow rectal instillation of normal saline solution containing forty-seven parts of glucose in 1,000 was then tried. This was replaced soon after by saline solution containing one per cent. of gelatin; cessation of the hemorrhages promptly followed these measures.



ACETONURIA AND CARBOHYDRATE  
STARVATION.BY STEPHEN H. BLODGETT, M. D.,  
Boston.

In 1908 I published my first article on the relation between acetone in the urine, vomiting, and the treatment with sodium bicarbonate. Since that time I have been greatly interested in the subject, and by the kindness of the hospital authorities and of many physicians of greater Boston, I have been enabled to have under my personal charge a very large number of these cases, and to undertake a large number of experiments concerning diet and various kinds of treatment.

The results of these experiments I have published from time to time, so I will speak only briefly here of the conclusions, and then go on to a phase of the subject which I have been recently investigating and which I have not previously reported. This I will go into more at length by citing five cases.

Vomiting, as the most marked symptom, occurs frequently where there is acetone and often diacetic acid without sugar in the urine. These patients usually have, in the beginning of the disease at any rate, a clear tongue, and the vomiting occurs irrespective of what food may have been ingested. In almost all cases there is a sore spot that can be found on deep pressure over the region of the pancreas. This spot can be distinguished from the abdominal muscular soreness that follows attacks of vomiting, by the fact that it is only found on *deep pressure*, and is only a spot, perhaps two inches in diameter, over the pancreas, while the muscular soreness following vomiting is brought out by superficial pressure and is more or less general over the entire abdomen. In extreme cases patients will complain of pain in the left hypochondrium and tell you that it is deep in. The sore spot is almost pathognomonic of this condition.

The acetone and often diacetic acid will appear in the urine during a period varying from a few hours to several days after the vomiting has begun, although in some cases the appearance of the acetone in the urine will precede the vomiting. Usually the acetone does not disappear until several days after the vomiting has ceased, and a relapse may be foretold by the increase in the acetone after it has almost entirely disappeared.

According to my statistics, about eighty-five per cent. of this form of vomiting occurs during pregnancy, about ten per cent. occurs in children, when it is usually called cyclic vomiting, about four per cent. occurs in adults, and about one per cent. in postoperative cases.

Among the first experiments I tried, was to take ten consecutive cases and place them on an almost exclusively nitrogenous diet, the next ten on a carbohydrate diet, and the next ten on a liquid diet. For nearly a year I continued to perform experiments in diet in these cases, and the outcome conclusively showed that the best result was obtained by allowing the patients to have any article of food they might wish. But, and this is most important, in severe cases, everything must be given in very minute quantities. For instance, in very severe cases I limit the patients to half an ounce of liquid

and a solid only as large as a piece of cracker one inch square, this allowance to be repeated not more frequently than every two hours until the vomiting improves, and then to be doubled. Some patients showing symptoms of great thirst are allowed two teaspoonfuls of water every five minutes. As for medicines, I have invariably had the best results by giving bicarbonate of sodium in amounts from ten to 140 grains per diem.

It often takes considerable ingenuity to make the patients take and retain the soda where the vomiting is very persistent, but I have succeeded by using different means in different cases. It is absolutely useless to try to give bicarbonate of sodium by the rectum, and it does not seem to have the proper action when given in milk or coffee. I would say, in passing that rectal feeding tends to prolong the attack. Perhaps my favorite way of giving bicarbonate of sodium is, if the patient likes tea, to dissolve five or even ten grains in one half ounce of boiling water, add a few drops of tea, and let the patient drink this, repeating every three or four hours. I have also given the sodium dissolved in an ounce of thin meat soup, repeated as often as necessary. Another method is to dissolve sixty grains in a glass of water, place it beside the bed, and tell the patient to take a sip frequently, using the entire amount in twelve or twenty-four hours. In very severe cases I have given forty grains, dissolved in a pint of normal saline, directly into the vein, and in two cases, I have given it under the breast, each time with successful results.

As a matter of experiment I have found that the patients who are allowed only thin soup, eggs, milk, and meat, recover as quickly as those who are allowed starches or glucose. Care must be taken not to increase the amount of food too rapidly as the patient improves, and not to decrease the amount of bicarbonate too rapidly.

The most persistent cases are those beginning during the first month of pregnancy, and those which respond most readily to treatment occur from the sixth to the ninth month and in nonpregnant adults. This treatment is just as efficacious where the condition occurs in children (so called cyclic vomiting), and by a little care succeeding attacks may also be prevented in these cases.

Following this brief résumé, I should like to speak of one phase of the subject which I have recently been investigating. We sometimes read in medical literature that acetone in the urine is caused by the absence of carbohydrates from the diet; in other words that acetone and its allied substances in the urine (including that occurring in this particular condition) is due to carbohydrate starvation. It does not seem to me that this is borne out by the facts.

I do not wish it to be considered for a moment that I maintain that acetone in the urine may not be due to carbohydrate starvation. Experiments have proved that carbohydrate starvation may cause experimentally large amounts of acetone to appear in the urine, but it would be very fallacious for us to say, as many have said, that because this is so, therefore acetone is always due to carbohydrate starvation.

As a matter of clinical practice, carbohydrate star-

vation will cause only very slight amounts of acetone in the urine, and after considerable experience with these cases, a physician can tell from the amount, whether the case is one of carbohydrate starvation or of this as yet unnamed condition. I do wish, however, to emphasize the fact that large amounts of acetone may appear in the urine where the patient has been taking and also digesting, as far as we can tell, a large amount of carbohydrate food, and these few cases which I shall cite will bear me out.

I shall cite only five cases, as these seem to be ample to prove my contention, and furthermore this "carbohydrate starvation" investigation has led me into examining another angle of the acetone question. Since that time I have used my well marked cases of noncarbohydrate starvation in the new investigation on which I hope to report later.

CASE I. A woman, two months pregnant, had been having very severe vomiting attacks during the previous three weeks. The vomiting began about six o'clock each morning and was very persistent up to nine or ten a. m. By noontime she was able to eat dinner and digest it well. She was able to eat supper in the evening, and this to all appearances was well digested, as the vomitus next morning consisted of watery mucus, with no appearance of undigested food. The urine showed a considerable amount of acetone and some diacetic acid (testchloride of iron test). The patient was placed for dinner on a diet consisting of two ounces of white bread, two ounces of potatoes, two ounces of rice, and one glass of milk. In the middle of the afternoon she was given the juice of one orange with a teaspoonful of sugar, and for supper she had three ounces of bread, two ounces of macaroni, two ounces of potatoes, and for dessert either a boiled custard or a portion of baked rice pudding and a piece of cake. As far as could be determined by examination of the vomitus, none of this was rejected the following morning. This diet was continued for five days, the acetone and diacetic acid increasing slowly in amount.

The diet was then changed and she was given for dinner one ounce of bread, one dropped egg, three ounces of meat with a little cheese, and a glass of milk. In the middle of the afternoon, she had the juice of one orange without sugar. For supper she had the same as for dinner with a dessert made with saccharin. This diet was continued for four days, the acetone and diacetic acid increasing, but no more rapidly than under the former diet. The patient was then given in the morning ten grains of bicarbonate of sodium dissolved in very weak tea. In the afternoon she was given twenty grains of bicarbonate, and at eight o'clock in the evening, twenty grains. Her nitrogenous diet was continued, but the amount of each article was much decreased. On the eighth day she asked to have a little breakfast, and on the twelfth day, still continuing on the largely nitrogenous diet, the acetone had entirely disappeared from the urine and she was feeling perfectly well, with the exception of a little nausea when first getting out of bed in the morning. This passed off in about a half an hour and she was ready to eat breakfast, consisting of one egg or one chop and a small biscuit.

In this case it will be noticed, first, the acetone increased daily, despite the fact that the patient was eating and apparently digesting a large amount of carbohydrate. Second, the acetone increased, no more rapidly, however, when the diet was changed to one largely nitrogenous. Third, whether the vomiting was helped by the bicarbonate of sodium or not does not enter into the scope of this paper.

During an epidemic of this disease at Concord, N. H., this second case occurred and was described to me by Doctor Morrill. The child had been perfectly well and had daily eaten her usual food, which consisted largely of carbohydrates, even to eating her breakfast on Sunday morning. She went

to church and while there appeared sleepy. On her way home she complained of feeling sick, and during the afternoon became unconscious. The urine at that time, eight hours after eating breakfast, showed an enormous amount of acetone and diacetic acid, and up to that time there had been no vomiting. In this case it was manifestly impossible for the great amount of acetone to be caused by carbohydrate starvation so soon, eight hours, after partaking of ordinary carbohydrate food.

A third case also occurred during the epidemic at Concord. The child had been perfectly well, eating food rich in carbohydrates, as the parents believed in bringing the child up largely on cereals and vegetables. The child ate its usual supper and went to bed. Early in the morning, it woke up vomiting a part of its supper of the night before. It vomited continuously, and less than twenty hours after its last perfectly digested meal, the urine was found to contain an enormous amount of acetone and considerable diacetic acid.

A fourth case had almost the same history as the third, except that the first vomitus and all following vomitus showed no evidence of food. In each of these cases very large amounts of acetone appeared in the urine twenty hours after the patient had eaten and digested food containing the ordinary amount of carbohydrate. Certainly the large amounts of acetone appeared in the urine too soon to be credited to carbohydrate starvation.

CASE V. Woman; had had repeated attacks of vomiting with pain in the left side. These attacks had occurred at intervals varying from two months to six months during twenty-three years. At the time of her first attack she was pregnant, and the vomiting was so severe that pregnancy was terminated at the fourth month to save her life. The attacks of vomiting following this had been attributed to a floating left kidney. The patient, when placed under my care, was confined to bed, and the lower edge of the left kidney could be just made out, apparently in perfect position. There was great soreness on pressure over the pancreas.

The x ray showed the left kidney in its proper place, even when the patient was placed in an upright position. The urine had a very large amount of acetone and diacetic acid. The patient was given one hundred grains per diem of bicarbonate of sodium and very small quantities of liquids. In a few days the vomiting began to decrease, and following that the acetone gradually disappeared from the urine, until in a couple of weeks it had entirely disappeared and the patient was sitting up, with a good appetite and eating a fair amount of food. As she craved meat, a considerable portion of her food consisted of scraped beef. Acetone and diacetic acid continued to be entirely absent from the urine. Suddenly, one day, during the latter part of the afternoon, she complained of a slight sore throat. This grew steadily worse and the next morning she had a temperature of 102° F.; both tonsils were enlarged and had small white patches over them. Cultures from the throat showed no Klebs-Löffler bacilli, but at the same time the urine showed a large amount of acetone and considerable diacetic acid. There was also a recurrence of the pain in her side.

In this case it is entirely out of the question that carbohydrate starvation had anything to do with the acetone in the urine, as it suddenly appeared while she was taking the same food as when the acetone was disappearing from the urine.

I had been gradually reducing the amount of bicarbonate of sodium until, when this sore throat began, she was receiving twenty-five grains daily. She complained of no nausea or vomiting until nearly twenty-four hours after the onset of the sore throat,

when she began to experience nausea, and during the next twenty-four hours had several attacks of vomiting. The amount of bicarbonate of sodium given daily was increased, and within a few days the nausea and vomiting had improved and the acetone had begun to disappear from the urine.

When this patient had recovered so that she could be taken home, she had shown no acetone or diacetic acid in the urine for two weeks, and her appetite was good, but we considered it advisable to send her home, a distance of twenty miles, in an ambulance. She was at that time on a mixed diet and taking the average amount of food for a convalescent.

A specimen of urine was examined when she left and no acetone was present. The first specimen passed, six hours later, and five hours after her ambulance ride, showed considerable amounts of acetone, but there was no nausea or vomiting, and after she had been kept quiet for two days, the acetone disappeared, without, however, my having made any changes in her diet or having given any bicarbonate.

I should like to record also some experiments undertaken on this patient with the object of discovering, if possible, the cause of her repeated attacks, and which have a direct bearing on this carbohydrate-starvation-acetone question. If, while the patient is apparently well and taking her usual diet and the urine is free from acetone, she is encouraged to walk for an hour or to ride in a carriage over rough roads, within five hours the urine will contain considerable amounts of acetone, and if this excessive exercise is continued for several hours, one of her regular cyclic vomiting attacks will begin.

#### CONCLUSIONS.

Acetone in the urine may be caused experimentally by carbohydrate starvation, but not clinically, except to a very slight extent.

Acetone alone, or in conjunction with diacetic acid, may, and in this unnamed condition frequently does, appear in the urine, often in enormous amounts, where there has been no carbohydrate starvation.

Therefore, the theory that a carbohydrate diet should be pushed in this condition appears to be unfounded.

419 BOYLSTON STREET.

#### LARYNGEAL TUBERCULOSIS.\*

BY A. SPENCER KAUFMAN, M. D.,  
Philadelphia.

As a preface to the remarks on this subject, I desire to say that I have nothing new in the way of diagnosis or treatment to offer, but I wish to make a plea for the routine laryngeal examination of pulmonary tuberculous patients, that an early diagnosis may be made and active treatment instituted.

In laryngeal tuberculosis, we have a disease that is almost always secondary; in fact, there are but three cases on record which have been diagnosed as primary laryngeal tuberculosis, which diagnoses have been substantiated post mortem. The percentage of laryngeal involvement varies greatly with dif-

ferent observers—from five per cent. by Heinze, of Leipsic, to eighty per cent. by Parker; the latter, however, put down thirty per cent. for true tuberculosis, and the other fifty per cent. for irritation incident to the cough and expectoration of the pulmonary condition.

While it is to be urged that a diagnosis of this condition be made early, as treatment begun as soon as the local infection is detected gives the patient the best chance, not alone for relief, but recovery, we must keep in mind that the larynx of a tuberculous patient is liable to the same pathological conditions as that of a nontuberculous person, the three most common being laryngitis, malignant disease, and syphilis.

If we wait for the typical symptoms of hoarseness and pain, and the signs of infiltration and ulceration, we have a great deal harder fight before us than if we begin earlier; therefore, we come to the question: "What are the first symptoms by which a diagnosis of laryngeal tuberculosis may be made?"—a question not easy to answer.

We are taught that weakness of the voice leads to suspicion of laryngeal tuberculosis in its incipency, but when we remember that there is general muscular atony in a tuberculous patient, it is not difficult to see that the musculature of the larynx may suffer along with that of the whole economy, and it must be further remembered that the larynx may be fatigued from the movements to which it is subjected by the inevitable cough. So we must conclude that this symptom has but little weight.

The next sign most commonly spoken of is pallor of the mucous membrane. If our patient is pale and anemic in general appearance, or if we actually know that his hemoglobin is low, it would naturally be expected that the laryngeal or any mucous membrane would be pale also; but, on the other hand, if the anemia is local, and the patient seems to have, or actually has a fair hemoglobin percentage, we must look upon the larynx with suspicion.

Hoarseness and pain are two symptoms that should never be awaited before making a diagnosis, as it is not difficult to conceive of an ulcer so situated as to cause neither of these symptoms, and the destruction may be considerable before they appear. Minor has noted that a catarrhal condition occurring in patches, and localized to one cord or arytenoid in a tuberculous patient, may easily be considered tuberculous. He further noted that this is usually confined to the side of the pulmonary lesion.

An early finding of great importance is a roughening on the posterior commissure, which Casselberry believes to be the earliest sign. A condition of this kind occurs in speakers and smokers as a result of catarrhal conditions elsewhere in the respiratory tract; this condition should be watched, and, if found to break down in small ulcerations, or extend to the vocal apparatus, may safely be regarded as tuberculous.

Minor says that a "tablelike elevation of the mucous membrane in the posterior commissure" is the earliest change of "real diagnostic significance"; this is divided into two equal parts by a depression, and may be on either side of the centre. As an early sign, Dennis lays great stress upon what he describes as a "thin line of mucus which lies in



the posterior commissure and extends up and over the top of the interarytenoid region." Thus, in all probability, comes from the condition of the posterior commissure described by other writers, and makes the distinguishing point between the tuberculous thickening or wrinkling, and that due to other causes; in the latter, we find just enough secretion to glaze the surface.

Redness of one cord or one side, is always significant in the early stages, and, likewise, a lagging of one cord, even before redness appears, should be regarded with suspicion. Occasionally infiltration of the epiglottis, not enough to cause much thickening or interfere with its function, but which squares the end of the organ, is found. The later symptoms are well known, and I will not enter into their discussion.

**Differential diagnosis.** Catarrhal laryngitis always involves both sides of the larynx. It usually clears up promptly under treatment, and shows no tendency to ulcerate or form nodules. A persistent laryngitis in a tuberculous patient, however, should be regarded with suspicion.

Syphilis, in these days of Wassermann reactions and salvarsan, usually can be detected readily.

To differentiate tuberculosis from neoplasms, the character of the tumor can be definitely decided by removing a small piece for microscopic examination.

**Prognosis.** The statistics relative to the prognosis of the disease vary so much that they cannot be summarized, and it would be outside the scope of a paper of this kind to discuss them in detail. I wish to say, however, that the number of recoveries and improvements are sufficient to demand early, vigorous, and persistent treatment.

**Treatment.** The general treatment I will not touch upon. Complete rest of the voice, although we are not always able to enforce it, is of great importance, together with the avoidance of all irritants, such as tobacco smoke, dust, etc.

In the early or catarrhal stage, the patient is taught to spray the larynx with a mild alkaline solution, in connection with the local application of mild astringents, followed by an oil spray. In regard to applications, they should be made with the aid of a laryngeal mirror, to guide the proper performance of this operation.

Nodules and ulcerations call for surgical interference. The use of the punch in the former and the curette in the latter, permit the medicaments which may be applied later, to gain better results.

Lactic acid, twenty-five to fifty per cent., formaldehyde solution, two to ten per cent., are efficient remedies when applied directly to the affected area, and not to the surrounding tissues. A drug recently used in this condition, and which has given very gratifying results, is scarlet red. Application of a ten per cent. solution in oil causes a marked lessening of pain, and the ulcerations show a tendency to heal. Furthermore, it is nonirritating, and may be applied to the larynx without causing the patient discomfort by the use of the laryngeal mirror. For dysphagia, local anesthetics are indicated. I have found that a twenty per cent. mixture of orthoform and boric acid, insufflated into the larynx, will give relief for some time after its use.

In conclusion, I wish to reiterate my plea for a routine laryngeal examination of tuberculous patients at frequent intervals, and for untiring efforts to effect a cure when the lesion is found.

254 SOUTH SIXTEENTH STREET.

## JOHN BUNYAN, HYPOCHONDRIAC.

By HOWARD D. KING, M. D.,  
New Orleans.

In the autobiography entitled, *Grace Abounding Unto the Chief of Sinners*, is contained the most vivid picture extant of a hypochondriac. It is a record of the feelings of "God's poor servant, John Bunyan," as the author styles himself. The plain tale of his unhappiness, from boyhood up to his imprisonment in Bedford jail, is explanatory of many passages in his more pretentious work, the *Pilgrim's Progress*, which do not harmonize with the psychological experiences of normally constituted Christians. In this connection attention is especially directed to the slough of despond, the man in the iron cage, the description of Doubting Castle, Mrs. Diffidence, and Giant Despair. Bunyan says, in words which naturally break into poetic rhythm, "I beheld the condition of the dog and toad, and counted the estate of everything that God had made far better than this dreadful state of mine." No normal individual ever felt like that; but to the hypochondriac, alone in creation, no past, no future, can be so bad as the present—*hora novissima, tempora pessima*.

One feature especially interesting is the sudden onset of the attacks. Bunyan furnishes a vivid picture of himself as arrested by one in the middle of a game of tip cat, so that he left the cat he was about to strike on the ground. But on "returning desperately to his sport again," he felt his soul possessed, as he terms it, with despair of ever attaining happiness. The suddenness of the attack is most marked when the patient is in the company of others, as was Bunyan.

A vague alarm of impending evil, which sometimes, as in Bunyan's case, takes the concrete form of a dread of Hell, and thoughts about his Satanic majesty frequently disturb the hypochondriac. Often there is a fear of death; but this is exceptional, and when found in an extreme degree, the case is likely to turn out one of insanity, delusions of the intellect supervening. At times death is looked forward to as a relief from misery and would be considered not unwelcome. In these cases suicide would be much more common, but for the reason which Hamlet, the prince of hypochondriacs, rightly assigns, "the dread of something after death," acts as a powerful safeguard. The workings of the hypochondriac's mind is well illustrated in the *Pilgrim's Progress* under the guise of a wicked old woman, Mrs. Diffidence, who suggests "knife, halter, and poison," as a cure for the pilgrim's doleful state.

Hypochondriasis appears very early in life. John Bunyan suffered from it when he was a mere child, and quite as severely when he was a ribald, foul mouthed tinker, as after his marriage and conversion. The mind of hypochondriacs is usually of a

superior order. Bunyan's case is a most notable instance. Again, the myriad minded dramatist, Shakespeare, makes Hamlet a courtier, soldier, scholar, "the observed of all observers"; and Shakespeare is never wrong in such matters. A common symptom in hypochondriasis is a temporary loss of power in the voluntary muscles of a part. Bunyan makes Giant Despair lose the use of his hands at a most lucky moment for the pilgrims, just as he is rushing at them with a club.

Bunyan parenthetically remarks that attacks of paresis came on when the sky was bright; "he sometimes, in sunshiny weather, fell into fits"; a very sage observation, and one not likely to occur to any but an actual sufferer. Hear with Shakespeare's hypochondriac: "I have of late (but wherefore I know not), lost all my mirth, foregone all custom of exercises; and indeed, it goes so heavily with my disposition, that this goodly frame, the earth, seems to me a sterile promontory; this most excellent canopy, the air, look you—this brave overhanging firmament—this majestic roof fretted with golden fire, why it appears no other thing to me than a foul and pestilent congregation of vapors," says Hamlet, pointing out of window to a bright starry sky. It does seem that the poet knew well the condition.

It is very seldom that a hypochondriac escapes without the general misery being localized in pain of some part or another, either continuously or at irregular periods. Bunyan says, "I felt such a clogging and heat at my stomach, by reason of this my terror, that I was, especially at sometimes, as if my breast-bone would have split asunder." This is the pain in the hypochondria, whence the disease gets its name. The "clogging and the heat" is very graphic of the symptomatology of hypochondriasis.

The loss of power which was described in the muscles of certain parts, still more infrequently affects the involuntary fibres of the intestinal tract. The peristaltic movements become sluggish. The bowels become filled with gas, distending them inconveniently and painfully. Poor John Bunyan seems to have been so blown up, that he says he feared he was going to suffer the fate of Judas Iscariot, and "burst asunder in the midst."

A feature which is almost universal in long cases of hypochondriasis, is loss of weight during the attacks. Soon as the patient comes to, and is again a normal individual, the weight increases. In his *Grace Abounding*, Bunyan describes himself several times as suffering from this symptom—as he words it, "inclining to a consumption, wherewith, about the spring, I was suddenly and violently seized with much weakness in my outward man." And a few pages afterwards he speaks of being "very ill and weak," presumably from a similar cause, when his spirits suddenly revived, and he thought of the angels carrying Lazarus into Abraham's bosom. Then he mused with comfort on "O grave, where is thy victory?" "At this," he goes on, "I became well both in body and mind at once, for my sickness did presently vanish." He typifies this symptom in the person of one of the prisoners in Doubting Castle, "Mr. Despondency, who was almost starved to death."

One usually pictures the male as the sufferer from

hypochondriasis, but women are not wholly exempt. It may be noted that Bunyan places one, and only one, woman in Despair's dungeons. Her he does not describe; because, indeed, he knew nothing of the other sex "but by their apparel" beyond his own family circle. He says he was "shy of women." "The common salutation of women I abhor; 'tis odious to me in whomsoever I see it. Their company alone I cannot away with." Thus, it is evident that Bunyan did not receive the confidences of hypochondriacal females.

Rest seems to have worked wonders for Bunyan the miserable. The being shut up as a Nonconformist for twelve years in Bedford jail effected a cure, though it was a filthy and noisome den," as he justly terms it. He says: "I never knew what it was for God to stand by me at all times, as I have found him since I came in hither"; and confesses that he passed his time there "in much content." It was at this period that he was gay and cheerful enough to compose the characteristic and descriptive anagram of his name, John Bunyan, "Nu hony in a B." Indeed, he was a bee full of new honey. From this date on he suffered no relapse. The truth is, that he was well fed up by admiring friends, and entered on his true vocation of writing those life dramas which have, even to this day, enshrined him in our hearts.

In the moral treatment of hypochondriasis Bunyan is an excellent guide. Is it not remembered how, when Christian and Hopeful were in the dungeon, in doleful case indeed, the former suddenly bethought him that he had a key in his bosom called "Promise," with which he picked one after another the locks that lay between them and liberty? "And so they went up to the mountains, to behold the gardens, and orchards, and fountains of water, where also they drank and washed themselves, and did eat freely of the vineyards." There is no key equal to it; it is somewhere in everybody's pockets; but the prisoner must find it himself, and the medical adviser seldom has an opportunity of helping him. At all events, it is to be hoped that no sufferer will come across such a miserable comforter as poor John Bunyan. He tells us, in *Grace Abounding*, "I took an opportunity to break my mind to an ancient Christian, and told him all my case. I told him also that I was afraid I had sinned the sin against the Holy Ghost; and he told me he thought so too." It is all very well to agree with a crazy man's whims, but a hypochondriac may claim a right to be reasoned with, and John Bunyan was badly used by the ancient Christian. Several other hints equally suggestive may be found in the *Pilgrim's Progress*. Though the pilgrims managed to escape, the giant was not destroyed, but afterward fell under the swords of Mr. Greatheart, Mr. Dare-not-lie, and their companions. In fighting to make others happy, the suffering soul is drawn out of itself, and conquers its own foes.

Bunyan felt very clearly the antagonism between hypochondriasis and the esthetic life. Puritan though he was to the backbone—fanatic, nonconformist, martyr, satirist, woman hater, a foiled reformer, at war with the age, and getting the worst of it—he had the true poet's sympathy with all that was human; and he celebrated the dinging-down of

Doubling Castle in a fashion that his sour faced coreligionists must have denounced as

"idoltrous and pagan;  
No less than worshiping of Dagon!"

For "Christiana, if need was, could play upon the viol; and her daughter Mercy on the lute. So since they were so merry disposed she played them a lesson; and Ready-to-halt would dance. So he took Despondency's daughter, Much-afraid by the hand; and to dancing they went in the road. True, he could not dance without one crutch in his hand; but I promise you he footed it well: also the girl was to be commended, for she answered the music handsomely."

What is Ready-to-halt's "crutch" which he could not lay aside? Bunyan leaves us to interpret it, according to our own experience; however, for the writer it means the medical treatment, which cannot safely be laid aside, even when the condition seems to have yielded to moral suasion.

Hard work and worry seem to aggravate the condition of hypochondriasis; but idleness is much worse. It was by going out of their way, and falling asleep, that the pilgrims fell into the clutches of Giant Despair.

If Hamlet, the Dane, is the prince of the psychic misérables, then surely John Bunyan, of Bedford jail, takes rank as the King of Hypochondriacs.

MEDICAL BUILDING.

## Therapeutic Notes.

**Treatment of Pneumonia.**—Edward Balm, in the *British Medical Journal* for June 5, 1915, recommends the abstraction of an ounce or two of blood by wet cupping from the base of the lung or lungs, when in pneumonia the patient's temperature rises very high and remains stationary in spite of medicinal treatment, or when the breathing is very rapid, the pulse full and bounding, and delirium and restlessness are prominent features. Within an hour or so, in Balm's experience, the pain is relieved, respiration facilitated and slowed, the temperature reduced to 99° or 100°, and a sound sleep induced. The measures are recommended in all cases except those occurring in weak or aged individuals. In addition, the author orders an ounce of brandy three times a day, together with a little potassium iodide, ammonium carbonate, and digitalis, if required. If the temperature rises again, the wet cupping is repeated.

**Liquid Petrolatum and Bismuth in the Treatment of Gastrointestinal Disorders.**—Vicario, in *Paris médical* for April 25, 1914, is credited with the following combination of these two remedies:

R Bismuthi subcarbonatis, ..... 5v (20 grams);  
Petrolati liquidii (purissimi), ..... 3iiss (75 grams);  
Petrolati puri, ..... 3art. lxxv (15 grams);  
M. et ft. cremor.

The bismuth salt used should previously have been washed. The author points out that liquid petrolatum is the most useful vehicle available for the administration of bismuth salts in hyperchlorhydria, gastric or intestinal ulcers, and likewise in x ray examinations. Bismuth subcarbonate thor-

oughly triturated with liquid petrolatum is not attacked by a five in 1,000 hydrochloric acid at body temperature, and bismuth subnitrate, under the same circumstances, is not split up with liberation of nitrous fumes. Where the bismuth is to be given in large amount for radioscopic purposes, it can be sweetened with powdered sugar and so flavored with aromatics as to be readily taken by the patient. The bismuth petrolatum combination is suitable for use in cases of tuberculous enteritis.

**Treatment of Hypochlorhydria.**—L. Pron, in *Revue de thérapeutique médico-chirurgicale* for July 15, 1914, states that in the treatment of hypochlorhydria of recent advent, unaccompanied by pain, all drugs tending to increase gastric secretion and motility may be employed, whether they are such as exert a chemical digestive action or not. Nux vomica, gentian, quassia, calumba, condurango, pilocarpine, ipecac, and cinchona are all suitable. Sodium persulphate is a very active remedy, to be employed not over a week, as it may induce pain where the gastric mucosa is sensitive. One tablespoonful of a solution of one part of this salt in 150 parts of water may be given half an hour before meals. Magnesium chloride is a useful remedy, exciting both gastric and intestinal contractility and relieving constipation:

R Magnesii chloridi, ..... gr. xv (1 gram);  
Aque destillate, ..... 5i (125 ccs.);  
S. Sig.: One tablespoonful before or after meals.

In flatulence the author has found the following solution effective:

R Sodii Bromidi (crystall.) ..... 3i (15 grams);  
Sodii phosphatis exsiccati, ..... 3i (15 grams);  
Sodii sulphatis exsiccati, ..... 3i (15 grams);  
Aque destillate, ..... 5vi (25 ccs.);  
S. Sig.: One tablespoonful immediately after meals.

The same solution, taken ten minutes before meals, may be administered to excite the appetite. The author rarely uses hydrochloric acid and pepsin or other ferments. In gastric insufficiency with pain, Pron avoids nux vomica and sodium persulphate, and orders the last mentioned formula for use before meals.

**Treatment of Thrombosis of the Lateral Sinus.**—W. D. Black, in the *Medical Fortnightly* for March 10, 1914, urges careful treatment of all acute suppurations of the middle ear, in order to avoid the often fatal complications that may supervene, and in particular thrombosis of the lateral sinus. Where the latter condition has become established, Black advises the performance of a simple mastoid operation, even if the symptoms of thrombosis are indefinite. The sinus should be exposed for a distance of at least one inch to one inch and a half, and after the field has been prepared with hydrogen dioxide solution, alcohol, and finally tincture of iodine, the sinus opened—unless healthy granulations are found, when it is advisable to wait for twenty-four hours before entering it. If no improvement occurs in the symptoms during this twenty-four hour interval the sinus should be opened, even if it appears normal in color and pulsates. If upon alternate pressure on the two ex-



tremities of the sinus there is free bleeding, no thrombosis exists, and the sinus should be plugged firmly for forty-eight to sixty hours. On the other hand, if the sinus is found partially or wholly blocked, the surgeon should leave the mastoid field and proceed at once with exposure of the internal jugular vein, an incision being made along the anterior border of the sternocleidomastoid muscle, from within a short distance of the jugular bulb down slightly below the facial vein. In resecting the internal jugular vein, Black considers it best, as a rule, to ligate this vein just above the entrance of the facial vein into it, though in a few cases the clot extends below the facial and lingual, and it is then necessary to ligate and resect lower down. After the tying and resecting of the jugular, the ligature at its bulbar or sinus end may with advantage be removed, so that the vein will act as a drainage tube; care should be taken, however, to place a second, loose ligature before the first is removed, in order that in case free bleeding follows it may be controlled. The neck wound should be left open except at its lower angle, which can be brought together with adhesive strips. After the operation in the neck has been finished the sinus field should again be dealt with, the sinus wall being split toward its torcular end until there is free bleeding and then through its lower or bulbar end to the bulb. As a rule, curettage is unnecessary, but a drain should be inserted along the whole course of the thrombus. The patient's head, after the operation, should be placed in such a position that drainage will occur by way of the sinus and mastoid wound rather than by the neck.

Black insists that there is practically no more danger of infection of the sinus by operative work than elsewhere. In 212 cases of accidental or intentional opening of the lateral sinus, infection occurred but eleven times, with a mortality of seven. When the thrombosis has been dealt with by a thorough operation, Black combats any infection which has already occurred from emboli by medical measures, e. g., saline proctoclysis or hypodermoclysis, enough of saline purgatives to produce two or three liquid stools daily, antistreptococcic serum when indicated, an ice cap and cool sponging when the temperature exceeds 102° F., and acetyl salicylic acid, acetphenetidin, and quinine for their combined antipyretic, sudorific, and anodyne effects.

**Treatment of Corneal Affections with Balsam of Peru.**—L. Müller, in *Semaine médicale* for July 1, 1914, is stated to have used balsam of Peru with success, for over four years, in the treatment of corneal ulcer and hypopyon. He uses the balsam in the following combination:

R Balsamum peruvianum, . . . . . gr. xv (1 gram);  
Olei ricini, . . . . . 3ss (2 grams);  
Olei olivæ, . . . . . 3iiss-v (10 to 20 grams).

M. Sig.: Shake before using.

The eye is first carefully anesthetized with cocaine and epinephrine, and the balsam preparation then applied and left in contact with the cornea for about two minutes.

Of eighteen cases of ulcer with hypopyon in which the balsam applications were made, independently of all cauterization or operative procedure, sixteen recovered without anterior synechiae.

In a number of instances small opacities remained, but in each of these, a large area of the cornea stayed clear. Equally favorable results were obtained in the treatment of other septic corneal ulcers of traumatic origin. Balsam of Peru was also used with success in eleven cases of vascular keratitis. In these patients the duration of treatment was in many instances greatly reduced through its employment. In a few cases complete recovery was attained in a week or two, in spite of the fact that the lesions were of considerable size. In eczematous ulcerations of the cornea, perforation was observed to be prevented by balsam of Peru. In corneal ulcers occurring in ophthalmia neonatorum, the author now merely separates the lids, applies a four per cent. solution of silver nitrate, and immediately after drops into the conjunctival sac the balsam of Peru preparation, without previous use of cocaine.

**Relief of Lumbosacral Pains.**—Gwilym G. Davis, in the *Therapeutic Gazette* for June, 1914, asserts that where pain is localized in the region of the sacroiliac joint, it is wise to consider the part affected and direct measures accordingly. The pains, at times, are very severe, may extend upward, across the sacrum, or down the thighs, and are usually caused by standing in certain positions, walking for prolonged periods, unusual exercise, etc. Limping is not a marked symptom, but local tenderness can often be elicited. Frequently, especially in men, a confined, cramped, or unusual attitude assumed in working indicates the source of the trouble. Many of the cases, Davis is convinced, are based chiefly on an osteoarthritic condition of the sacroiliac joints and sometimes the lumbar spine.

The treatment should be both hygienic or constitutional and local. A saline laxative is of service. Digestive disturbances should be corrected, and sometimes acetyl salicylic acid, phenyl salicylate, or a course of the iodides given. Massage is rarely indicated, and if used, should be light and superficial. It is of chief service when carried out over the abdomen to relieve constipation and correct any tendency to ptosis. Locally, firm strapping with a belt of adhesive plaster frequently gives comfort. For men there may be ordered a belt of leather or canvas passing around the pelvis between the crest of the ilium above and the greater trochanter below. In women the lower part of the corset may be reinforced either by additional strips of steel sewed on or by bands of webbing. Addition of shoulder straps will reduce the tendency to lateral movement; or, Cook's leather back splint may be worn underneath the corset for this purpose. Where firmer support is required, an apparatus consisting of a wide canvas belt strengthened with strips of steel at the back and bands around the body, both above and below the iliac crests, and to be firmly buckled on, should be ordered. Upon extension upward it may be employed to fix the lumbar spine or even still higher parts. If pressure is desired over the sacrum a pad may be inserted in the belt, or an instrument made on the pattern and principle of a truss ordered. Rarely, a plaster cast may be used. By such means most of cases of the sort referred to can be made more comfortable, and, in fact, many of them may be practically cured.

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CHARLES E. DE M. SAJOUS, M.D., LL.D., ScD.

CLAUDE L. WHEELER, A.B., M.D.

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## THE NERVOUS CHILD.

After endless expert pictures of nervous children, very ingenious many of them, but after a time quite unsatisfying, it is a pleasure to come across the work of a real physician. Professor Langstein has written in the *Zeitschrift für aertliche Fortbildung* for June, 1914, a short account of the Pathology and Therapy of Spasms in Childhood, which has no rival today as a work of lifetime's study and abounding enthusiasm. We have known him, perhaps, less as the child specialist than Hutinel, Schlossman, or Barlow; while those who know Heubner's work have recognized him as a close and exceedingly accurate observer of the occurrence of fits in children. But hitherto these studies have been scattered in many directions; now, thanks to Professor Langstein, we have them collected and final, and the result promises to be probably, from the physician's point of view, the most authoritative classification of the symptoms of fits in existence. We think that on the whole the symptoms grouped together by Professor Langstein are a surer guide to the identification of the latent and fully developed signs of what is called the spasmodic diathesis than even more elaborate works.

Our clinical experiences, the observations of Langstein, all go to show how great a part inheritance

has played in the convulsions of childhood. The first fits occur at the sixth month; it is generally believed that the cause of these is the diathesis of which we have spoken. Fits, on the other hand, after the sixth month have a graver cause; they indicate organic disease, epilepsy, hereditary syphilis, hydrocephalus, and even more obscure lesions. There is no sign familiar in these convulsions that has escaped the professor. He notes some symptoms which he believes have been generally overlooked. For instance, beside the general tonic spasms, there are spasms of small regions of the nervous system, that is, in the neighborhood of the eye muscles, the oculomotor, trochlear, abducent, facialis, and diaphragm. We find them in the newborn, especially in the prematurely born, and their sudden appearance alarms the mother. The rolling of the eyeball, for example, is a very frequent sign; it is accompanied by twitching of the eyelids, and twisting of the mouth. It is the *petit mal* of spasmodic disease. Proof that these fits are intimately connected with artificial feeding is, of course, a theme of the professor, and the ancient craft of statistics is reviewed both on the romantic and the utilitarian side. He begins his paper by citing Heubner, who wrote: In Berlin, in 1905, 1,723 cases of convulsions were fatal among 100,000 nurslings. The argument is one with which we are familiar. Professor Langstein's assistant adds another series of figures from his own funds. He examined many newborn and reached the astonishing conclusion that forty per cent. manifested the twitchings and convulsive movements of the face and eye muscles. These statistics really need more management; they should be severely pruned and edited.

Glancing through this work one must early note how often the author has fallen into the thought that these convulsions may be epileptic, the disease that is preeminent among the disorders of the nervous child. The writer leads us surely to distinguish between convulsions or spasmophilia, or epilepsy and tetany. The diagnosis is not easy, but in epilepsy and tetany there is nearly always a family neurosis. Where there is the history of epilepsy or of tetany, where the factors of artificial food and premature birth are wanting, there, in all likelihood, we have the true spasmophilia. The distinction, if sound, is of great importance.

Professor Langstein's treatment of the disease is medicinal and dietetic. There are two methods of feeding, the breast, above all, and a diet of carbohydrate without milk. We may venture to say that diet alone has never succeeded in curing these convulsions. Such, in fact, is the belief of Zybelle. He found that children lost their tendency to convulsions after a milk diet; while a farinaceous diet in-

creased the irritability of the nervous system. The whole question is strange and unsettled. As a rule medicines are needful. Zybelle and Langstein recommend chloral. We differ with them here, but in the calcium salts that they praise we have a large and interesting opportunity. In this respect, the combination of phosphorus and calcium seems to have the best effects.

#### ADVANCES IN TREATING CHOLERA.

Seven years ago Leonard Rogers first published his discovery of the enormous value of the use of injections of hypertonic saline solutions combined with the oral administration of large doses of the permanganates in the treatment of cholera. The saline injections largely did away with the extremely fatal collapse which was so frequent in the disease. The permanganates helped in destroying a large proportion of the toxins formed in the intestine and absorbed. These two methods of treatment at once reduced the mortality in cases of cholera in the Calcutta Medical College Hospital from a point never below sixty per cent. to about thirty per cent. Further experience with the use of these methods has brought the mortality down to an average of 23.5 per cent. for the last three years.

At the present time the greatest cause of death is uremia, developing either in the active stage of the disease or coming on after the most acute stage has passed. Not content with the great advances which he had already made in treatment, Rogers has sought some means of further reducing cholera mortality by combating the uremia.

A. W. Lellards, an American working in the Philippines, suggested that the uremia of cholera was probably due to an acidosis, for he found that very large amounts of alkali could be given without rendering the urine alkaline when uremia was present. Lellards was unable to confirm his suggestion by chemical examination of the blood, but Rogers and his associates have found that an acidosis is always present in choleraic uremia, often reaching a most extreme grade. It having been shown by Lellards that the oral administration of alkalies was of little value, Rogers tried them by intravenous infusion and has produced a method which gives the most excellent results. Along with the saline infusion one pint of solution containing sixty grains of salt and 160 grains of sodium bicarbonate is administered and this is repeated as necessity arises. He has given as high as 1,120 grains of the bicarbonate in desperate cases with recovery. The remainder of his treatment has not been changed. With the addition of the use of bicarbonate of sodium in the uremic cases, Rogers says that the death rate can be

kept below twenty per cent. This brings the dreaded cholera down to the point where it is no more deadly than lobar pneumonia is under the best of conditions.

These advances in the saving of human life have been made, as Rogers says, by prolonged research (extending over ten years) on physiological lines without the aid of any specific bacterial or medicinal agent. This is a remarkable instance of the value of intense clinical research.

#### GERMAN DOMINANCE IN RUSSIAN MEDICINE.

Russia is beginning to realize that Germany has been her mentor and guide for the last two centuries, in fact ever since Peter the Great invited German physicians to come and practise their art in Russia. Russia has been importing her court manners and fashions from Paris, but to Germany she looked for progress in politics, science and industry. This is the admission made by Professor P. I. Tichoff in a recent contribution dealing with Russian made chloroform (*Roussky Vrach*, June 6, 1915). "The impression gained," says Professor Tichoff, "is that we, Russian physicians, have become enslaved by the Germans, enslaved to such an extent that we are in the position of vassals, and from a practical standpoint, medical Russia has become a sort of German colony. We studied in Germany, we translated German textbooks and educated our students by means of them, and, under the slightest pretext, have been sending our patients to Germany; and from Germany we have been receiving our scientific and pharmaceutical organizations." The author goes on to describe how Russian graduates have been sent to Germany for their post-graduate work, how German medical literature has been given preference in universities and medical libraries, how not only the laymen but even physicians, when sick, have been flocking to Germany for treatment, and how German pharmaceutical preparations have flooded the Russian market. The point is made that while Russia possesses six to seven seas with mountains of decaying weeds, they have been importing iodine from Germany, and at the outbreak of the war, the only iodine that could be obtained was from Japan. Practically all of the chloroform used in Russia, about 200,000 pounds a year, has been supplied by Germany, and as soon as war was declared, the price went up twenty-five per cent., with the prospect of becoming prohibitive. It appears that a small amount of chloroform is now manufactured by the Physicochemical Society at the University of Kieff, the product being in every way as satisfactory as the German. The Russian phy-



scians are also endeavoring to develop the various watering places and "limans" (mud baths) to take the place of the German resorts, so lavishly patronized in the past.

It remains to be seen whether Russia will succeed in shaking off the shackles of German enterprise, which has permeated every sphere of Russian life. The probability is that with the end of the war the well known indolence of Russia will reassert itself, and everything will again be "made in Germany."

#### THE PROPER USE OF TUBERCULIN.

In these days of ultramodern therapeutics, when nearly every disease has its serum specific, we must stand on our guard against the lure of these remedies. A guide to the use and technic of tuberculin has been published lately by Doctor Cochrane and Doctor Sprawson.

Full directions are given in their manual for finding the proper therapeutic dose in a given case, the temperature being held to be the proper guide, although such other symptoms as loss of weight, focal reaction, and the opsonic index are to be considered. The authors wisely refuse to deal in generalities, holding that each case must be treated individually. To illustrate this point they illuminate the text by a number of charts, representing cases treated by them with tuberculin.

The writers are not dogmatic about the efficacy of tuberculin, maintaining merely that by its use, in gradually increasing doses over long periods of time, immunity to the infection may be established, and they seem to have supported their contention fairly well.

#### HYSTERIA AMONG SOLDIERS.

A discussion has been going on as to whether the explosion of shells causes hysteria or whether the cases reported are not in fact occurrences in soldiers who are instances of hysteria in an undiscovered or latent form. The discussion really seems to us immaterial. We do know that most dreadful cases of hysteria occur in soldiers after the bursting of shells. The *British Medical Journal* for August 14th says: Three Zouaves were knocked out by the violent explosion of a shell in their trench, which killed two men outright and buried a dozen more or less completely in earth. Two of the three bled from the nose and ears; all three were deaf, and became dumb also. Three days later they reached Roussy's clinic in Paris, deaf, dumb, communicating by signs only; one of them, nervous and excited, feverishly wrote long accounts of the accident. The three, presenting such uniform symptoms, were placed apart in separation rooms, and Roussy described in the presence of each how they would recover completely in a day or two. Two recovered hearing partially and

speech completely the next day, the third the day after. Each had perforation of the tympanum and otitis media, one bilaterally. Each had been for several months at the front and each had been wounded already, one twice. Roussy has seen a fourth similar case, and gives a careful analysis of fifty cases of hysteria, and four of simulation he has had under his care as a result of the war. Nine of the fifty had hysterical fits and required severity of treatment.

#### THE PROBLEM OF TWILIGHT SLEEP.

The newspaper gush over twilight sleep has been defended on stage and platform. There is the further and more interesting question of the physician's point of view, his attitude toward it. Philanthropists speak of its benefits, its martyrs, and of the unmitigable prejudice of doctors. Differing with diffidence, we think it may be shown that the philanthropist's attitude is a pose merely, an artistic and quite innocent pose, but still a pose. It is the amusing pose of the nonmedical cynic, now turned into a theatrical convention. When we read in the newspapers that an excellent lady endured twilight sleep and was a "martyr to motherhood," we do not wish to speak unsympathetically, but the phrase, to be quite candid, is not just. It is somewhat blatant sentiment. The problem of twilight sleep has never been stated quite impartially. The question, "Would you like to try it?"—is here, as in most other cases, irrelevant. The real problem is much more complex. Is it a help to women, and is it a mode of practice within the reach of the average physician? We think these questions have not had a sufficient reply. If the mother in labor is to be comforted by twilight sleep, let it be studied scientifically. Criticism is a reminder that there is more in life than commercial exploitation. Hostility to this criticism comes from taking it with an attitude of superiority over the experience of physicians.

#### OLD ANTISEPTICS AND THEIR NEW APPEARANCE.

The most interesting experiment of all in the energetic surgery of the day is the raising of a crop of antiseptics which the promoters hope to show are the best in an epoch. In the working of a new antiseptic, recently reported from Paris, there is to be no excess of by-effects and their waste. All is pure antiseptis. This imaginary novelty is criticized freely, but not too freely, in the *Lancet* for August 14th. "Some accounts stated that the new antiseptic was chlorinated lime (calcium hypochlorite), to which boric acid had been added, and subsequently chalk to neutralize the acidity of the mixture. Later it was stated that the new antiseptic was prepared by adding to a solution of sodium hypochlorite, boric acid until the mixture was neutral. In both cases it seems fairly obvious that the net result would be a solution of hypochlorous acid, a well known and powerful antiseptic, probably more efficacious than chlorine itself. But the claims to novelty for this antiseptic are ill founded." In this instance, happily, the novelty is grounded in real merit.

## Obituary.

### PROFESSOR PAUL EHRLICH.

(of Frankfurt, Germany.)

Despatches this week announce the death of Paul Ehrlich at Bad Homburg, Germany. He was born at Ströden, Silesia, in 1854. He had his schooling at Strassburg, Breslau, Freiburg, and Leipsic, from which university he received the M. D. degree in 1878. The main facts of Professor Ehrlich's life are very striking; they indicate in a clear way what manner of man he was. His discoveries are notable for their brilliancy, and for the strenuous attempt to make an exact science of therapeutics. The enthusiasm which prompts a contemporary generation to accept salvarsan as a cure for syphilis by no means is necessarily a result of stricter habits of observation. It is the success which comes of untiring experiment and of the greater piquancy of chemotherapy. Many physicians have sacrificed to this idea of finding substances of which the therapeutic dose is a small fraction of the toxic one, such practical advantage as they are capable of taking from the greatest triumphs of what is called rational therapeutics. It may be granted that imitators of Ehrlich, who have brought forward salts and colloids of the elements, have not quite succeeded. On the other hand, Ehrlich's work on immunity, his side chain theory, his researches into ricin and abrin, his studies of antitoxin will achieve, given time and reflection, a high perspective. He received many honors, including the Nobel prize. It is probable that most people will be saddened by the end of so extraordinary a genius.

### CHARLES JOHN FINLAY, M. D.,

(of Havana, Cuba.)

Dr. Charles John Finlay died at Havana, Cuba, aged eighty-two years. He was born at Puerto Principe, Cuba, on December 3, 1833. He was educated at the Lycée de Rouen, France, and at Jefferson Medical College, Philadelphia, where he received the degree of M. D. He married Adele Shine, of Trinidad, W. I. Doctor Finlay was a member of many societies, including the Society of Sciences, Brussels; the Royal Society of Arts, Eng-

land; the College of Physicians, Philadelphia; the American Public Health Association; the Society of Tropical Medicine and Hygiene, England, and the American Society of Tropical Medicine. He was chief sanitary engineer of Cuba from 1902 to 1908. It was Doctor Finlay's work that first enabled physicians to see the origin of yellow fever in more correct relations. In 1881, he pointed out that the mosquito is the medium of conveying yellow fever. The discovery was afterward established by the experimental work of the United States Army Commission. This service of Doctor Finlay to science is one of a long list of useful works. But the thought which led to the prevention of yellow fever is profound, and enriches the memory with an unforgettable picture. America is thus, through Doctor Finlay's work, credited with one of those scientific movements that reach the gigantic proportions of the Panama work.



PROFESSOR PAUL EHRLICH,  
(of Frankfurt, Germany.)

## News Items.

**The Race Betterment Conference.**—The second international Conference on Race Betterment was held in San Francisco, Cal., August 4th to 8th. Race decadence, the possibilities of race improvement, and the agencies of race betterment were among the subjects discussed. Mr. Luther Burbank, in discussing Evolution and Variation with the Fundamental Significance of Sex, said that abundant, well balanced nourishment and thorough culture of plants and animals would always produce good results in holding any species or variety up to its best hereditary possibilities beyond which it could not carry them, and that it was only by constant selection of the best

individuals for continuing the race could the race ever be improved. Mr. Paul B. Popenoe, editor of the *American Journal of Heredity*, delivered an address on the Natural Selection of Man, in which he stated that the only hope for permanent race betterment under social control was to substitute a selective birth rate for Nature's death rate. Dr. J. H. Kellogg, superintendent of the Battle Creek Sanitarium, proposed that the conference institute a eugenics register designed to keep a record of two classes of persons, those who measured up to eugenic standards and the children born of parents whose pedigree and physical characteristics conformed to the required standards. Among the other speakers were Dr. David Starr Jordan, of the Leland Stanford University; Dr. Ernest B. Hoag, of the Los Angeles Juvenile Court; Edgar L. Hewett, director of the United States Bureau of Ethnology; Professor Irving Fisher, of Yale University, and many others of equal prominence in sociological and scientific circles. The conference was concluded with a morality masque, in which two hundred students of the University of California took part. This masque was a dramatic arraignment of disease and war.

**Cholera in Austria.**—Official reports state that during the week ending August 24th there were 625 cases of Asiatic cholera in Austria.

**A New British Hospital in Serbia.**—A British hospital with two hundred beds, sent by the Wounded Allies Relief Committee in London, has been set up at Podgoritz, Serbia.

**Postgraduate Lectures on the Heart.**—On October 1st, Dr. Robert N. Wilson, of Philadelphia, will take up again his Friday afternoon postgraduate lectures on the heart. These clinics are held in the amphitheatre of the Philadelphia General Hospital, between five and six o'clock on Friday afternoon from October 1st to April 28th and are open to all physicians and medical students who are interested. There are no fees and no obligations connected with the course.

**State Hospital Commission to Be Retained.**—The Constitutional Convention in Albany, N. Y., on August 24th voted to continue as a constitutional body the New York State Hospital Commission, which exercises supervision over the care of the insane. In doing so, the convention went on record as rejecting a substitute proposal providing for a Secretary of Charities and Correction, with power of supervision over all State institutions, with the board of charities, the prison superintendent, and the hospital commission continued as divisions of the Department of Charities and Correction.

**American Physicians Send Aid to the Belgian Profession.**—Two contributions to the fund being collected by the Committee of American Physicians for the Aid of the Belgian Profession were received last week by Dr. F. F. Simpson, of Pittsburgh, treasurer of the committee, one of \$5 from Dr. C. N. Kreider, of Springfield, Ill., and one of \$10 from Dr. Hugh A. Cuthbertson, of Chicago. By an oversight, Dr. Charles N. Dowd, of New York, whose contribution of \$25 was received on July 16th, was credited with this contribution on July 17th and also on July 24th. The total amount of the contributions received up to August 21st was \$7,804.84, with a balance on hand of \$494.80.

**A Conference on First Aid.**—Military surgeons and surgeons and general officials of railroads, manufacturing and mining concerns met in conference in Washington, D. C., August 23d and 24th, to discuss first aid and accident surgery and transportation. One purpose of the meeting was to unify and standardize as far as possible first aid appliances and instruction. Army and navy medical officers are frequently called upon to take charge and assist in times of great disaster and floods. In order that the work may be done in harmony with that of the civilian doctors, it is felt that the same methods should be adopted by military and civil medical authorities. The Red Cross and the military systems have already been harmonized.

**Cincinnati's New \$4,000,000 Hospital has been opened.** There are twenty-seven buildings, containing forty-five wards, situated in a tract of sixty-five acres of land in the suburbs of Mount Auburn. Other buildings will be added as the growth of the city may render necessary. In the forty-five wards now in use are about 900 beds, each costing something like \$4,180. The equipment of the new institution is complete down to toys for children and tennis courts for adult convalescents. A large park around the buildings ensures quiet and plenty of fresh air. It took a special hospital commission four years to gather all the good points of the most modern hospitals in America and Europe and four years more to build them in this most modern institution which is said to be a model institution.

**The Sanitation of a Model Summer Resort.**—Dr. Robert Abbe, of New York, was host at a meeting of the Hancock County, Me., Medical Association, held recently in Bar Harbor. The program consisted of a symposium on the sanitation of a model summer resort, and among those who discussed the subject, in addition to Doctor Abbe, were Dr. William Eustis Brown, health officer of York, Me., Professor William T. Sedgewick, of the Massachusetts Institute of Technology, Dr. E. K. Dunham, of New York, Dr. Nathaniel Gildersleeve, of Philadelphia, Dr. John S. Thacher, of New York, Dr. Galen M. Woodcock, of Bangor, and Dr. A. G. Young, of Augusta, secretary of the State Board of Health. Doctor Abbe gave a general talk on the subject, Doctor Gildersleeve discussed the milk and cream supply, and Doctor Dunham dealt with the question of flies and mosquitoes.

**American Medicine Medal Awarded to Surgeon General Blue.**—The trustees of the American Medicine medal award have unanimously selected Surgeon General Rupert Blue, of the United States Public Health Service, as the American physician who did most for humanity in the field of medicine during the year 1914.

**A Research Laboratory for the Allegheny General Hospital.**—A laboratory for investigation into the origin of disease, to be operated in connection with the Allegheny General Hospital, Pittsburgh, will be erected in the near future by the children of William H. Singer. The cost of construction, equipment, and endowment will amount to \$300,000.

**Mortality Statistics of New Orleans.**—During the month of July, 1915, 580 deaths from all causes were reported to the health department of New Orleans, corresponding to an annual death rate of 18.66 in a thousand of population. The total deaths among the white population numbered 316, with a death rate of 13.94; colored population, 264 deaths, with a death rate of 31.37. Not included among the total deaths were 50 still births.

**Examination for Sanitary Bacteriologist.**—The United States Civil Service Commission announces that an examination will be held on September 22d for sanitary bacteriologist, which will be open to both men and women. From the list of eligible persons resulting from this examination certification will be made to fill several vacancies in this position in the United States Public Health Service, for duty in the Hygienic Laboratory, Washington, D. C., at a salary of \$1,500 a year. The duties of the position will be to assist in the study of stream pollution, water supplies, sewage disposal, and other public health problems. Applicants should be able to make the usual chemical and bacteriological examinations of water and sewage. Graduation from a scientific course in a college or university of recognized standing, or the degree of M. D. will be required. For the proper application blanks and for further information concerning the scope of the examination address the United States Civil Service Commission, Washington, D. C.

**Personal.**—Dr. Edward W. Ryan, of Scranton, Pa., chief of the American Red Cross Society in Belgrade, has been decorated by both the French and Serbian governments for his work in the hospitals during the epidemic of typhus fever.

Surgeon John D. Long, United States Public Health Service, has been appointed to the position of director of health recently created by the new Philippine health laws.

Dr. Louis H. Howard, of Jackson, Miss., has been sent to Trinidad by the International Health Commission to take charge of health interests in the British, Dutch, and French West Indies.

Miss Violet Catherine Turner, M. B., of Hazelwood, Derbyshire, England, has been awarded the London University gold medal. It is the first time that this medal has been won by a woman.

Dr. Otto R. Eichel, of Albany, N. Y., has been appointed director of the division of sanitary supervisors of the State Department of Health.

**New York City's Death Rate.**—The death rate for the week ending August 21, 1915, was 63 lower than the death rate for the corresponding week of last year. The total number of deaths was 1,366 with a rate of 12.27, compared with 1,381 deaths and a rate of 12.90 during the week ending August 22, 1914.

The deaths from sunstroke were 75 per cent. fewer than during the third week of August of last year. The only disease showing a noteworthy increase during the past week was typhoid fever. Six more deaths were attributed to this disease than during the corresponding week of last year and six more than during the previous week of this year. The deaths of children under five years of age on diarrheal diseases showed a slight actual increase, but this is to be accounted for by the increased number of inhabitants in the city at this age. Deaths from measles were fewer than during the corresponding week of last year—the first week since March 27th that the weekly death toll of this disease was lower than that recorded last year. Indeed, this decrease marks the end of the epidemic of measles that has prevailed throughout the city since last winter. The death rate for the first thirty-four weeks of 1915 was 13.68 compared with a death rate of 14.16 for the corresponding period of last year.



# List of Current Literature.

## CORRESPONDENZ-BLATT FÜR SCHWEIZER AERZTE.

**Plasma Cells in the Various Organs in Infectious Diseases.** by Ryoichiro Hagiwara. Plasma cells are to be found not only in chronic and subacute, but also in the acute infectious diseases, and probably have the duty of attending to the absorption of broken down tissue. They are localized in the interstitial tissue, especially about the vessels, within which they are almost never found. They always appear to be most numerous in the spleen. Toxins are not the only cause of the formation of plasma cells, with which the antibody formation has nothing to do. When there is a strikingly large number of plasma cells in the interstitial tissue of the kidney or heart, an acute infectious disease may be predicated with fair certainty. Large numbers of plasma cells in the uterine mucous membrane do not point to gonorrhea, but in the mucous membrane of the Fallopian tube, their presence is to a certain degree indicative of this diagnosis.

## MEDIZINISCHE KLINIK.

**Weiss's Urochromogen Test,** by Kurt Halbey. --The test was performed one or more times in fifty-five cases representing a variety of diseases and was found positive in about one third of the total number. In all cases proved to be typhoid fever the test was always positive, from the beginning of the disease until after the fever had subsided. It was occasionally positive in other infections such as sepsis, measles, scarlet fever, erysipelas, and malaria. It was observed that in such cases it was positive only where there was evidence of septicemia and not in the simple types. Halbey concludes that a positive test is strong evidence of the presence of typhoid and that it constitutes a valuable aid to diagnosis. The original technic of its author should be followed and is so simple that it can readily be employed by the practitioner.

**An Effective Throat Pastille,** by Collischonn. --The pastille is composed of anesthesin 0.03 gram; phenacetin 0.08 gram; thymol, menthol, and oil of eucalyptus, of each 0.0015 gram, with a sufficient amount of gum acacia. It is the result of clinical experiment and is designed to meet all of the usual indications. Anesthesin is for the local relief of pain; phenacetin is to relieve the joint and muscle pains so often associated with infections of the throat and to promote sleep. The volatile oils serve as local antiseptics and stimulate the flow of lymph in the inflamed area. The acacia gives the pastille the required consistency, makes it dissolve slowly, and acts as a mechanical protective. One pastille can be used every hour. Six years of use of these pastilles has proved their efficacy in the majority of simple throat inflammations.

## BULLETIN DE L'ACADÉMIE DE MEDECINE.

**Mild Cardiac Disturbances in Rheumatism,** by Camille Lian. --Attention is called to the existence and frequent occurrence of mild cardiac disorder of

rheumatic origin, with clinical evidence of myocardial involvement alone, and in which the symptoms, in the absence of arrhythmia, mean merely a slight or intermediate degree of cardiac insufficiency. The subjects are often twenty to forty-five years old, who complain of breathlessness, sometimes precordial discomfort, and frequently palpitation, with or without extrasystoles, upon walking rapidly or ascending stairs. There is no edema or appreciable visceral congestion. In the anamnesis, an attack of acute rheumatism preceding the cardiac disturbance is elicited. Mild myocardial involvement, according to Lian's experience, can sometimes be detected in its initial stage in the course of acute rheumatism; being manifested either in the symptoms already referred to, in cardiac acceleration disproportionate to the temperature—especially when the fever is subsiding—or in acute cardiac dilatation or arrhythmia. The prognosis, in the absence of arrhythmia, is rather favorable, though if an infection or intoxication, or especially, another rheumatic attack supervenes, decided myocardial disease and insufficiency may be induced. Visceral disease, physical overwork, and psychic commotions may tend to an attack by overburdening the heart. The treatment, in the acute stage, consists in the prolonged use of sodium salicylate, at first in large, then in decreasing doses. In the chronic stage, cardiac overwork from any cause must be avoided, and strophanthus or convallaria given. Where cardiac function is so impaired as to interfere with the patient's customary occupation, 0.0001 gram of crystalline digitalin should be given every three days or on the first two days of each week.

## PRESSE MÉDICALE.

June 3, 1915

**Symptomatology and Treatment of Penetrating Chest Wounds,** by Piéry. --The author's study is based upon fifty-three carefully followed cases of penetrating chest wounds in soldiers. In the twenty-five uncomplicated cases, the symptoms were strikingly constant, varying only in intensity and duration, and are denominated by the author the hemopleurpneumonic syndrome. Stress is laid especially on the physical signs, hitherto overlooked or insufficiently appreciated. Over the inferior third of the wounded lung, posteriorly, an area of dullness with resistance to the finger, loss of vocal resonance, and indistinctness or loss of breath sounds, were noted. Above this area was another of diminished resonance, with preserved or increased vocal resonance, but in particular, with distinct bronchial breathing, at times slightly veiled. Fluoroscopic examination showed a shadow, very dark below, over the lower two thirds of the lung, and exploratory puncture, an intrapleural accumulation of blood. Hemoptysis, the most characteristic functional sign, was present in 56.7 per cent. of the cases. Primary hemoptysis is carefully distinguished by Piéry from secondary hemoptysis, which sets in only on the second or third day and in which not fresh blood, but blood mixed with mucus and serum, is got rid of. Fever beginning twelve to forty-eight hours after the injury, persisting about two weeks, and then declining by lysis, was a striking feature, signifying a pneumonic process, more

or less marked. In the treatment, Fiory lays stress on decongestion of the lungs by means of opesia and digitalis, to combat the oncoming hemorrhagic pneumonia. No attempt should be made to evacuate the hemothorax. Extraction of projectiles from the parietes should be delayed as long as practicable.

**An Epidemic of Diphtheria**, by Guiart and Fortincau.—Throat cultures were taken 620 times in a series of 270 patients during a diphtheria epidemic in the French army. Eighty-nine cases of diphtheria were treated. Instances of transformation of the short type of diphtheria organism into the long and of the long type into the short were observed; the theory that these types are but different forms of the same organism was thus confirmed. The virulence of the organism seemed to vary directly with its length. The epidemic in the hospital began to slacken as soon as preventive injections of antitoxin were given. In a study of the period of persistence of diphtheria bacilli in the fauces, it was found that in diphtheria cases the organisms disappeared, on an average, in fifty-two days; where cultures cannot be taken, a diphtheria patient should therefore be isolated at least two months. In diphtheria carriers, the period of persistence was found to be nearly always proportionate to the length of organism present, the long bacillus disappearing generally in five weeks, the medium bacillus in four, and the short in three. The conclusion is reached that in diphtheria prophylaxis, the chief measure is preventive antitoxin injection, and next to it, early detection and isolation of developed cases.

#### RIFORMA MEDICA.

July 31, 1915.

**Vagus Lesions and Alternations in the Stomach**, Wall, by P. Fiori.—Experimental lesions of the vagus below the diaphragm produce hemorrhagic foci in the mucosa and submucosa of the stomach. Lesions of the celiac plexus produce a typical circular pyloric ulceration of the mucosa.

**Vaccine Therapy in Infantile Tuberculosis**, by V. Provinciali.—After using Bruschettini's serum vaccine in a number of cases, Provinciali finds that the injections are painless and harmless and produce an immediate improvement in strength with a marked sensation of well being. By limiting the infective process, there is frequently obtained a genuine cure. Furthermore, by the use of this vaccine it is possible to create an immunity against tuberculosis.

#### ROUSSKY VRATCH.

April 25, 1915.

**Coagulation of Blood; Blood Treated with Hirudin**, by V. S. Sadikoff and A. A. Lozinsky.—The authors performed a series of experiments which seem to indicate that hirudin prevents the coagulation of blood by its tanning effect on the lipid covering of the red cells, thus preventing the liberation of thrombokinase. This effect may be destroyed by a saturated solution of ricin or a solution of solamin. Blood treated with hirudin remains fluid for a long time, with the red cells in a state of perfect preservation. The authors see a practical application of this principle in the hemo-

lysis tests. Blood treated with hirudin and dried complement serum may be employed in performing the Wassermann test, without the necessity of fresh blood, thus greatly simplifying the method. The authors promise further communication on the comparative value of preserved red cells and complement in performing the Wassermann test.

**Arsenobenzol (Billon) Instead of Salvarsan and Neosalvarsan**, by D. S. Tchapiin.—In view of the difficulty of obtaining salvarsan in Russia, the author experimented with Billon's arsenobenzol in twenty cases of syphilis. The results showed no difference in the effect between the French and the German preparations.

**Pathogenesis of Polycythemia**, by A. B. Balajan.—Since the description by Vaquiez, in 1892, of a disease characterized by polyglobulia, enlarged spleen, and cyanosis, various theories have been advanced as to the pathogenesis of this condition, but so far none proved altogether satisfactory. From a review of the literature and his own observations, the author concludes that erythremia in the primary and secondary forms of polycythemia is a product of increased new formation and not delayed disintegration of the red blood cells. In most cases, the respiratory exchange of gases is increased, while the oxygen contents of the blood are diminished, despite the increase in hemoglobin. The diminution of oxygen is a primary factor, which, by causing irritation of the bone marrow, produces, secondarily, a polycythemia as a defensive phenomenon.

May 1, 1915.

**The Influence of Salvarsan on the Development of Immunity in Infected Animals**, by F. V. Verbitsky.—The author concludes from his experiments that the destruction of the parasites under the influence of chemotherapeutic agents, salvarsan, brings about the formation of antibodies which take part in the final sterilization of the organism and produce a temporary immunity. This immunity lasts only four to fifteen days and is not transmitted from mother to offspring, either directly or through the milk.

**Psychoneurosis during the War**, by S. A. Suchanoff.—The author discusses the psychoneuroses which are of frequent occurrence on the battlefield. While the usual forms of neuroses are, in the main, not different from those occurring in peace, they are nevertheless accentuated, particularly in those who already have a predisposition. The chief etiological factor is concussion caused by the terrific explosions of the heavy artillery pieces. This concussion either causes traumatic disturbances of the fine structures of the nervous system, resulting in traumatic neuroses, or else produces emotional shock with marked hysterical manifestations.

May 1, 1915.

**The Neutralization of Toxins by the Adrenals**, by M. N. Tchekoksaroff.—The author performed a series of experiments to determine whether the adrenal secretion possesses detoxicating properties. He failed to find any evidence that adrenaline possesses such properties, and he regards the question as still open.

**Local Anesthesia by Means of Quinine Bihydrochloride Carbamide**, by V. S. Samborsky.—The author employed a one per cent. solution in all the cases of action, including several of minor degree, with very gratifying results. The anesthesia was somewhat late in developing, but it was deeper and lasted longer, from two to five days and longer. Locally the anesthetic acts as antiseptic and favors healing.

**Differentiating a Sanguinous from a Sanguinopurulent Exudate**, by W. H. Perrier.—The author found the following method simple and trustworthy. A quantity of the exudate is poured into a test tube, diluted with four to six times the volume of distilled or boiled water and allowed to stand for two to three minutes. If the exudate is pure blood, a sediment will form and the supernatant liquid will be clear and red. If pus is present, the supernatant liquid remains cloudy and contains shreds.

#### REVISTA DE MEDICINA Y CIRUGIA PRACTICAS.

**Total Extirpation of the Bladder**, by P. Cifuentes.—Electrocoagulation is of service in benign polyp and small pedunculated tumors, but is inapplicable to malignant or infiltrated growths, for the removal of which extirpation of the bladder is necessary. In a case of malignant tumor in a man aged thirty-nine years, Cifuentes practised a total extirpation by the combined suprapubic and perineal routes and attempted to drain the ureters through the abdominal wound. However, sloughing occurred which necessitated the transferring of the ureters to lumbar incisions which proved successful. Each ureteral orifice was covered with a specially devised cap leading by a rubber tube to a urinal strapped to the posterior surface of the leg. After ten months the man was in good health and the operative wounds were healed. The division of the operation into two stages, one of extirpation of the bladder and the other, several days later, of ureterostomy greatly lowers the mortality.

**Neuritis of Rice Field Workers**, by J. S. de Figueroa.—Neuritis of the lower extremities is very frequent in workers in the rice fields, especially in those fields where drainage is poor and the water stagnant. The exciting causes are the humidity, the great quantity of decomposing organic matter in the water, and small abrasions of the skin which facilitate infection. De Figueroa considers that this should be considered as a distinct clinical variety of neuritis. Rest and hot moist applications relieve the condition, but it returns on exposure to the same causes. Only complete change of occupation can effect a cure. It should not be confused with *beri beri* as it shows neither edema nor atrophy, and furthermore the absence of protozoa from the blood excludes any malarial process. Alcoholism plays no part in the etiology of the disease, nor does either the rheumatic diathesis or acute rheumatism. As only young males work in the rice fields, it is found solely in this class of population.

#### BRITISH MEDICAL JOURNAL.

**The Principle of Anoci Association Applied to Medical Practice**, by Dr. M. D. Macdonald, Surgeon.

scious as well as conscious cerebration may, depending upon its character, either materially aid in the recovery from a serious illness, or may even serve to turn the tide against a patient and hasten death. It should be one of the important duties of the physician to protect his patient from all injurious impressions and to stimulate in him a hopeful outlook. To accomplish this, every little detail must be looked after, including the temperament of the nurses, the visits of friends and the conduct and manner of the physician himself. Success demands the close study of the patient's outlook and an attempt to understand something of the workings of his subconscious mind, all of which in turn demand a certain intimacy of acquaintance. Such a relationship is the privilege of the family physician and the various modern efforts to make the practice of medicine a state service all lead away from this end. So far as they do so they are detrimental to the best interests of perhaps a large majority of patients. A doctor of moderate attainments who has the confidence of his patients can often serve them much better than one of the highest attainments who has not their sympathy.

**Treatment of Pulmonary Tuberculosis by Nitrogen Compression**, by Geoffrey Lucas.—It is advisable to have the patient at absolute rest in bed for two days prior to the injection. The bowels should be emptied by an aperient given the evening before. Careful examination of the chest should be made and three likely sites for puncture selected and painted with tincture of iodine an hour before the operation, at which time omnopon-scopolamine should be given. At the time of puncture a second dose may be needed, smaller than the first; the point of puncture again painted with iodine; and the needle track anesthetized down to the parietal pleura by an injection of novocaine. The nitrogen should be introduced slowly and a slight positive pressure should be produced by the third injection. A day should separate the injections. The positive pressure can then cautiously be raised by subsequent injections until it reaches twelve or fifteen cm. of water, or until complete compression of the lung is secured. The results of injections should be controlled by skiagrams. It is desirable that one lung should be healthy, but this is not necessary, so long as the other has sufficient pulmonary tissue to supply the normal requirements. Disease in the opposite lung is more likely to be benefited than aggravated by pneumothorax, for a passive hyperemia is produced which aids healing. In the author's experience pneumothorax has not been followed by a prompt fall of fever, but this has usually required a month to six weeks for subsidence.

#### LANCET.

**Some Recent Experiences in Vaccine Treatment**, by Frank Cole Madden.—In severe conditions and lobar pneumonia polyvalent stock vaccines may be used, but in the great majority of conditions an autogenous vaccine is preferable. Practically all of the autogenous vaccines should contain all of the more important organisms grown from the material with a very marked preponderance of the principal organisms present. An appropriate vaccine should



produce some general reaction and a definite temporary increase in the local symptoms. Maximum curative effects are usually secured by eight to twelve injections running up to about 600 million at a dose. If the first dose is without appreciable effect a second larger one should be given. If this is also without effect a fresh culture should be taken and a new vaccine prepared. From time to time during the course of treatment cultures should be taken and new vaccines prepared as the predominant flora change. Various stock vaccines may be used for diagnostic purposes where cultures are negative or unsatisfactory and a vaccine used from which a reaction was secured. The conditions in which vaccines have given good results, using the methods described, were the more or less localized infections due to pyogenic organisms, such as boils and furunculosis, impetigo, sycosis, erysipelas, eczema, lymphangitis, pustular acne, and carbuncles in diabetes; septic throats and various traumatic infections; bacillary infections of the urinary tract, especially with the coliform group; respiratory infections, including bronchitis, pneumonia, and obstinate coughs. Chronic gonorrhea can often be much benefited by a mixed vaccine containing all the more important organisms found in the discharge: Acute gonorrhea, infections with streptococci, and coughs which are complicated with asthma usually fail of good results from the use of vaccines. The phylacogens have been used, but never with any benefit except in rheumatism, and then only after a long series of rapidly increasing doses.

**Direct Hemolysis**, by H. Lyon Smith.—A test for the presence of bacterial toxins and for the estimation of the dose of vaccines has been worked out on the basis that when washed red blood cells are brought into contact with bacterial emulsions they undergo hemolysis when they have been sensitized by a previous infection with the organism present in the emulsion. It is suggested that this hemolysis represents what happens *in vivo* in actual infections, varying from the explosions of hemophilia to the slight anemias of mild infections. The technic of Smith's tests is described in detail. Briefly it consists of exposing measured amounts of the washed red corpuscles of the patient to an emulsion of each of a considerable series of organisms and determining those organisms which produce hemolysis. Quantitative tests are next performed with graded dilutions of the emulsions which gave hemolysis. The test is believed to show those organisms toward which the patient's cells have been sensitized, and hence those concerned in the production of his illness. Vaccines are then to be prepared from the organisms giving reactions, and the amounts of each present in a dose as well as the actual size of the initial dose are determined by the quantitative tests. The initial dose should never exceed in strength that of the dilution which was found to give the least trace of hemolysis. In acute cases it should be only one tenth, or less, of such strength. Clinical notes of some cases successfully treated by this method are appended by R. Cassels Brown, who conducted their treatment.

**The Relation of Ventricular Fibrillation to Clinical Chloroform Syncope**, by E. H. Embley.—Recent investigations by Goodman Levy showed

that the sudden death in cats during the induction stage of chloroform anesthesia, or during reinduction, was owing to the inception of ventricular fibrillation. He also found that the use of very high concentrations of chloroform vapor protected against this danger. He sought to apply these observations to man. Embley shows the probable fallacy of such application in a series of analogies between the physiological responses of dogs, in which ventricular fibrillation is not produced by chloroform, and of man, and by showing the peculiar liability to this phenomenon in cats. He concludes that the evidence strongly suggests that sudden chloroform syncope in man, like that in dogs, is due to a vagal reflex cardiovascular inhibition arising from overdose or excessive concentration of chloroform vapor. It is typically an induction phenomenon. Levy's protest against the need of care regarding overdose is held to be unwarranted by the facts and to be dangerous teaching.

#### BOSTON MEDICAL AND SURGICAL JOURNAL

**Massachusetts Antituberculosis League, April 1, 1915.** The papers presented were: 1, The Origin and Aims of the Massachusetts Antituberculosis League, by Vincent Y. Bowditch; 2, What the Antituberculosis Organizations Can Do to Help the State Department of Health, by Allan J. McLaughlin; 3, The Present Situation in regard to Local Tuberculosis Hospitals, by John B. Hawes; 4, Local Tuberculosis Dispensaries, by Walter G. Phippen; 5, First Annual Report of the Massachusetts Antituberculosis League, by Seymour H. Stone; 6, Reporting Cases of Tuberculosis, by Walter P. Bowers; 7, Tuberculosis Associations as Health Educators, by Michael M. Davis; 8, The Responsibility and Opportunity of the Teacher in Preventing Tuberculosis, by Thomas F. Harrington; 9, Medical Inspection of School Children, by Francis Lee Dunham; 10, Tuberculosis Work in the State, by Amy F. Acton. Massachusetts has a number of laws with reference to tuberculosis; one is that cities and towns shall build tuberculosis hospitals to care for their consumptives at home; another that all cities or towns of over 10,000 population shall have a tuberculosis dispensary; a third that all cases of tuberculosis shall be reported. The workings of these laws is the basis of several of the papers.—Hawes says that of the fifty-four cities in the State, eighteen have hospitals.—Phippen says that twenty-two have some sort of a dispensary, while according to Bowers the law for reporting cases seems to be honored more in the breach than in the observance. Physicians who do not report cases seem to be in the great majority and are divided into four classes: Physicians who do not know tuberculosis when they see it in its early stages; those who do not believe it wise to tell a patient that he has tuberculosis; those who refuse to report because of the stigma on the patient consumption is supposed to bring with it; those who fear to be considered alarmists and to lose their patients. It is stated that a certain physician found that after reporting promptly some cases, no more patients of this class applied to him.—Phippen's description of what a dispensary should be is excellent. It should serve as a general information

support for tuberculosis under the management of the local board of health, an antituberculosis association, or a combination of the two. The first requisite is a social worker, who may or may not be a trained nurse, but should be familiar with tuberculosis, not only as a disease, but as a social problem, should have had some training in social service, and should be able to inspire confidence. She must assume the initiative, be forceful, stimulating, and tactful. The next requisite is the headquarters, two rooms in a reasonably quiet, central location, with a desk and a chair for the nurse, and other chairs. The next is a physician who is a willing worker interested in the social side of the disease. A general card index for records, a pair of scales, some clinical thermometers, paper napkins, sputum cups, diet lists and leaflets and the dispensary is established.

The physician examines, diagnoses, outlines the treatment, and the case then passes into the hands of the social worker, or more properly nurse, who follows it up and attends to innumerable details in its care.—The following remark of Dunham is true with regard to all contagious diseases: The tendency to regard artificial fumigation as an adequate bactericidal measure in inhibiting contagion is a highly fallacious one. The fumigating plant at the disposal of the ordinary town board of health is perfectly useless save for moral effect. Its only good point is that it seems to intimate that a useful fumigating plant is a possibility.—Acton urges that private antituberculosis societies confine themselves strictly to the education of the public and not divert their funds to the seeking out and caring for those afflicted with the disease, a work of such magnitude that they cannot carry it out; it should be borne by the State.

#### JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

August 1, 1915.

##### Syphilis of the Stomach, by Frank Smithies.—

Twenty-six cases were encountered in the examination of 7,545 patients affected with dyspepsia, a frequency of about one in 300 gastric cases. The condition is rarely part of a general syphilis, but usually occurs as a distinct local manifestation. The lesion may be a diffuse infiltration of the areolar tissue with thickening of the stomach wall; typical miliary gummas with sloughing ulcers; single or multiple inflammatory nodules or extensive tumors; or subperitoneal and peritoneal infiltrations resulting in perigastritis. Eleven of the patients were women, fifteen men, and their ages ranged from twenty to sixty-six years. The latent period between infection and the appearance of gastric symptoms ranged from four to forty-five years. There was no instance of congenital syphilis and all but four of the cases occurred as tertiary manifestations. The Wassermann reaction was positive in all. The clinical picture of the condition was very varied, but frequently simulated gastric ulcer, although free hydrochloric acid was not often increased. The fluoroscopic picture of tumor or extensive gastric deformity associated with a fairly high degree of peristalsis and a normal or low acidity, if combined with a positive Wassermann reaction, established the diagnosis with reasonable certainty. Antisyphilitic treatment gave relief in many cases,

but complete cessation of all symptoms and signs was seldom secured.

**Specific Treatment of the Malignant Forms of Malaria,** by C. C. Bass.—The estivoautumnal parasite is the cause of practically all of the malignant cases of malaria and lies lodged in the capillaries during about three quarters of its life cycle. The obstruction to the flow of blood through the capillaries of the vital organs by the enormous numbers of the parasites is the probable cause of most of the symptoms. Quinine in the circulation does not reach the plasmodia lodged in the capillaries, but if it is maintained in the circulation in sufficient concentration for two days or more, it will destroy all of the young forms of the parasite as they escape into the general blood stream. The ordinary methods of administering quinine are incapable of maintaining the requisite concentration. The only method by which this can satisfactorily be accomplished is by the repeated intravenous injection of the drug. Ten grains of quinine hydrochloride should be injected every eight hours or five grains every four hours. Never more than ten grains should be given at a single dose, nor over thirty grains in each twenty-four hours. Malarial hemoglobinuria is due to hemolysis of the damaged red cells. This liberates the contained plasmodia, which are promptly destroyed by the plasma. Quinine is, therefore, not required for their destruction, but is rather contraindicated, for it tends to increase hemoglobinuria.

**Recent Methods of Treating Diphtheria,** by Frank C. Neff.—In suspected cases direct examination of smears should be made and cultures examined in a few hours. The use of a curette to remove the membrane and obtain smears from the bleeding base will often reveal the Klebs-Loeffler bacilli when they would otherwise not be found. The most immediate neutralization of the toxin can be secured only by intravenous injection of antitoxin, which method also gives the least discomfort of all. Next in point of effectiveness and rapidity of action is intramuscular injection. There is no reason for continuing to give antitoxin subcutaneously. The Schick test is of value in exposed persons, for a negative reaction indicates a lack of susceptibility which makes the use of a prophylactic dose of antitoxin unnecessary.

#### MEDICAL RECORD.

August 14, 1915.

##### The Bone Graft Wedge in the Treatment of Habitual Dislocation of the Patella, by Fred H. Albee.—

After trying many of the known methods, Albee has devised the following operation. A semilunar incision is made to the outer side of the patella from the external condyle to the tubercle of the tibia. Then the external condyle is incised with an osteotome on its external surface, making an incision from one and a half to two inches in length, which allows the anterior surface of the condyle to be raised by producing a green stick fracture. Into the wedge shaped gap thus formed, a section of bone from the crest of the tibia is fitted. Dowel pins also made from the tibia are used to anchor the graft in position. The ligaments and tendons are sutured over the graft and the skin is

closed without drainage, after which the leg is put in plaster of Paris for three weeks. Then passive movement and massage are begun. The advantages are that, with no sacrifice of joint cartilage a minimum of injury is produced, thereby lessening the chances of limitation of movement, of adhesions, or future joint changes. There is thus obtained a permanent blocking of any further displacement of the patella by the elevation of the external condyle.

**Pollen Vaccines in the Treatment of Hay Fever**, by Henri Iskowitz.—The causes of hay fever may be divided into predisposing causes, local conditions in the nose, and lastly pollens. The nasal conditions concerned are hypertrophic rhinitis, spurs, deviations of the septum, polypi, hypertrophy of the nasopharynx, and sensitive areas. The nasal secretions contain a digestive enzyme which has the marked property of splitting proteids, which thus explains the bactericidal action. Under normal conditions there is no absorption of the products of such splitting. However, absorption does occur in the pathological conditions mentioned above. The best results in immunization and also in treatment have been obtained by the use of multipollen vaccines. The pollens of some twenty types of plants are used, dried under sulphuric acid, ground, sifted, and dissolved in sterile salt solution. After incubation and filtration and the addition of 0.25 per cent. phenol and 0.5 per cent. glycerin, the solution is ready for use. The treatment consists of fifteen doses administered subcutaneously in the interscapular region at intervals of three to five days, depending on the reaction. It is preferable to make the treatment a prophylactic one, although encouraging results are obtained when the disease has already developed. The treatment should be begun eight weeks prior to the hay fever season. The pollen when dropped into the eye is a test of the sensitiveness of the individual to hay fever.

**Advantage of Kelly's Method of Cystoscopy in Women**, by Hiram N. Vineberg.—The advantages are, first, simplicity of the method and the absence of features which may lead to misinterpretation. Secondly, it is of service in the condition of the bladder, which makes it impossible to examine the interior of the bladder with a prism cystoscope. Thirdly, a great majority of bladder disturbances in women are due to a localized cystitis in the trigonal area, which resists ordinary treatment but yields to the application of nitrate of silver, which can be only applied effectually through a hollow tube such as Kelly's cystoscope. Lastly, the removal of foreign bodies and small growths can be much more easily accomplished than with any other form of instrument.

#### ANNALS OF OTOLARYNGOLOGY AND RHINOLOGY.

March, 1915.

**Systemic Infection of Middle Ear Origin in the Exanthemata**, by Charles R. C. Borden.—Measles have been proved to be a bacteriemic disease. It is rarely a true systemic infection, though certain predisposing influences may give rise to a streptococcus or a staphylococcus general infection. The striking peculiarity of the disease is its tendency to attack or involve mucous membranes, especially those exposed to the air. In severe cases this may amount to a

definite injury to the vitality of the tissue. Diphtheria is a local infection followed by the absorption of toxins into the lymphatic and blood streams. The marked peculiarity of this disease is the specific toxemia, which is the usual cause of death in the fatal cases. The most striking characteristic of scarlet fever is the lack of immunity against streptococcus infection. All manner of infections, both local and systemic, are common. Death from toxemia, however, is not as common as from nephritis or from the various forms of septicemia. The organ most susceptible to the specific influence of the disease is the kidney. The lack of immunity to streptococcus infection extends well into the period of convalescence, as evidenced by the considerable number of cases of aurial infection which occur during the convalescent stage of the disease. In the clinical cases, complications in the vital organs of the body in measles and diphtheria rarely occur in conjunction with disease of the middle ear. In scarlet fever, complications in any of the vital organs of the body may be vastly increased if diseased conditions of the ear become an added focus of infection to the toxemia already present. The influence of acute otitis media or mastoiditis is very great. The beneficial effect of evacuation of pus from the middle ear may not be limited to a decline in temperature, but may be followed by distinct improvement in untoward symptoms in the heart, lung, kidney, joints, etc. Edema over the mastoid or protrusion of the auricle are late symptoms and usually occur after the cortex has perforated. Temperature amounts to absolutely nothing as a diagnostic point, its drop following cold applications to the mastoid should be looked upon with suspicion, as cold will often temporarily decrease bacterial absorption from the ear or the mastoid, but only at expense of valuable time. Tenderness over the mastoid is of value only when present. Its absence means nothing. The advantage of radical surgical procedures when middle ear disease occurs in conjunction with serious complication in other vital organs cannot be overestimated. Few remedies are at hand for the severe septicemia, such as occurs in scarlet fever. Specific antitoxins cannot be obtained in scarlet fever and measles. Fear of anesthetics or of surgical shock is not as grave a question as it would appear.

**Modern Mastoid Operation**, by John J. Kyle.—If after a week, in a case of acute purulent inflammation of the middle ear, there persists a slight rise of temperature, with or without swelling of the mastoid, and pus comes pulsating from the middle ear, the author believes a simple mastoidectomy is indicated; or, if the temperature, above 100 degrees, persists for forty-eight hours, after spontaneous rupture or paracentesis, it is advisable to drain the mastoid. Early drainage of the mastoid is the surest preventive of meningeal complications. Pulsating discharge of pus from the middle ear is indicative of tension from rapidly forming pus in the antrum, and possibly the mastoid process. The more pronounced the tension and pulsation, the more positive is the indication for immediate operation. The value of radiography as confirmatory evidence cannot be overestimated.

**Vincent's Angina Successfully Treated with Sodium Perborate**, by H. H. Stark.—Vincent's



usually a far more common disease than supposed. The diagnosis is difficult in gross lesions, and in suspected cases there should be an examination microscopically for the combined spirochetes and fusiform bacilli. Sodium perborate has given uniformly good results. It is safe to remedy, without danger, will clear pain promptly and cures within a short space of time.

**Harmless Postoperative Temperature**, by George F. Cott.—In phlebitis, especially of the lateral sinus, there is commonly the steeple-peaked temperature of slow or rapid repetitions, according to the virulence of the infection. In septic thrombosis, the symptoms include violent chills and sweats, depression from sepsis, and a high leucocytosis. In suppuration of the internal ear, dizziness, nystagmus, and often vomiting and deafness, follow caries of the middle ear. The case becomes more complicated when several of these lesions occur together and disaster is more apt to follow. Examination of the blood is of importance. If there is a moderately high leucocytosis with a normal polynuclear percentage, followed in ten or twelve hours by a mild recession, the next day and the following day the same, the patient has no serious involvement and will speedily recover. When the reverse condition is true, it shows twenty-four to thirty-six hours before any other symptoms are noticed, and is usually indicative of some complication. Four conditions in which the temperature could be below normal in serious cases are brain abscess, sinus thrombosis, shock and dissolution. If the temperature is taken every hour and the blood count is made twice a day where complications are suspected, the approaching danger is more readily disclosed.

#### ANNALS OF SURGERY.

**Sarcoma of the Breast**, by S. H. Geist and A. O. Wilensky.—Usually the first thing noted is the presence of a small hard mass. The tumor may grow rapidly from this time, or after a period of quiescence may suddenly begin to proliferate. The tumors are, as a rule, single, though they sometimes occur as multiple masses involving one or both breasts. Pain is rather infrequent, occurs in about forty per cent. of the cases, and is usually a late symptom. The skin and deep parts are rarely involved. Occasionally the skin is tense and reddened from the pressure of the growing tumor. It is rarely adherent and more rarely ulcerated. The nipple is rarely retracted and secretion from the breast is only occasionally present and is usually accompanied by cystic tumors. Cachexia is rare. The lymph nodes are involved in about three per cent. of the cases, usually in the round cell type of tumor. The consensus seems to be that the radical operation is the best treatment. Excision has often resulted in a permanent cure. The cystic type of tumor and the less cellular spindle and fibrous types lend themselves to more conservative operations. The cellular solid tumors, such as the round and giant cell tumors, are usually very malignant and demand radical operation.

**Cancer of the Testis**, by William B. Coley.—If the testis is in the inguinal canal, or inside or just outside of the ring, it is possible to make a fairly

early diagnosis, the signs or symptoms being not unlike those found in connection with sarcoma of the normally descended testicle. If, however, the testicle is situated in the abdominal cavity, the diagnosis is rarely made until the disease has reached a fairly advanced stage. Acute abdominal pain is often the first symptom. Usually there is a history of a dull, dragging pain in, or over, the iliac fossa. If the trouble is on the right side it is not infrequently taken for appendicitis. After a few weeks—in some cases months—these irregular symptoms are usually followed by the appearance of a smooth, ovoid, or round tumor in the lower iliac fossa, more or less tender on pressure. Sometimes the condition becomes so far advanced before a diagnosis is made that marked swelling of the leg occurs, accompanied by severe lumbar pain. Strangulation has been known to occur, but in most cases the tumor is fairly well fixed and not very movable. The first and most important step in the diagnosis is a careful examination of the scrotum with a view to determining the presence or absence of a normally descended testicle. Before the disease has advanced sufficiently to form a palpable mass, it may be very difficult to make a diagnosis, as the condition cannot be easily differentiated from that of renal colic, appendicitis, or cecal tumors. If the testes cannot be found in either scrotum or inguinal canal, and a tender mass is found in the lower iliac fossa, giving rise to the symptoms already mentioned, the chances are very strong that one is dealing with a malignant ectopic testicle.

**Carcinoma of the Stomach**, by George Woolsey.—Given a patient over forty years, with persistent symptoms of epigastric pain, vomiting, anorexia, loss of flesh and strength, and anemia, with a palpable epigastric mass or sense of resistance, we should be almost sure of the diagnosis of carcinoma of the stomach. Pain, vomiting, and gas are not characteristic, for they occur in all gastric ailments and in many others, but anorexia is more pathognomonic of cancer, and serves to distinguish it from ulcer. Appetite is lost early and its loss is often the first symptom to attract attention to the stomach. Progressive loss of flesh and strength is another symptom most suggestive of cancer. Motility of the stomach may be readily tested by the presence of raisins in the lavage water twelve hours after ingestion. They are found in over fifty per cent. of cases and indicate mechanical obstruction. A Wassermann reaction should be taken in every case in order to help differentiate it from syphilis of the stomach. Every case should be radiographed.

#### ARCHIVES OF INTERNAL MEDICINE.

June, 1915.

**Studies in Renal Function**, by Arthur H. Hopkins and Leon Jonas.—Clinical tests are reported showing that the estimation, by blood analysis, of the degree of nitrogen retention in the blood is of definite value in relation to the treatment of renal cases. The amount of protein fed in nephritis was found to have a direct influence in nitrogen retention in the blood, especially in pure chronic interstitial nephritis with hypertension; the importance of a low protein diet in these cases was shown. Investigation of the relation of the phenolsulphonephtha-

lem output and the blood pressure to the amount of nitrogen in the blood showed that in the presence of nitrogen retention the former is usually low and the latter often high. The nitrogen retention and phenolsulphonephthalein tests, to be of value in individual cases, must be repeated at intervals, as various factors may markedly alter the results at different times.

**Effects of Intravenous Injections of Colloidal Copper and of Casein in Human Cancer,** by C. B. McLurg, W. O. Sweet, H. N. Lyon, M. S. Fleisher, and Leo Loeb.—A comprehensive description of the effects of the copper and the casein solutions on the veins, temperature curve, blood, and cancerous tumors is given, together with the methods of preparing the solutions and the technic of the injections. Clinically, the copper injections yielded a definite effect in a certain proportion of cases, especially in the least virulent, in most chronic cases, viz., those of the smaller basal cell carcinoma, and in patients still relatively vigorous and not cachectic. In certain cases the injections failed to influence the tumor itself, but caused a marked diminution in the swelling of the surrounding tissues, with the possibility that through sharper demarcation a previously inoperable tumor might become an operable one. Often the pain and sometimes the putrid discharge was reduced by the injections. Rarely, however, did complete healing take place. After injections of casein preparations benefit was slight or none.

**Normal or Increased Vocal Resonance in Pleural Effusion,** by C. M. Montgomery and E. A. Eckhardt.—Experiments showed that sounds passed readily from solid tissue, such as fetal lung, to water, as well as through water itself. From an air bearing lung to fluid, on the other hand, a marked break in the passage of sound takes place, owing to the change in density of mediums. The reason for normal or increased vocal resonance in some cases of pleural effusion is thus clear; the phenomenon is due to the presence of a lung solid either from compression or actual pulmonary disease. In any doubtful case with normal or increased vocal resonance, the idea of fluid in the pleural cavity should be entertained. Given a case with demonstrable pleural fluid exhibiting normal or increased vocal resonance, the possibility of solid lung beyond the fluid should be borne in mind.

**Urobilin in the Stools as an Index to Blood Destruction,** by Oswald H. Robertson. Increase above normal in the urobilin in the stools was found constantly in eleven cases of pernicious anemia, as well as in congenital hemolytic jaundice, malaria, and one case of secondary anemia. Other blood affections and diseases of the liver did not exhibit this increase. The stool urobilin may thus be taken as a measure of the degree of blood destruction going on in the body, and its estimation is of definite value in the diagnosis of conditions possibly of hemolytic nature, especially anemias of uncertain type. The method of urobilin estimation employed was that of Wilbur and Addis.

#### PRACTITIONER.

August, 1915.

**Effects of Cleft Palate Operations on the Dental Arch,** by H. Blakeway, Arbuthnot Lane.

Warwick James, and Thomas H. Kellock.—Blake-way favors Lane's operation, in which a flap is taken from one side of the cleft, turned at the edge of the latter across which it is turned, its raw surface is partly covered by the mucoperiosteum at the opposite side of the cleft, partly left uncovered. The surface from which the flap is raised is left here. The operation is performed on very young infants, seven hours was the age of the youngest, and the contraction of scar tissue that results may draw in the alveolar arch on that side, or prevent its normal expansion; in either case the side from which the flap has been taken may be straighter than on the opposite side. The temporary teeth are often injured by the operation.—Lane and James showed a considerable agreement with the writer, but Kellock disagreed with the view that babies with cleft palate should be operated on at once. When he got the children at the age of a year or eighteen months they were fine, healthy children and better results could be obtained.

**Interpretation of Opaque Meal Shadows in Diseases of the Stomach,** by J. Alfred Codd.—The teaching of the cases reported may be thus summarized: Excessive motility may be defined as the picture seen when a wave passes along a shadow and cuts into it for a distance of half its depth or more; when a wave passes along from one end to the other in ten seconds or less; and when the long axis of the shadow moves through a considerable angular distance or executes vermicular movements. If the stomach shows excessive motility immediately on the reception of the meal, or in four hours, and the stomach is clear in six or eight hours, there is probably peptic ulcer. If there is no excessive motility, immediately, but it shows itself in four hours, and the stomach is not empty in eight hours, there is probably pyloric obstruction, especially if there is excessive motility in eight hours, as well as in twenty-four hours, in an unemptied stomach. The hour glass shape is fairly typical and should show a definite neck or isthmus. If there is a mere constriction, with both sacs in contact, it is probably spasmodic and should be watched for change. If Barclay's duodenal sign is present there is probably an ulcer of the duodenum.

**Treatment of Fibroids by X Rays,** by F. L. Provis.—X rays are useful in the treatment of certain cases of fibroids. Success depends on a careful selection of the cases and the closest attention to every detail of the technic. Rays of the hardest penetrative nature possible should be used, and with few exceptions they should be recommended only in women under thirty-nine years of age. The advantages, it is said, of the treatment are: It is painless; it avoids the shock of an operation; it does not interfere with the daily life of the patient; in the hands of a skilled operator it is attended by no risk; the menopausal symptoms are mild in degree in most cases; it is attended by no mortality. The disadvantages are: Its length of time; its danger to the skin and underlying organs, immediate and remote; its uncertainty.

**Ordinary and Atypical Migraine in Relation to Ocular Defects,** by G. F. C. Wallis.—The responsibility of errors of refraction in causing headache is now so well recognized that it has become an ar-

full of medical belief and is one of the first causes of which the practitioner thinks, but other symptoms, such as attacks of sickness in children, vertigo, and certain migraines, are not so well known. Wallis reports the case of a boy suffering from severe periodical vomiting after meals unassociated with headache and rarely with nausea; drowsiness, emaciation, and marked prostration, a condition closely resembling cyclic vomiting. Complete relief was obtained by means of glasses that corrected a slight compound hypermetropic astigmatism. Another case was one of migraine in an adult with most of the typical symptoms. There was complete relief by glasses correcting a very slight mixed astigmatism and presbyopia. Another case was one of migraine in a young girl, with hemicrania and sickness, but no optical sensations. She had hypermetropic astigmatism, and correcting lenses lessened greatly the severity and frequency of the headaches, and relieved entirely the sickness and the nausea. In still another young lady in whom attacks of migraine were replaced by nausea and momentary giddiness and slight sickness, with an entire absence of headache or other phenomena, and whose father and paternal grandmother had classical migraine, these symptoms were relieved completely by correction of a myopic astigmatism and hyperphoria. Wallis also calls attention to the liability of these obscure cases of eyestrain to be mistaken for organic brain lesions, especially if headache sickness, giddiness, and nausea appear in a patient who has a fluffy indistinctness of the edge of the optic disk, a pseudoneuritis that is said to be present in twenty-two per cent. of children.

## Proceedings of Societies.

### AMERICAN CLIMATOLOGICAL AND CLINICAL ASSOCIATION.

*Thirty-second Annual Meeting, Held June 18 and 19, 1915, in San Francisco, California.*

The President, Dr. HENRY SEWALL, of Denver, in the Chair.

*(Continued from page 1265.)*

**Lung Involvement Secondary to Suppurative Abdominal Disease.**—Dr. J. N. HALL, of Denver, said further that the displacement of liver dullness by tympany, if gas was present, was of extreme importance in diagnosis, and was usually associated with movable dullness. Subphrenic abscess rarely broke externally. In one of his cases it broke into the colon with fatal results. If one was in doubt as to the diagnosis of subphrenic abscess or pleural effusion, the needle must be freely used, the patient being prepared for operation, and, in serious cases, an anesthetic being used. The greater danger of using an exploring needle on the left side and the need of emptying the stomach by means of the tube before aspiration, should be borne in mind. There were notable features in the amoebhepatopulmonary abscess. Extensive destruction of lung tissue was not infrequent, and expectoration of the products

of tissue disintegration might be noted. In case of perforation into the lung, death might occur from the pneumonic process, from abscess, or from gangrenous destruction before the abscess emptied itself through the bronchus. Pulmonary embolism was spoken of as a complication of subphrenic abscess, coming from the thrombotic process in the veins of the abdomen, but a much more striking variety of embolism might occur in a case of perforation of the lung by the subphrenic abscess. There were rare instances in which the abscess ruptured into the pericardium. In cases of subphrenic abscess with lung involvement, complete recovery was most exceptional. He could not agree with Rolleston's statement that death commonly resulted in two or three months, since he had had three patients who had lived from one to ten years, and two of them were alive when lost track of. The prognosis was so grave that the early diagnosis must be followed by prompt operation, even at considerable risk. The empyema must be thoroughly drained to avoid the danger of lung involvement; after that occurred, surgery rarely offered any assistance.

Dr. JOHN A. LIGHTY, of Pittsburgh, in about 700 cases of appendicitis, had not found subphrenic abscess more than five or six times and in only one instance did he find an empyema and that ruptured into the lung.

Dr. GEORGE E. BUSHNELL, U. S. A., asked Doctor Hall what had been his experience with those cases of subdiaphragmatic conditions as a cause of pleurisy.

Dr. PHILIP KING BROWN, of San Francisco, reported two interesting cases. One he had operated in for a paranephritic abscess and there was a streptococcal septicemia and pleurisy with loud friction rales. The other case was a deep abscess of the liver, accompanied by a pleurisy on the same side of the lung. Bevan, of Chicago, had pointed out that in acute appendicitis, pleurisy of the lower right portion of the lung was not uncommon, though there were no lymphatic connections to explain the association of the two conditions.

Dr. J. N. HALL, of Denver, said the reason he had found these subphrenic abscesses more frequently than some others was because he lived in a sparsely settled country where it was improbable that a person suffering with such a condition would find a physician able to make a diagnosis. Another reason for finding the condition more frequently was that patients were not likely to be operated on early for the conditions which might produce subphrenic abscess if neglected. He related three cases seen in succession in which the subphrenic abscess was due to appendicitis; all had deep cavities just above the diaphragm and they were of the neglected type. One could not see these cases in a large city. He always insisted upon early operation because ninety-nine per cent. of the trouble was due to neglect and showed what a neglected appendicitis could do. With regard to the question as to whether these abscesses perforated more frequently than empyema, he thought the subphrenic abscesses perforated oftener than empyema because the latter was more likely to be recognized, and treated.

**The Acute Infections in Diabetes mellitus.**—Dr. JOHN A. LIGHTY, Pittsburgh, Penna., said that



from the beginning of their knowledge of diabetes as a clinical entity, it had generally been recognized that patients suffering from this malady were poor surgical risks and many theories had been advanced to account for this fact. One of these theories was that there was a disturbance of tissue vitality due to the existing hyperglycemia and, on account of this disturbance, bacterial invasion occurred more easily. There was little in the literature, however, that would lead one to think that the ordinary infections which were included under medical diseases were particularly fatal in patients having diabetes mellitus with perhaps the exception of erysipelas, lobar pneumonia and pulmonary tuberculosis. It was his purpose to show that the more simple and ordinary infections were not infrequently a determining factor in influencing the mortality of diabetes. He reported two cases of diabetes; in the first case there was an acute infection of the nasopharynx which was followed by an acute otitis; in the second there occurred a cold in the head which was the starting point of a train of symptoms which quickly led to a fatal issue. He said he might mention other instances of similar apparently mild infections, and some of the graver infections, such as lobar pneumonia and acute pulmonary tuberculosis, but they all showed the same rapidly fatal results. It was found that when the restricted carbohydrate diet upon which the patient usually maintained his weight and feeling of well being was relaxed and an attempt made to force upon him a large general diet, as was usually done in pulmonary tuberculosis, the amount of sugar eliminated invariably increased and the chest signs became rapidly alarming. On the other hand, if the urine could be kept free from sugar, or nearly so, and the caloric value of the diet could be maintained at the normal or slightly above the normal requirements, other things being equal, the patients invariably improved. No matter how grave or apparently trivial the infection might be, the consideration of the diabetic element in the case was of paramount and extreme importance. In thirty-three cases of his own series, eight died of some acute infection. This included cases of pulmonary tuberculosis and lobar pneumonia.

Dr. F. M. POTTENGER, Montevia, Colo., said he had the same experience as the writer of the paper in diabetes mellitus in tuberculous patients. He found that about one half of the patients on an ordinary diet lost their sugar temporarily or for a period of months. He related the instance of a patient who had been free from sugar for some time; after being struck by a croquet ball he was completely unnerved and the sugar promptly reappeared; this man had been free from sugar for a long period on a regular diet.

Dr. JOHN A. LIGHTY, Pittsburgh, Penna., said that the treatment of the diabetic and the tuberculous patient was very much alike except that the diabetic could not take the same amount of carbohydrate; but in the tuberculous patient, if fed on fats and proteins, the pulmonary lesion would heal as readily.

**A Case of Primary Pulmonary Aspergillosis.**  
—Dr. G. W. HOLDEN, Denver, Colo., reported a case which was originally diagnosed and unsuccessfully

treated as pulmonary tuberculosis and was later tentatively diagnosed as Hodgkin's disease. There had been only a few instances of aspergillosis in human beings reported and most of these cases had been reported in France among the pigeon feeders and among those who handled grain and flour. Sporadic cases had been reported, however, from other countries. The fungi pathological for man had been divided by Plaut into three groups according to their pathological effects: 1. Moulds in the narrowest sense; 2, the fungus of thrush and, 3, the fungi infecting the skin. Still divided the genus *aspergillus* into six species, and of these the most pathogenic for man was *Aspergillus fumigatus*. It was very frequently observed in the lower animals and in birds; here it often produced a pseudotuberculosis and it was supposed that the infection might be carried from birds to man. *Aspergillus fumigatus* was found most frequently in the ears, nose and mouth. When occurring in the lungs it was thought to be secondary to an already existing tuberculosis until Dieulafoy and others reported cases of primary infection about 1890. A sufficient number of authentic cases had been observed to make it worthy of consideration in diagnosing obscure cases of pulmonary tuberculosis. Pulmonary aspergillosis might be either acute or chronic. When acute it resembled bronchopneumonia; when chronic the symptoms were similar to those of pulmonary tuberculosis. The recognition of the disease depended upon finding the parasite in the sputum. The case reported occurred in a woman forty-seven years old. She had never been robust. She gave a history of having had bronchitis recurring every winter since she was the age of sixteen years. She was sent to Colorado on the supposition that she was suffering from pulmonary tuberculosis. The right and left cervical and axillary glands were enlarged from the size of a hickory nut to a small egg, and were freely movable under the skin. Expectoration, at first very scant, showed later opaque white masses containing a few epithelial and pus cells, but no tubercle bacilli. The sputum was cultured and a pure culture of *aspergillus* was found. The patient lived fifty-four days after entering the sanatorium; the course of the disease was that of chronic pulmonary tuberculosis with scant expectoration containing a few pus cells. At no time was there any hemorrhage or blood stained sputum, such as would be expected in aspergillosis. Death was due to a right sided dilatation of the heart. A post mortem was not permitted.

Dr. CHARLES BROWNING, Los Angeles, Cal., said that he had seen two cases of actinomycosis and his bacteriologist was on the lookout for this condition. He had also found a few cases of saccharomycosis and they were in the habit of making a systematic investigation for these organisms in cases of clinical tuberculosis in which the tubercle bacillus could not be found.

Dr. HENRY SEWALL, Denver, Colo., believed that the finding of a fungus in making an examination of the sputum was not extremely unusual and that such a finding should not lead one to the conclusion that he had found something new. It was well known that if urine was kept for a time it would develop a fungus.

# Cardiac Syphilis: Its Incidence and Diagnosis.

By JAMES N. ANDERS, Philadelphia, Pa., was absent; his paper was read by Dr. J. N. Hall, Denver, Colo. The author stated that a statistical investigation into the question of the bearing of syphilis on the incidence of syphilitic myocarditis, mesoarteritis, angina pectoris and aortic incompetency had yielded significant results. The statistics of Longcope, Clifford Allbutt, Fiessinger, Collins, and Babcock, of which he had made a collective investigation, embraced 219 cases, of which 133, or 60.7 per cent., were clearly syphilitic. No reference had been made to the Wassermann test in a considerable number of the cases found in the literature, so that it was obvious that the figures underestimated the true role of syphilis in the production of this condition. It was of the utmost importance in cases of aortic incompetency that an early diagnosis be made to the end that serious damage to the aortic segments might be obviated by intensive antisyphilitic treatment. All cases of aortic incompetency in which rheumatism, gout, lead, alcoholism, pyogenic infection or a predisposing occupation could be ruled out should be labeled suspect and given the benefit of vigorous antisyphilitic treatment. The special physical signs that aid in the establishment of the syphilitic character of the chronic valvulitis were enlargement of the left ventricle, and therefore capillary pulse and double sound over the crurales were not so marked and there was a greater degree of arrhythmia. The cardiac lesions of syphilis usually appeared within two or three years after the infection and sometimes much earlier. The author emphasized the importance of the Wassermann reaction as a means of determining the etiological variety of the lesion. When myocardial syphilis developed in the secondary stage the onset was rapid or even acute and the principal features were irregularity of heart action, tachycardia, intermittence, extrasystole and rarely soft murmurs, especially in the mitral area. These symptoms might disappear after a few days as the result of energetic antisyphilitic treatment. True angina pectoris might be associated and anginoid pains were not infrequently present. The Stokes-Adams syndrome was not infrequently caused by syphilitic myocarditis or fibroid change in the bundle of His. Of 270 cases of angina pectoris which the author had collected from the literature, only twenty-six per cent. gave evidence of syphilis. This was too low an estimate since no mention was made of the Wassermann test having been made. Every case of angina pectoris during the younger period of life was open to the suspicion of syphilitic origin. Curative treatment was impossible when either aortic regurgitation or syphilitic myocarditis of marked extent existed and hence the necessity of early vigorous and prolonged treatment. The Wassermann test should be made until they were no longer positive. The treatment consisted of the alternate use of salicylate of mercury and salvarsan. The iodides were reserved for later use after the active syphilitic process had been checked. In the opinion of the author the use of salvarsan was feasible in the later stages of myocarditis and aortic insufficiency in which the actual condition of the myocardium was undeterminable, but was not degenerated to a marked degree, and in

those cases in which the patients urgently demanded that relief of some kind be afforded them.

Dr. JOHN M. SWAN, Rochester, N. Y., said that it had been his experience that cardiac disease in which there was no history of rheumatism or of other infectious disease was often due to syphilis. This was especially true of physicians who often had syphilitic disease without knowing it. One case of a physician came under his observation in which there was a typical aortic regurgitation. The physician denied ever having had syphilis and refused to have a Wassermann test made. Finally after going over his case very carefully, it was found that he probably had been infected with syphilis while attending a labor. According to the statement of Harlow Brooks, cardiac irregularities often cleared up after the administration of the iodides and he had seen several cases of ventricular extrasystole in which the condition cleared up after the administration of the iodides. One should always suspect syphilis in the cardiac conditions under discussion in which there was no other definite etiology.

Dr. JOHN A. LIGHTY, Pittsburgh, Pa., said that no one was more competent to speak on this subject than Doctor Anders, but he had heard Doctor Collins read his paper in Washington when the Wassermann test was comparatively new and had followed the work of Dr. Harlow Brooks and he felt confident that there were more cases of syphilitic aortitis than ever before, yet the fact should not be overlooked that unless there was an autopsy, one was not free to speak definitely about them as actually syphilitic. It should be remembered that all cases giving a positive Wassermann reaction were not due to syphilis. Neither was syphilis ruled out in all cases giving a negative Wassermann. In three instances coming under his observation, Doctor Lighty stated that he had obtained a positive Wassermann reaction and there was an aortic lesion present and yet at autopsy he had found an infective aortitis, the aortic cusps showing vegetations, in one instance a *Streptococcus viridans*, and in another, a tuberculous pericarditis, while in the third the streptococcus was found in the blood stream. In Pennsylvania they had not found the spirochete so frequently in heart lesions as Doctor Warthin had found them. The reason for this was probably because of the sources of the material. Since Doctor Warthin obtained most of his material from an orphan asylum, Doctor Swan suggested that in the case referred to by Doctor Lighty in which he found a streptococcus infection, the streptococcus might have been implanted on a syphilitic condition.

Dr. HENRY SEWALL, Denver, Colo., pointed out that the syphilitic seemed to present a psychic or nervous condition different from that of the normal individual and that this would have a definite effect on aortic trouble due to syphilis. Dr. James H. McBride, who was asked to express his opinion on this subject, said that he could not state definitely that there was a psychical deviation which could be attributed to syphilitic degeneration. One author had stated that aortic aneurysm was always due to syphilis except in cases of direct injury. He had seen several cases in which heart lesions were directly due to syphilis, but his experience had not been as definite as that of Doctor Anders.

### Some Disputed Anatomical and Pathological Questions in Tuberculosis.—

Dr. F. M. POTTENGER, Montevia, Cal., stated that it had been fairly determined that bovine infection could be transmitted to human beings; that it was accountable for about ten per cent. of tuberculosis, but that the human infection was responsible for most of the infection in the human race, and that bovine infection was rarely found in adults. It seemed that one must either believe that bovine infection was usually not virulent or healed, confining its sphere of activity to the child; or that the bovine bacillus changed its type by residence in the body of man. It produced quite a large percentage of the clinical tuberculosis of childhood and as far as could be judged seemed to be well able to adapt itself to the soil and thrive. That it could thrive equally well with the human bacillus did not seem probable. The possibility that seemed most worthy of acceptance was that these different bacilli after living in man for a while adapted themselves to the new condition and gradually became the bacillus which naturally would be produced on human soil. This view seemed to be opposed by experimental work which showed that the repeated passage of bacilli through different animals and repeated cultivation on artificial media failed to change the bovine bacillus to the human type. But there might still be a sufficient difference between the rapid passage through animals and a prolonged sojourn in the human body. Unless transmutation occurred and the bovine bacillus of the early infection changed and became the human bacillus, one was compelled to assume that bovine infection in childhood did not except in rare instances produce the metastases in later life. The most rational explanation of the fact observed required the acceptance of the idea of transmutation.

With reference to the primary focus and metastases, the author, after reviewing Johne's position, stated that he took a slightly different point of view but one that could be harmonized with it. There was a marked difference in the behavior of the infection which took place in an animal or a human being who was healthy at the time of the inoculation and one which was already infected. An infection when once present produced hypersensitiveness of the cells and in this way was created a defense against further infection by the same organism. The mucous membrane and other tissues of the noninfected organism showed no specific defense and consequently offered little opposition to the passage of the bacilli. This was seen in the readiness with which bacilli passed through the tonsils of children and affected the cervical glands of the bronchi and the bronchial glands, or through the intestines and affected the mesenteric glands. The first important barrier met prior to true infection was by the lymphatic glands which were particularly active in protecting the organisms at this time. After infection the cells became sensitized and cellular defense became general. Then a specific opposition was offered to the bacilli at every point of entry. The metastases usually occurred through the blood and were produced, as a rule, by a few bacilli and the contact with the sensitized cells limited their virulence, the resulting lesion being abortive. Later it might become active and other metastases might

occur. This theory would explain the freedom of the lymph glands from secondary metastases both in the larynx and in the intestinal tract.

The reason why the apex of the lung was usually involved in the adult while any portion might be affected in the child was due to the anatomical changes incident to assuming the erect position and to rapid growth, particularly at the time of puberty, which retarded the motion of the apices of the lungs and thus favored the implantation of the tubercle bacilli at the apices of the lungs.

In discussing the small heart in tuberculosis, Doctor Pottenger stated that this condition was found in early tuberculosis where the tissues had not had time to suffer degeneration and also in otherwise normal individuals and in other abnormal conditions. The feature that was common in all instances was a deficiency of the inspiratory act. After showing how the mechanism of inspiratory deficiency was responsible for the production of the small heart, the reader stated that this inspiratory deficiency as constant in tuberculosis and the heart was obliged to accommodate itself to the lessened output and naturally became smaller in size.

Doctor SEWALL, Denver, said that Doctor Pottenger was to be congratulated for his courage in presenting his theory even if they could not all agree with him. He then spoke somewhat at length on the work of Vicard and Theobald Smith on the theory that sensitization to the tubercle bacilli made easy a secondary implantation and that it was this secondary infection that was observed clinically.

Dr. E. O. ORIS, Boston, said he was much interested in these theories as they had given him much to think about, but he would like to know how much evidence they had that bovine tuberculosis was frequent in children.

Dr. GEORGE E. BUSHNELL, U. S. A., Fort Byard, N. M., said that with reference to sensitization as a causative factor in secondary infections he could not agree for the reason that it was not true that after a primary infection with reinfection there would be marked extensive infection. Experiments with animals had shown that there was no infection with a second injection of tubercle bacilli. This had been shown in sheep which had been given a subcutaneous injection of human bacilli and later they were given another injection. Some were killed by anaphylaxis, but those that did not die were as well as ever after a few days. He believed that after a first infection, if a child did not get a striking infection, immunity developed and persisted, and if tuberculosis did develop in later life it was a localized process, a fibrosis, and not a rapidly extending process, and this was evidence that the individual had gotten by the stage of extreme sensitization.

He said his theory was somewhat different from Doctor Pottenger's in that he thought that if a child got an early infection the question of the development of tuberculosis depended on the size of the infection or whether it was frequently repeated. A reservoir of tubercle bacilli was more likely to develop where there was a massive than where there was a small infection.

Dr. JOHN M. SWAN, Rochester, N. Y., said that small heart was found in conditions other than tuberculosis. It was very common in disturbances of



the blood. It might be in a degree congenital and might provide the conditions that would predispose to tuberculous.

Dr. F. M. POTTENGER, Monrovia, said that with reference to Doctor Otis's question as to what evidence they had of the frequency of bovine tuberculosis in children, he had accepted the reports of the Imperial German Government and of the results of the work of Koch and of Theobald Smith. These authorities had found quite a considerable percentage of bovine tuberculosis in children. As to why tuberculous meningitis should be more frequent in children he could not state definitely. According to the theory that the tubercle bacilli were apt to settle wherever the blood stream was slow, there would be no particular locality in children. With reference to the laboratory experiments, it was not fair to compare them with what we found clinically in man. The human being was fighting tuberculosis from the time of his birth and building up resistance; while in the laboratory a guinea pig was given large doses of tubercle bacilli at one time and the results were not comparable.

## Letters to the Editors.

### LATE CONGENITAL SYPHILIS.

New York, August 17, 1915.

THE EDITOR, JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 535 N. Dear Sir:—The issue of August 14th contains a letter signed Eli Moschowitz, which I would have left unanswered were it not for my desire to clear up scientific facts. The sentence quoted from Alquier and Lefas, to whom Doctor Moschowitz refers as my authorities, and whom I consider such as far as they follow the teaching of Cornil and Ranvier, says indeed of gummata: "*Elles ont une apparence de cellules par l'absence de cellules géantes dans leur centre*," but this, of course, does not mean that giant cells are found in the walls of a gumma, though such a statement may appear ridiculous to Doctor Moschowitz.

I have to say that I studied some pathology under Cornil, and that it was his teaching that gummata contain no giant cells in contradistinction to tubercles. Giant cells, when they are found at all, are, as a rule, situated in or near the centre, as bigger bodies are usually situated in the centre, whereas smaller ones go to the periphery. Some assert indeed to have found occasionally, but not very commonly, as Doctor Moschowitz says, giant cells in gummata, but I spoke of the teaching of recognized pathologists like Cornil.

Now what is a gumma? A gumma is simply a lymphocytic infiltration, *lymphocytaire Infiltration*, as the Germans say, or to quote again the words of my authorities, Alquier and Lefas: "*Elles sont caractérisées par une infiltration lymphocytaire intra-maculaire qui les compose*." (They consist of small, lymphocytic cells.) By referring to Doctor Berkowitz's article in the JOURNAL for July 17th we see an illustration of the nodule of the lung which shows much fibrous tissue, and in the description of it we read that in the centre there were nuclear fragments, which were surrounded by dense fibrous tissue, which contained giant cells. Now fibrous tissue is not characteristic of a gumma, though it may appear near or around it owing to an added inflammation or otherwise and the presence of giant cells in benign fibrous tissue has yet to be proved. Thus the nodule of the lungs shows absolutely nothing characteristic of a gumma. The other points will be briefly disposed of.

I had heard of hemic murmurs, but in this case, where there were so many gross pathological lesions, it was more than a functional murmur, whose very existence can even be questioned. To my question: "Did then the patient have both syphilis and tuberculosis?" Doctor Moschowitz says, "Why not?" Why then was the case described, based on the report of Doctor Moschowitz, as one of syphilis, and not as both syphilis and tuberculosis? As a

matter of fact, if we consider the whole report, the absence of gummata and spirocheta in the liver where they are as a rule found in congenital syphilis, and the absence of any characteristic elements of gumma in the nodules of the lungs where gummata are infrequent, as well as the clinical history, one has a right to question the diagnosis of syphilis. Concerning "the rambling and discursive ending of my letter," I will simply say that, of course, Doctor Moschowitz has good reason to be satisfied with our hospitals. Perhaps when he learns a little more he may change his mind.

As I try to make a letter as short as possible, and this one is already quite long, I could not enlarge on some points as I should like to do, but a word to the wise is sufficient.

I will say, however, concerning the Wassermann reaction, that while attending Wassermann's demonstrations some time ago I heard him say that in many instances this reaction was being used by persons who knew little about it.

E. PALMER, M. D.

## GAS AND PAIN.

LAKE PLACID, August 17, 1915.

To the Editors:

Requests for information regarding the cause and effect of gas and pain in gastroenteric conditions have been made to me, and I offer the following to Doctor Barry's letter: The conception rather commonly held by the lay people, and often by medical men, that efforts to "raise gas" or "pass gas" as the definite point in therapy to bring about, is based upon fallacy in a primary sense, although benefit from distress is usually brought about in a secondary or resulting way.

Many disturbances of digestion are accompanied by gas and pain, but the pain is not caused by the distention from the gas in a section of the digestive tube but by active peristalsis upon it. In acute gastroduodenal dilatation of serious grades the largest amounts of gas are often met with. Yet there is no degree or only slight degrees of local pain. Why? Because an atony or paralysis of the musculature exists. When the patient is recovering and muscle tone is being restored, pain comes to a greater degree. The person operated upon (laparotomy usually) who gets "gas pains" on the third or fourth day has sufficiently good peristalsis with good general condition. If he or she had a paralysis of the colon there would be more or less general collapse with much abdominal distention and little or no pain. Thus, pain accompanied by gas, the first relieved when the second is more or less removed, means a simple condition. The peristalsis is active, which activity logically subsides and with it the pain, when the gas upon which it is working is removed. In that way the rifting or passing of gas gets the credit for the cure, whereas good peristalsis should have it instead, because the removal of the pain, the important matter, is brought about by the removal of the gas (the least important). Of course, here I am thinking diagnostically rather than merely subjective to the patient, or objective to the patient and attendant in removal of the gas. When there is strong pain with distention it is a simple condition, but when there is distention with little or no pain, be more concerned. Many of the latter cases end favorably themselves by simple means, too, but nevertheless, in that group are contained the serious cases.

ANTHONY BASSLER, M. D.

## Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*The Principles of Bacteriology. A Practical Manual for Students and Physicians.* By A. C. ABBOTT, M. D., Professor of Hygiene and Bacteriology and Director of the Laboratory of Hygiene, University of Pennsylvania. Ninth Edition, Thoroughly Revised. With 113 Illustrations, 28 of Which are Colored. Philadelphia and New York: Lea & Febiger, 1915. Pp. x-650. (Price, \$2.75.)

For the teaching of students one could find few better books than this. We have often looked for a plain treatise

of bacteriology which would release us from hours of study and anxiety at the same time. This demand is not easily met. Too often those treatises on bacteriology that offer all the knowledge required and the release from exhausting research offer them in the too condensed form of Abel and the somewhat leisurely way of Hewlett. Doctor Abbott's book is a genuine release. The definitions are clear, the description of technic refreshingly easy to follow. We know at the end what we expected, and the mind has not in reading them, experienced that disagreeable necessity of going back to find the meaning of the first clauses, and, hence, the mind does not experience that fall or jar when suddenly confronted with an unexpected and unnecessary detail. This in a word is the sort of book that reads easily, though it is not at all easy to write. There are, however, disadvantages to Doctor Abbott's method. Such brevity and clearness is a snare for students. They will be apt to forget that there is a hard distinction between easy bacteriology and bacteriology which is easy to apply. We are not certain that it would be practical to undertake an examination of milk, for example, after a study of this book alone. There is something needed. It should have perhaps a trifle more detail. As an instance, we might cite the pages on ultramicroscopic viruses. They are by no means explicit enough. We have noticed a few proofreading errors, like "ascetic" for "ascitic" (page 246).

*The Clinical Anatomy of the Gastro-Intestinal Tract.* By T. WINGGATE FORD, M.B., Ch.B., F.R.C.S. (Edg.), Henry Willson Payne Professor of Anatomy in the Western Reserve University, Cleveland, Ohio; Late Lecturer in Anatomy, University of Manchester. Manchester: At the University Press; London, New York, Bombay, etc.: Longmans, Green & Co., 1915. Pp. xii+264. (Price, \$1.75.)

For a book entitled anatomy this volume is somewhat of a surprise. In the first place it does not deal with dissection; indeed, there is hardly and reference to the dissecting room or cadaver. In the next place it is avowedly not intended for examination purposes. Still, it is of interest and real value. The reader will find an outline of recent work which has not yet found its way into the ordinary textbooks. Work, not only on the anatomy but also on the physiology and pathology of the gastrointestinal tract is conveniently grouped together. The volume concludes with a well arranged and comprehensive bibliography.

*Urgent Symptoms in Medical Practice.* By ROBERT SAUNDEN, M.D. Edin., Lieutenant-Colonel, R.A.M.C. (T.), Hon. LL.D. St. Andrews and McGill; Hon. M. Sc. Birmingham; Fellow of the Royal College of Physicians, London; etc. New York: Longmans, Green & Co.; London: Edward Arnold, 1915. Pp. v+37. (Price, \$2.10.)

The title of this work is somewhat misleading, as the book includes such topics as longevity, deformities of the nails, talipes, and albinism, none of which can be considered to present urgent symptoms. However, it is well written and so paraphrased as to make easy reading. It really is a compend of medical practice, which takes up, first, the definition of a medical term, then gives the symptomatology and a brief outline of the pathology, followed by a short synopsis of the treatment. On the whole it may be said to fulfill the object of the author, to furnish as a handy work of reference for the busy practitioner who wishes to learn at a glance the significance of a certain symptom and the manner of its relief.

### Interclinical Notes.

The *Metropolitan* for August discusses editorially the unpleasant case of Professor Scott Nearing, who met the natural fate of a progressive in Philadelphia. Our readers who have liked our correspondence from Serbia, will find the same kind of thing on a much more elaborate scale by John Reed and Boardman Robinson. They note by the way that a British R. A. M. C. lieutenant whom they met laughed the parasite theory of typhus to scorn. The Frothingham mist, whence comes our correspondence, is mentioned as well as its station, Skoplje. There is a most

workmanlike short story by Richard Harding Davis, The Frame-up. There are other good stories, as well as Colonel Roosevelt's famous address on Preparedness, widely reproduced in the newspapers.

There is an anonymous epigram in the August *Century* captured by the author of Pleasures and Palaces, who was once an actress. Apropos of Bernard Shaw and his school, the unknown epigrammatist observed: "If you leave your mind gadding about on the loose, one of these scoundrels will pick it up and set it going for you in a way you won't like."

The August *Popular Science Monthly* is a singularly rich and entertaining issue. We have Sir Ernest Rutherford on the Constitution of Matter, Chancellor David Starr Jordan on War Selection in Europe, Professor G. T. W. Patrick on the Psychology of War, Professor I. W. Howarth on War and the Progress of Society; and there are one or two articles of a more peaceful nature, one on Mosquito Sanitation, by Professor L. O. Howard, on the Waste of Life, by Elaine Goodale Eastman, and on Early Ritualistic Ceremonies, by Dr. Clark Wissler.

Duncan Frazer, a physician, is the apparent hero of The Great German Plot, by Alan Graham, in the August *Strand*. He makes his entrance into what promises to be a most thrilling serial story, by disappearing from it—an admirable paradox. The special features of this magazine are as diverting as ever; one tells how to add new horrors to the family talking machine. There are two gossipy theatrical articles, of which readers never seem to tire, although they are usually the purest fiction. Perhaps that explains their popularity.

*Pearson's Magazine* for August pays its respects to organized charity, asserting that not only are its methods costly, but that it is jealous of all other means of tackling the problems of poverty. Eugene Wood is interesting, as he always is, in *The Devil and the Disk*. R. F. Foster, in *The Gambler's Protégé*, tells a good many secrets useful to foolish young men who haunt gambling houses. No harm is done, for it takes years of practice to cheat successfully at cards, whereas it needs but little training to see when cheating is being attempted.

Those who have paid any attention to our occasional comments on dramatic technic, will find their viewpoint corroborated in *The Golden Goose*, by Virginia Tracy, in the August *Century*. There is many an Evelyn Bayard on the stage, despite the bright and apparently original remarks attributed to the type of press agents. Many of our best women stars are nothing but mental projections of a Belasco, a Julian Mitchell, or of a less famous stage manager.

Doctors play a large part in the fiction of the August magazines. For instance, *Dear Enemy*, by Jean Webster, in the August *Century*, is a physician, apparently of the most dour Scottish kind. The story, which involves the management of an orphan asylum by a young graduate of a woman's college, opens in a promising way. The asylum will soon become a veritable children's paradise unless all signs fail. The doctor's one case, so far, involves the extraction of a doorknob from the mouth of a young woman orphan; we are told that he manages this with the aid of a buttered shoehorn.

We are afraid to think of the effect on the various anti-alcohol bodies of Inez Haynes Gillmore's story in the August *Metropolitan*, *Matt Looks upon the Wine*. It is a dreadfully immoral affair from the teetotal viewpoint. A young man gets drunk and then—gets over it, that's all! No remorse, no broken up home, no shattered constitution, no degenerate posterity, none of the simple, logical effects that abstainers know so well to follow half a dozen drinks. There is a slight *Katzenjammer*, to be sure, but its moral effect is nullified by the laughter of the victim's brothers thereat.

## Official News.

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and their officers of the United States Public Health Service for the seven days ending August 18, 1915:*

**Allen, R. L.**, Assistant Surgeon. Relieved from duty at the Marine Hospital, Stapleton, N. Y., and ordered to report to Springfield, S. C., for duty in the investigation of pellagra. **Anderson, John P.**, Surgeon. Detailed to represent the Service at the meeting of the laboratory section of the American Public Health Association, Washington, N. Y., September 7-10, 1915. **Anderson, T. B. H.**, Assistant Surgeon. Directed to report at the Marine Hospital, Chicago, Ill., for duty. **Ashford, E. A.**, Passed Assistant Surgeon. Granted five days' leave of absence from August 17, 1915, under paragraph 193, Service Regulations. **Francis, Edward**, Surgeon. Directed, in order to complete investigations of the transmission of pellagra, to proceed to points in Georgia and South Carolina for the collection of materials and data. **Fricks, L. D.**, Surgeon. At the request of the Utah State Board of Health, directed to proceed to Salt Lake City for conference and investigation of disease supposed to be caused by bite of insects. **Frost, W. H.**, Passed Assistant Surgeon. Granted three days' leave of absence en route to station, August 6-8, 1915. **Lake, Gleason C.**, Assistant Surgeon. Continued on duty at the Hygienic Laboratory, Washington, D. C. **Lanza, A. J.**, Passed Assistant Surgeon. Detailed to deliver an address on health hazards and diseases peculiar to the mining industry at the meeting of the American Public Health Association at Rochester, N. Y., September 7-10, 1915. **Leake, J. P.**, Passed Assistant Surgeon. Granted fourteen days' leave of absence from August 18, 1915. **Lumsden, L. L.**, Surgeon. Detailed to deliver addresses on public health subjects at farmers' meetings to be held at Washington, N. C., and other points in that vicinity during the two weeks beginning August 30, 1915. **Phelps, Earle B.**, Professor. Directed to proceed to Cincinnati, Ohio, Luray, Va., and Noblesville, Ind., to supervise field investigations of sewage and industrial wastes. **Rucker, W. C.**, Assistant Surgeon General. Detailed to represent the Service at a joint conference on first aid, accident surgery, and transportation, to be held in Washington, D. C., August 23-24, 1915. **Safford, M. V.**, Assistant Surgeon. Granted five days' leave of absence from August 16, 1915, under paragraph 193, Service Regulations. **Schereschewsky, J. W.**, Surgeon. Detailed to represent the Service at the meetings of the section on Industrial Hygiene, of the American Public Health Association, Rochester, N. Y., September 7-10, 1915. **Spencer, Herbert A.**, Assistant Surgeon. Directed to report at New Orleans Quarantine Station for duty. **Sutton, Don C.**, Assistant Surgeon. Relieved from duty at Galveston, Texas, and ordered to proceed to New Orleans, La., for temporary duty at the Marine Hospital. **Sweeney, A. R.**, Assistant Surgeon. Relieved from duty at the New Orleans Quarantine Station, and ordered to proceed to the Galveston, Texas, Quarantine Station. **Trask, John W.**, Assistant Surgeon General. Detailed to represent the Service at the meeting of the section on Vital Statistics of the American Public Health Association, to be held in Rochester, N. Y., September 7-10, 1915. **Weldon, L. O.**, Assistant Surgeon. Directed to report to the Marine Hospital, San Francisco, Cal., for rotation of duty at that station as well as at the Panama-Pacific Exposition Hospital. **Wildman, Henry V., Jr.**, Assistant Surgeon. Directed to report at the Marine Hospital, Stapleton, N. Y., for duty.

#### Representatives

Dr. Gleason C. Lake, Dr. William S. Bean, Jr., Dr. Thomas B. H. Anderson, Dr. Herbert A. Spencer, and

Dr. Henry V. Wildman, Jr., commissioned as assistant surgeons in the United States Public Health Service.

### United States Army Intelligence:

*Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the week ending August 21, 1915:*

**Foster, Charles L.**, Captain, Medical Corps. Ordered to take charge of the Medical Supply Depot, St. Louis, Mo., during the absence of Lieutenant Colonel Thomas U. Raymond, Medical Corps; Captain Foster will make, not to exceed, three visits per week from Jefferson Barracks to St. Louis, Mo., and return while on this duty. **Fronk, Clarence E.**, Captain, Medical Corps. Relieved from duty with the Second Division, and from further duty at Fort Benjamin Harrison, Ind., and will proceed to Fort Sill, Oklahoma, for duty at that station. **Hardaway, Robert M.**, Captain, Medical Corps. Now on leave of absence at St. Charles, Mo., is relieved from duty in the Second Division, to take effect upon the expiration of said leave, and will then proceed to San Francisco, Cal., and report in person to the commanding general, Western Department, for temporary duty until such time as it shall be necessary for him to take the transport to sail from that place on or about October 5, 1915, for the Philippine Islands, and will proceed on that transport to Manila for assignment to duty in the Philippine Department. **Mitchell, Leopold**, Captain, Medical Corps. Relieved from duty at Fort Leavenworth, Kansas, and will proceed at the proper time to San Francisco, Cal., and take the transport to sail from that place on or about October 5, 1915, for Hawaii, for duty in the Hawaiian Department.

## Births, Marriages, and Deaths.

### Married.

**Greenwood—Clausen.**—In New York, on Thursday, July 22d, Dr. Hugh Allison Greenwood, of Ecuador, and Miss Marie Gertrude Clausen.

### Died.

**Aiken.**—In Boston, Mass., on Monday, August 16th, Dr. Thomas F. Aiken, aged forty-five years. **Barry.**—In Fort Wayne, Ind., on Sunday, August 8th, Dr. George A. Barry, aged forty-three years. **Bragg.**—In Lincoln, Me., on Saturday, August 7th, Dr. S. W. Bragg, aged fifty-five years. **Cubertson.**—In Massillon, Ohio, on Saturday, August 7th, Dr. Neal W. Cubertson, aged forty-four years. **Ehrlich.**—In Bad Homburg, Germany, on Friday, August 20th, Dr. Paul Ehrlich, aged sixty-one years. **Finlay.**—In Havana, Cuba, on Friday, August 20th, Dr. Charles J. Finlay, aged eighty-two years. **Follett.**—In Somerville, Mass., on Sunday, August 15th, Dr. A. Ward Follett, aged fifty-seven years. **Hackett.**—In Ceres, N. Y., on Wednesday, August 11th, Dr. George W. Hackett, aged fifty-one years. **Hicks.**—In Flushing, N. Y., on Thursday, August 19th, Dr. Joseph Lawrence Hicks, aged eighty-one years. **Higgins.**—In Salt Lake City, Utah, on Friday, August 6th, Dr. Charles W. Higgins, aged seventy-four years. **Huson.**—In Detroit, Mich., on Thursday, August 12th, Dr. Florence Huson. **James.**—In Kittanning, Pa., on Saturday, August 14th, Dr. William D. James, aged fifty-eight years. **Jones.**—In Galion, Ohio, on Thursday, August 12th, Dr. Silas Jones, aged sixty-one years. **McCaslin.**—In Tomestead, Pa., on Sunday, August 15th, Dr. William A. McCaslin, aged sixty-six years. **Mayer.**—In Allenhurst, N. J., on Friday, August 20th, Dr. Abraham Mayer, aged sixty-one years. **Merriman.**—In Arendtsville, Pa., on Sunday, August 15th, Dr. David Leroy Merriman, aged fifty years. **Meyer.**—In Woodhaven, L. I., on Sunday, August 15th, Dr. Joseph Meyer, aged sixty-one years. **Montgomery.**—In St. Louis, Mo., on Thursday, August 12th, Dr. Alexander Montgomery, aged eighty-one years. **Norris.**—In Lexington, Ky., on Friday, August 13th, Dr. Charles W. Norris, aged fifty-three years. **Reasoner.**—In Muncie, Ind., on Monday, August 9th, Dr. Osmer Irvin Reasoner, aged sixty-two years. **Roddy.**—In Lynn, Mass., on Thursday, August 12th, Dr. Martin Roddy, aged thirty years. **Spencer.**—In Atlantic City, N. J., on Saturday, August 7th, Dr. Horatio N. Spencer, aged seventy-three years.



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### Original Communications.

#### WHAT DO THE NEWER METHODS OF TREATMENT OFFER THE PATIENT WITH MALIGNANT DISEASE OF THE UTERUS?\*

BY JOHN G. CLARK, M.D.,  
Philadelphia.

During the past decade we have witnessed the complete abandonment by the majority of gynecologists of vaginal hysterectomy in favor of removal of the uterus by the abdominal route. Even those specialists in Germany who prefer the vagina as the elective route for many pelvic operations no longer use this avenue for the removal of carcinoma-uteri.

Up to three years ago German literature was replete with reports of the results of these more radical abdominal procedures. Instead of limiting panhysterectomy to cases in which the cervix alone was involved, this method was extended, even to the most advanced cases, in which the glands also were involved. This radical stand was soon followed by a recession, for it was all too evident that the small percentage of ultimate recurrences in these cases of extensive glandular dissections did not offset the tragically high primary mortality of the operation, nor the increased frequency of distressing post-operative sequelæ, such as urinary and rectal fistulæ, intestinal adhesions, etc.

In all but the very early cases of carcinoma the surgeon operates with repressed enthusiasm, for he realizes that even the most skillfully performed operation must necessarily be attended with a high rate of mortality and be followed by a large number of recurrences in the survivors. Nevertheless, up to the present time operative intervention is the only means known by which the disease may be stamped out.

From time to time new remedies or "cancer cures" have appeared on the medical horizon, engendering hope as to their therapeutic possibilities, dazzling us for the moment with their cometlike splendor, only to sink into oblivion, never to reappear during our generation.

In the continental literature of three years ago surgery was the only method of treatment con-

sidered; suddenly, however, a wave of enthusiasm swept over France, Germany, and, to a lesser degree, conservative England, and radium became the subject for extended discussion in the literature. From the pinnacle of surgical exaltation the scene shifted, and some of the strongest advocates of radical treatment turned abruptly from the enthusiastic laudation of surgical measures to the advocacy of mesothorium and radium. Thus in the space of two years we find Krönig, of "twilight sleep" fame, who, in the last review of his ultimate results in the clinic at Halle, held that, instead of limiting the extent of operative indication, they should be broadened so as to encompass a larger number of cases hitherto considered inoperable, veering away from surgery, and acclaiming mesothorium and radium as the great panaceas. Such enthusiasm must be counterbalanced by the conservative physician, for undoubtedly there is a vast deal of good in both measures. Startling assertions in favor of the potency of mesothorium and radium were made, and, what was more astounding, these assertions were apparently sustained by the report of a long series of cases studied accurately from every side. The clinician pronounced the disease a carcinoma of inoperable extent; the microscopist confirmed the diagnosis; and radium was then applied, and soon a remarkable transformation was observed; usually the hemorrhage and offensive discharge ceased, and the local areas of ulceration underwent cicatrization. The cancerous tissue either disappeared or showed evident signs of degeneration, and microscopists confirmed these retrogressive changes in the malignant cell and observed a regrowth of healthy tissue. With it all, however, even the most enthusiastic followers of the new method cautioned against the abandonment of surgical procedures in favor of this newer agent, and this is precisely the position we occupy today, even after three years of active use, upon the continent, of the radioactive substance in the treatment of malignant growths.

Schauta, of Vienna, who has made a careful but conservative study of these cases, gives an excellent summary of the effects of radium, and of what may ultimately be expected from it. In his description of results, he says:

The nodular masses covering the cervix disappear; one may also say that they melt away, as ice before the sun. The rigid, resistant, easily bleeding walls become soft and smooth; in many cases the formerly unrecognizable portio vaginalis assumes again its original contour. A distinctive *elective action* is noticeable in all these changes; in no instance was the vagina in any way inflamed; there was no necrosis produced, not even a reddening or desquamation of the epithelium could be noticed. At the end of the

\*In an annual publication, entitled *Progressive Medicine*, the gynecological chapters of which have been edited by a liberal supervision, I have endeavored, in conjunction with my associates, Doctor Ansbach and Doctor Outerbridge, to summarize, in the opening pages, the newer issues presented in the solution of the cancer problem. For the abstracts of the literature of the last year I am indebted to Doctor Outerbridge.

the line of transition from carcinomatous tissue to healthy vaginal wall is generally marked by a circular wall of connective tissue in which no carcinoma is to be found, a more or less well marked crater indicating the site of the former cancerous growth. Microscopic examination of the excised bits of tissue showed, often after the first or second application, at the latest after the third, no unaltered carcinoma, but only swollen, degenerated carcinoma cells, or none at all.

In addition to these local effects, however, again Schauta, he encountered quite marked general reactions, such as headache, loss of appetite, gastralgia, enteralgia, alternating constipation and diarrhea, pain in the bladder region, and temperature elevation. Except in a very few cachectic and seriously ill patients, these symptoms always disappeared within twenty-four hours after the radium tube was removed, and no permanent injury from its use could be demonstrated. In a few instances quite severe hemorrhages occurred, probably the result of destruction of tissue by the action of the radium.

In one case a vesicovaginal fistula, and in another a rectovaginal fistula resulted. These were probably due, not to any destruction of healthy tissue by the radium, but to the fact that the respective septa in question were completely infiltrated with carcinoma, and as these were destroyed by the radium, a fistula naturally resulted.

As regards the indication for the employment of this agent, Schauta considers every case of carcinoma a suitable one for radiotherapy; for the present, however, he declares that he will continue to employ surgical measures on all operable cases, as permanency of the apparent radium cures has not as yet been established; after all operations, however, he will apply moderate doses of radium as a routine to ward off possible recurrences.

Another report that runs along similar lines is that of Exner, who for ten years has used radium in the treatment of malignant growths, getting splendid results in the case of superficial, but very unsatisfactory ones in the more extensively involved cases. Of forty cases so treated, two which were apparently cured remained so for from seven to nine years, when recurrences developed and they ended fatally. He believes, however, that the lives of all the patients were prolonged, and the majority rendered more comfortable, but he does not aver that a cure was effected in a single case.

Wertheim, one of the sponsors for the radical method of operation, has employed radium in nineteen cases of uterine carcinoma. None of these was in the operable stage, one was a borderline case, and nine cases were absolutely inoperable. In seven of the operable cases a hysterectomy was performed after the application of radium had been made. Specimens removed showed that decided destructive effects had taken place in the carcinomatous cells, but he asserts that a complete disappearance of the tumor was not observed, except where the growths had been superficial. This observer believes that similar effects may be accomplished as the result of cauterization or of amputation of the cervix. Speaking from his personal experience, he does not believe that there is sufficient evidence to warrant the assumption that the radical operation is to be displaced by radium therapy.

At the International Medical Congress held in London in the summer of 1914, two French observers, Cheron and Duval, reported the results of 150 cases of uterine and vaginal carcinomata treated with radium during the past five years. These writers believe that the unfavorable results reported in the literature were due to a faulty technic in the administration of the radium. They laid particular stress upon the efficiency of massive doses well filtered. In their opinion radium given in small doses ranging from ten to twenty mg.—is worse than useless, in that the remedy may actually stimulate the growth of the tumor cells. Similar reports have emanated from the London Radium Institute.

From the literature here reviewed we must inevitably draw the conclusion that radium offers excellent possibilities in the treatment of superficial growths, and is useful for the relief of hemorrhage and to lessen the offensive discharge in extensive cases, but that no extreme degree of optimism can be gathered from these reports, since they all point to one fact, namely, that the deeper metastases are not reached by the radium, and that, therefore, the fate of the patient hangs upon this one point. This is a somewhat interesting observation, since it tallies so completely with our own surgical observations in the treatment of carcinoma of the uterus. We have long since abandoned the extensive dissection of lymph glands, and, from my personal observation of cases coming under my care, I reached the conclusion, five years ago, that when the deeper iliac glands are the seat of metastases, we are merely fighting wind mills, so to speak, in the attempt to cure these patients. Since that time it has been my controlling policy merely to remove one or two glands for microscopic examination. When a radical operation has been performed and these glands are demonstrated to be free from cancer, the prognosis is guardedly favorable. Conversely, if metastases are found, no hope for ultimate cure can be held out.

#### THE X-RAY IN CARCINOMA OF THE UTERUS.

Because of the great expense incident to the use of the radium treatment, attempts are being made in all countries to achieve good results with the x-ray as could be secured from the more expensive form of therapy. Perhaps the most thorough report on this subject comes from Professor Bumm, of Berlin, who has endeavored to perfect a method of treatment by the use of the x-ray. He believes that, eventually, the Röntgen ray will prove a very effective substitute; indeed, he is inclined to predict that this latter agent will supersede radium in the treatment of uterine carcinomata. In his opinion a technic will be evolved to permit of satisfactory treatment with the x-ray, without resulting serious burns of normal tissue. He even makes the startling assertion that, with the use of the newer tubes, it may be possible ultimately to reach these cases without the necessity for employing vaginal treatment. In order to prove his theory, Bumm subjected six women suffering from advanced carcinoma of the cervix, in all of whom large, fungoid, freely bleeding masses completely filled the vaginal vault, solely to radiation from the abdomen or back. In all these cases the tumor disappeared completely within a few

weeks. Specimens of tissue excised for microscopic examination showed almost complete destruction of the carcinoma cells, only a few scattered, degenerating remains being found, and these surrounded by dense masses of fibrous tissue. In one instance, no cancer cells were demonstrated.

From these experiments Bumr believes that many deeply seated growths hitherto regarded as of unfavorable prognosis may be offered a hope of cure by the use of the x ray. The technic must be very carefully carried out, however; moreover, the method requires time and is costly, facts that must be recognized by physician and patient. This observer draws attention to the fact that in many instances considerable irritation of the skin is bound to result, and this may even go on to the formation of blisters. This dermal condition, he states, will rapidly disappear under local treatment, and, in his opinion, is a very slight objection when compared with the ultimate cure of an otherwise hopeless malignant growth.

Out of this mass of literature reviewed by us, we arrive at the inevitable conclusion that the x ray in these large doses must possess harmful effects upon normal tissues, and prove an actual danger from deeply seated burns. Krönig, one of the most enthusiastic exponents of the use of mesothorium and radium, does not, as previously stated, aver that a single cure of cancer in which there were deeply seated metastases has been effected. Basing our statements upon the literature and upon our own limited experience in the use of radium, we should set down as definite postulates the following conclusions:

1. Up to the present there is not sufficient evidence in favor of radium to justify one in using it as a substitute for surgical measures in operable cases.
2. As a forerunner to and a follower up of an operation, it is unquestionably advisable.
3. In inoperable cases it should invariably be tried, for apparent cures have occurred in some markedly advanced cases, and in those cases that are not ultimately cured there is, nevertheless, a decided amelioration of symptoms—in many instances, the offensive discharge and hemorrhage completely disappear.
4. A serious disadvantage in the use of radium is that it occasionally produces a widespread necrosis, leaving vesical and rectal fistulæ in the wake of its destructive action. This, however, usually occurs only in advanced cases of carcinoma, and need not, therefore, deter us from the use of the remedy.

#### CHEMOTHERAPY.

From time to time chemical means for the cure of cancer have been advocated. Thus far, however, no measure has proved of sufficient value to be accorded more than a temporary place in the literature, and, therefore, this subject may be dismissed without further discussion.

The treatment of carcinoma by cancer extracts and various serums has also proved to be worse than valueless.

#### THE TREATMENT OF INOPERABLE CARCINOMA BY HEAT.

In this country a very ardent advocate of desiccating heat for the cure of carcinoma is Percy, of

Galesburg, Illinois. This investigator is of the opinion that experimental work has proved that cancer cells may be destroyed when the temperature of the affected part is raised to between 50° and 55° C. For the purpose of applying heat to inoperable carcinoma masses he uses a "cold cautery" at a comparatively low degree of heat for a sufficient length of time to destroy not only the superficial, but also the deeply seated growths. He has not as yet published a report of a definite series of cases treated by this method, and thus far his experiments have been conducted largely upon a theoretical basis. He maintains that he has had most remarkable results in individual cases, but as these are but isolated examples, it seems that no proper estimate of this plan of treatment can be made until a carefully detailed study of the cases is presented. In justice to Percy, however, it must be said that the majority of surgeons in the United States who have attempted to use his method, have started in on the assumption that he employs cauterizing heat. He protests very strongly against this use of his cautery, and prefers to speak of it as a "cold cautery." The iron should not, he declares, be hot enough to scorch a pledget of white cotton kept in contact with it for even half an hour. No smoke or odor of burning tissue should accompany its use. In the hands of skillful persons I believe that this method holds out a definite promise of ultimate good results, provided that the rules laid down by Percy are followed to the letter. Much credit is due him for having elaborated this method, and where radium is not available, I consider it the duty of every surgeon to equip himself with this apparatus.

From my own experience, however, with the use of radium, I feel that this agent affords better, at least equally good chances for cure without the attendant dangers of mortality incident to the operation as proposed by Percy.

From this review of the newer therapeutic methods in the treatment of carcinoma, I feel that we may conclude that definite progress has been made, but that as yet, no genuine panacea has been discovered or even forecast by the reports of the most optimistic champion of the various methods here considered.

2017 WABLER STREET.

### THE TEACHING OF MEDICINE.\*

By ADAM H. WRIGHT, B. A., M. D., M. R. C. S.,  
F.R.C.

Toronto,

CLARK'S PUBLISHING CO., LTD.

During my student days I spent three months in New York, taking what was known as the fall session, and also a part of the winter session. I became a student at Bellevue College, and my connections with that institution gave me the entrée into all hospitals, dispensaries, and to a limited extent to the medical colleges. Among the men I remember best were Alonzo Clark, Loomis, Fordyce Barker, Gaillard Thomas, the Austin Flints, senior and

\*Read at the meeting of the Ontario Medical Association, Toronto, December 1, 1900.



puller, Sayre, VanDusen, Metcalf, Lusk, Valentine, and some younger men they considered then as boys, such as Limbway, Keyes, etc. These were all great men and the best teachers of medicine, I think, I ever met. They were men of pronounced individuality, strong personality, and great magnetism. Their methods were through didactic lectures, clinical lectures, demonstrations of the treatment of outdoor patients to large classes, and work in the outpatient dispensaries.

I do not like the word, didactic, because it is so frequently misunderstood, or at least misapplied. According to Webster, it means instructive, but it happens that all lectures designated didactic are not instructive. Therefore we have instructive lectures and noninstructive lectures. The fashion once in existence to teach medicine entirely, or almost entirely, by didactic lectures was absurd, and had much to do with the present objections to didactic teaching. Having in mind some of the men of the past whom we knew, may we not presume that a set of lectures delivered by such teachers as the late W. T. Aikens, George Peters, and J. E. Graham would be really instructive?

(Of these medical teachers in New York I found that most had taken postgraduate courses abroad, especially in France and Great Britain. However, the fame of Germany was then spreading rapidly, and it soon became the fashion to go to that country. I have been told that the man who did the most to attract young American graduates was that wonderful teacher, Johannes Müller, professor of anatomy and physiology in Berlin from 1833 to 1858. After him came many of his pupils, and here one may be named, Carl Ludwig, who had in his laboratory such men as H. P. Bowditch, afterward professor at Harvard, and other young men from the United States who became in time distinguished teachers. German methods became exceedingly popular in various universities of the Republic, and were considered by some better than those designated as English methods. Without doubt the Germans for a time led the world in scientific investigations in their well equipped laboratories. While this fact is recognized, the majority of scientific men in Great Britain now think that deplorable changes have taken place in German *Kultur* during the last thirty years, and the arrogant claims of superiority in Germany in art and science have become absurd. In considering the two methods, it may be said probably without any serious adverse criticism, that those teachers who can combine the good features of both the German and the English methods will do the best work for students.

A great many teachers of medicine think that we in Canada and the United States pay too much attention to the German machinelike work, and not enough to the art of medicine. Most of the presidents of the Canadian Medical Association for several years have warned the profession respecting the evils of such methods in teaching. Let us choose from these presidents two only.

Dr. Francis Shepherd stated, in 1902, that "in many of our modern hospitals with their laboratories students are not taught to observe so carefully the evident symptoms of disease and are becoming mere mechanics. . . . The higher and more intellectual

means of drawing conclusions by inductive reasoning are almost neglected."

Dr. H. A. McCallum said, in 1912: "The Carnegie Foundation authorities have, however, over-emphasized the laboratory side of medical instruction. The German method of medical education is to tie the medical student to a microscope, as opposed to the English method of cultivating knowledge through the unaided eye. In Germany the aim is to make scientists first and then doctors; whereas the primary purpose for which students learn science is to become physicians, not scientists. Literature of the several subjects which form the basis of medicine has become so extensive that no man can keep abreast of it. For years American medical teaching has been dominated by the German plan of instruction. In certain quarters there is setting in a reaction. It is claimed that we have become guilty of a fetish worship of laboratories in medical instruction and medical practice."

Let us go back a few years and quote from one of England's greatest teachers, Sir George Humphrey, professor of anatomy, Cambridge University, who said, in 1896: "There is too great a mass of facts heaped on the memory and too little reflection on them. . . . The sciences of physiology and histology have become and those of pathology are becoming more separated from medicine, delegated to special teachers, doubtless to the advantage and width of scope of these sciences and greater knowledge of them, but I fear there is here incurred the tendency to take the student too far afield. . . . It is apt to lead too much in great altitudes; too little to straight going on *terra firma*; too much to pride and abstrusiveness; too little to reasoning, and too little to that sort of reasoning which constitutes the basis of common sense. The scientific and the practical in short become too much separated. What is needed is a greater regard for that connection between the two which should be maintained through the whole period of study."

Doctor Sterling, professor of physiology, University College, London, said in 1908: "The tendency for anatomical education to be imparted by professional anatomists has led to increased demands upon the student in the way of accuracy of knowledge. The work demanded of the student is practically double in amount and is still increasing. What is the result? We are trying now to get two pints into a pot that formerly held one. The result is the student is overburdened . . . so that he has no time for independent thought."

The *British Medical Journal*, in 1910, said: "Biology as taught by nonmedical biologists must go. . . . Chemistry in the future must be taught by the physiological chemist, and physics by the physiological physicist; by medical men who have gone through the whole training and know the needs and aims of practical medicine. . . . In anatomy great reform is needed in the size of the textbooks, and the masses of useless detail required have reached the limit of pedagogic absurdity."

Dr. Herbert Hamilton, in his presidential address before the Academy of Medicine, in 1913, said: "The curriculum is now becoming so overburdened that revision is imperative." In the years 1913 and 1914 there was much discussion in England as

to the work of the Royal Commission on University Education in London, of which Lord Haldane was president. We were told by the *Medical Press and Circular* that "the object of this commission was to promote a professorial university largely on the lines of the German university." Sir Henry Morris said: "Why are the independent medical schools to be sacrificed in favor of grafting on to our British methods a system which has been as pernicious in its origin as it is impractical in character and results?"

The *British Medical Journal*, last November, referred to the vanity and spite of the German professors, "which will only help to stop the tendency to pan-Germanism in medicine." It also quotes, evidently with approval, from "a shrewd observer," Dr. H. P. Greely, who from his own observation wrote in the *Boston Medical and Surgical Journal*, last September:

There are certain tendencies in the evolution of medicine as a pure science, as it has developed in Germany, which rather contribute to the increase of charlatanism. These tendencies are worthy of analysis by us who are so rapidly Germanizing our methods, as a warning so that we may escape like evils. The medical school has two important duties—one to medical science, the other to the public; the one encouraging and promoting medical education and scientific medical progress, the other supplying to the public well trained practitioners. The latter is really the greater, for out of every graduating class ninety per cent. are practitioners and less than ten per cent. are scientists, and of these only one or two are so eminently fitted for scientific work as ever to accomplish much. The conditions in Germany are reversed, however. There there are ninety physicians dawdling with science to every ten doing practice. Of these ninety fully seventy-five per cent. are wasting their time so far as permanent results are concerned. . . . The teaching in Germany produces a few scientists, a large number of pseudoscientists, and a few good practitioners. In Germany the scientific side is overdeveloped, while the human side is greatly neglected. German physicians do not know how to treat the individual and recognize only the disease. The comfort of the patient or the recognition of his personality is not considered.

These men who have expressed opinions are, perhaps with one exception, eminently scientific as well as practical, and most of them are or have been great teachers of medicine. Why have not their level headed and sensible efforts prevailed to a greater degree? Why should Englishmen themselves belittle English methods and actually attempt to Germanize the University of London? Why should a big, broad minded scholar and statesman like Lord Haldane become infatuated with things German? Why should the gifted and wise president of Toronto University think so highly of German methods of research as to forget the pressing needs of the majority of his students who do not desire to become Pasteurs, but to become general practitioners? Why should so many of our ablest philanthropists, business men of high calibre, and many other very worthy men value German methods so highly? Instead of answering these questions in detail, we may concede that there is much that is admirable in the careful, methodical, patient methods of the German scientists. There is much in the whole German educational machine that appeals to the instincts of successful men. The word, science, carries great weight, and properly so. Science is knowledge, and, more than that, it is the highest type of knowledge, medical or other. I admit that freely and have for many long years, but many of us insist that the

art of medicine should not be neglected. Science should be dovetailed into art, and should be the mainspring and controlling power of the art or practice of medicine, but science and practice should not be divorced in the training of a general practitioner.

It is, of course, difficult to choose from modern science in all its departments the portions which are best suited to the needs of the medical student. The scientist who has not practised medicine is not qualified to make the proper selections. Through a process of evolution an unfortunate condition has come into a large proportion of our best equipped medical colleges. In framing the curriculum, each science man wishes to give all that is important in his department. As a rule, these are able and conscientious men and are anxious to help the students. It has often happened that two parties in a college are formed. The majority of the primary teachers with a minority of the final teachers work in the German direction, while the majority of the final teachers with a few science men work in the British direction. The science men generally win. Thus we have the medical curriculum framed really by the men least qualified for such a task. Outside the few men in Toronto there is almost a universal opinion in this Province, and in a great portion of the United States, that nearly every medical curriculum in North America is overburdened.

Let us consider the position in the University of Toronto. It happens that its medical faculty is composed of able men both as to their professional attainments and their teaching capacity. For a long time there was much discussion as to British and German methods. At a certain time the pro-German won and the other side yielded with fairly good grace, as I think was their duty. It seemed right to give the methods selected by the majority a fair trial, especially as a new president and a new dean—both highly respected—appeared on the scene.<sup>1</sup>

There is one feature about the German educational machine which is peculiar and at the same time unfortunate. It has destroyed the individuality and originality of the instructive teachers, and has thus impaired their usefulness to an alarming extent. Several months ago, a public man—not a physician—who knows Ontario well and is a very keen observer, asked me the following question. Why is it in the last few years I never hear a graduate say anything about his teachers in the University of Toronto? In former years the graduates and undergraduates of both the universities in Toronto were almost continuously telling me things about their teachers—including yourself, I may say. This question should make us all think rather seriously about the singular results of the machine methods. Let me illustrate by quoting from the presidential address last year: "John Caven—What shall I say of him?—I knew him best as I knew him first as a young and boyish looking lecturer in pathology twenty-five years ago." I thought I myself knew something about teaching, but I was glad to sit at the feet of John Caven, and learn afresh the art of

<sup>1</sup> I had intended to express doubts as to the wisdom of imparting instruction now in vogue in our Provincial University, but I have decided not to do so now. When the commission, which we are told the Government are now appointing, shall have made the whole question of medical education and the granting of licenses, I shall be glad to give my opinion on the subject in the light of my standing of the situation to that body.

making obscure things plain, and difficult things easy for the student. I have heard it said that he was the best teacher of pathology that the university has ever had. . . . His witty remarks," "quick reparation," "shrewd criticisms" endeared him to his pupils. "He was a great teacher." Yet if Caven came back now he would have little or no opportunity to show his individuality or originality.

Now let us go back to New York. I have already said that certain men there were good teachers. Their forcefulness and lucidity made their lectures interesting, impressive, and inspiring. Even a dolt could not help learning much from their lectures. There was a singular but friendly rivalry between them. Each did his best because he desired to be considered a good teacher, and as a consequence to attract large classes. Are there such teachers now in New York? Probably most of us think that men like Abbe and Holt do not come far behind them. Most people, so far as I know, think it is not a waste of time to listen to their instructive lectures.

The courses at many of our universities do not cover half or nearly half of the needs of the general practitioner. His chief aim is or ought to be to prevent people becoming so ill that they need treatment in a hospital. Preventive medicine from his standpoint comprises a host of things outside of ordinary sanitation and the prevention of infectious disease.

I can only refer to a few of the important ailments which come under the care of the general practitioner, which urgently require treatment. The girl when growing into womanhood requires careful supervision for two, three, or four years. Watchful care with simple treatment often makes a young woman healthy and strong at twenty-one years, while through neglect during this period of her life she sometimes becomes a weakling or a nervous wreck. The woman going through the climacteric needs much care, at least she thinks she does, which amounts to the same thing in a way. As a matter of fact, the careful practitioner thinks carefully about the "flushes and heats," investigates thoroughly, and, as is well known, frequently detects a serious condition in time through bringing his patient to the surgeon, who can then save her life. As it is now in Toronto, a few women with such symptoms consult general practitioners, a few go to the gynecologist; but the majority go to the osteopath. These two conditions are simply illustrative. These and many other ailments require treatment such as the following: chronic constipation, "sour stomach," "heart burn," fitful appetite, headaches, backaches, bad breath, abdominal pains, common colds, stiff necks, etc. The proper treatment of these conditions, which are commonly known as minor ailments, will often prevent arteriosclerosis, and various other serious conditions, and yet none of these every day ailments will be found in a general hospital.

Unfortunately the general tendency of the times is to belittle the family doctor or the general practitioner as he is sometimes called. Some of our medical colleges almost boast that they do not pretend to manufacture such a commodity now. A similar condition is observed even in England, but it is not so pronounced as that now existing in this

Province. Mr. Morrison, professor of surgery, Durham University, said a few weeks ago: "For the present surgeons are preeminent, but this is only a temporary phase because the general practitioner, as soon as he can realize his position, will again become, as he always has been heretofore, the backbone of the profession."

The general practitioner realizes the fact that in recent years he has been discredited more or less. All he need do, however, is to assert himself, and he will soon regain the proud position he held thirty years ago as the most important member of the medical profession, and by far the most useful one in the interests of the public. Doctor McCallum says, as I have before mentioned, "that there is setting in a reaction and that our fetish worship of laboratories is changing." We certainly have evidence that radical changes are taking place in many cities of the United States, where the family doctor is coming back to his proper place.

Thirty years ago, in Toronto, the family physician flourished, having the confidence, friendship, and love of those whom he cared for. He treated his patients as well as their diseases. The relationship between doctor and patient was in a large proportion of cases almost sacred. When special work was required, he chose the specialist. Now a large number of the public want specialists only, and are inclined to make the choice themselves. This feature is a serious one and means extra danger and cost to the patient in a large proportion of cases.

A singular result of science stuffing has been a remarkable growth of irregular methods, of which the amazing prosperity of some of these practitioners is a striking example. There is an instinct in a large portion of the public which craves for treatment of themselves as well as their diseases. They want a bit of human sympathy, perhaps even more than they desire mathematical precision. As many of our universities have ceased to train every day doctors, a large portion of "well to do" citizens in Toronto (and I have been told of other cities in Ontario, such as Hamilton), who formerly had family doctors of the "regular sort" are now under the care of men outside the regular profession.

The opinions I have expressed may be briefly summarized:

1. The medical curriculum is overloaded.
2. There is no proper training of the general practitioner.

I do not intend to make any suggestions now as to procedure in the future, but I think the opinions of those who advise the institution of two courses—one for general practitioners, and another for specialists—are worthy of consideration.

30 GERRARD STREET EAST.

**Treatment of Cervical Metritis.**—Ronneaux, in *Presse médicale* for July 25, 1914, it is stated, has reported a number of cases of metritis localized in the cervix, in which a rapid cure was effected by applications of the galvanic current through the vagina for periods of twenty to forty minutes. The intensity of the current used did not exceed twenty milliamperes.



## A HELPFUL SIGN IN DIAGNOSING LATENT SYPHILIS.

By IRVING WILSON VOORHEES, M. S., M. D.,  
New York.

Like many other infectious systemic diseases, syphilis very frequently first manifests itself in the mucous membrane of the nose, mouth, and throat. In performing the now very common operation of submucous resection of the nasal septum on known syphilitic subjects, I have frequently been struck by the difficulty in starting the mucoperichondrium when beginning elevation at the line of incision. Is it not possible that this is due to a productive inflammation in the perichondrium and periosteum, which might go on to tertiary destruction of the septum?

Whatever the explanation, I have been able in three cases to make a diagnosis of latent syphilis while doing this operation. In each case it was difficult to start the elevation, there was more bleeding than should commonly obtain with good technic, the blood seemed darker, and the cartilage and bone both had a rough, uneven feel. This latter point is, I think, of great importance, and has induced me to examine with the finger all pieces of bone removed by intranasal surgery.

One patient had been a chronic invalid for twenty years without diagnosis or treatment that had satisfied him. He was exceedingly neurasthenic and worried constantly about his health. He read everything of a medical nature he could get his hands on, including much quack literature. An eminent London specialist exenterated the right ethmoid region for chronic nasal discharge. The result was only partially satisfactory. Operation for deviated septum was advised by the writer and consented to. The bone and cartilage both had a rough, uneven feel, and almost a wormeaten look. The patient denied all possibility of syphilitic infection. Nevertheless, his blood tests reported from two laboratories were 2+.

Recently a retired officer in the United States navy was referred for nasal insufficiency by his family physician. There was a sharp deviation of the septum to the right, hypertrophy of the left middle turbinate, and a discharge of thick purulent secretion from the right middle meatus. Transillumination showed the right ethmoid region very dark compared with the normal left side. The right middle turbinate was removed, the ethmoid labyrinth was curetted out, and a submucous resection was done, all at the same sitting. Although the patient denied absolutely every evidence of syphilis, the cartilage and bone removed were rough and uneven to the touch.

The Wassermann reaction was reported 4+ by the New York board of health, but this did not satisfy the patient, who refused to believe himself a victim of syphilis. Therefore he was referred to the New York Eye and Ear Infirmary laboratories, where Mr. E. B. Burchell did a Wassermann and Noguchi control tests. The result was again 4+.

In view of these facts, it seems advisable for surgeon rhinologists to examine all bone removed from the nose at time of operation, and if there is any reason to suspect a syphilitic infection, the pa-

tient should be referred to a laboratory for the Wassermann tests. It is always wise, in order to convince the patient, that two separate laboratories receive specimens of blood at the same time.

A patient without active symptoms is very loath to believe that he has syphilis. Since these are the cases most frequently overlooked, it behooves us to insist upon a blood examination if there is any cause for suspicion. This suspicion may be first aroused during an intranasal operation.

14 CENTRAL PARK WEST.

## PRURITUS—FOR EXAMPLE.

By WILLIAM P. CUNNINGHAM, A. M., M. D.,  
New York.

Assistant, Dermatology, Hotel-Haus, Central Avenue,  
St. Louis, Mo.

It is conceded that men are largely the victims of circumstance, and that habits are formed through a disinclination to oppose pressure. The law of inertia, the analogue of the law of gravitation, drags us to the level of least resistance, and we blunder along, pushed hither and yon by the obstacles we encounter. With most of us our religion is a habit, our politics is a habit, our eating and drinking, and manner of speaking are habits, and in many instances habits of an unwise and unlovely character. The yawning of the excited partisan in early November is, ninety-nine times in the hundred, the thoughtless repetition of catch phrases that he has accumulated from the cart-tail orator or his newspaper guide. We gulp the most unwholesome edibles, in the most outrageous combinations, and swallow the most destructive fluids because through long indulgence these things have acquired a horrible fascination and we lack the nerve to make an effective resistance. It is not necessary to retail the long list of culinary and bibulous atrocities in high favor among the laity and, to our shame, among the members of our own profession. The citation would be tiresome and unprofitable. But this gets me to the point whither I was striving, that medical men are—like every other stripe of men—the slaves of circumstance and habit. We eat and drink the wrong things, we smoke and chew tobacco, we permit our wives and daughters to indulge in the same sartorial absurdities as other fashionable fools; we run after cars at the imminent risk of cerebral apoplexy, we sit for hours in a smoke laden banquet hall and sally forth boisterously in the cold of a wintry morning with everything nicely prepared for the onslaught of lobar pneumonia. Aged *Æsculapians* are seen haunting *thés dansants* and hot footing it through the gyration of the tango. Men whose white locks and noble profession should be a guarantee of prudence, burst upon our startled vision capering through the sensuous courses of the turkey and the fox trot; generally in close adhesion to female partners in their teens. Their grotesque diablerie is doubly amazing for that they accentuate their rusty nimbleness in a vain attempt to fool the eye of judgment and delay the march of time. If men of sixty—odd full of the knowledge of what leads to disaster, can be so swept away in the current of ridiculous fashion as to make public spectacles of themselves, why need we be surprised to find that in their professional careers they have been subservient to cir-

circumstance, the bond slaves of habit, that fossilizes thought, paralyzes initiative, and reduces them to the level of unprogressive routine.

In the treatment of disease in general this state of mind is obvious. We do the things that we were taught to do by those who had been taught to do the same. We cling to our first impressions with a tenacity that no reverses can relax. A habit of mind is formed which resists innovation like a shield. When this has been hardened by the lapse of years, its impenetrability is absolute. Let any of us pause and consider whether he treats pneumonia any differently now from the way in which he was instructed to treat it twenty years ago. Perhaps there have been no advances made in the treatment of pneumonia in that time. Perhaps there have been some. Is our habit bound practitioner prepared to consider any deviation from the method he was taught and fondly cherishes? Realizing that milk is a splendid culture medium and that immediately upon entering the stomach it ceases to be a liquid and becomes a solid food; realizing further that it has a marked tendency to constipate and aggravate tympanites, is he willing to admit that the antediluvian manner of feeding typhoid patients has been rationally superseded?

Faced with the inerrancy of the Wassermann test, is he prepared to admit that syphilis is not cured after three years' administration of mercury; that it is not cured by one, four, or forty injections of salvarsan; that as far as our vision can carry at present, it is never cured at all except by the unknown and persistent forces inherent in the patient's blood; that even in cases where there have been no indications of activity for twenty years or more, the nervous system may suddenly succumb to an insidious invasion of its functioning tissue; that the offspring of cured (!) luetic parents coming into the world unmarked with visible evidences of the plague, and growing up in apparent freedom from its blight, may nevertheless develop at maturity mysterious abnormalities of brain or bone or blood; that many of the maladies to which we have no clue are thus engendered; that the vitiation of the stream of life once effected cannot be purged away, but strikes in devious and unknown ways through generations of transmission? He may be straying too far afield who avers that *Spirochaeta pallida* is the cause of all disease; but he could scarcely be classed as an irresponsible visionary, who should maintain (despite the libel put upon the helpless Indians by the sea dogs of Columbus) that, arising among the peoples that have attained to civilization, it must have been engendered by the vices incident to civilization. Such vices are the deviations from the natural congress of the sexes in the seemly, sane, and salutary family tie. Its pancacogenetic potency is evidenced by its proneness to attack the structure of the human organism in *all* its vital parts. It destroys the blood-vessels, nerves, and special senses. Skin, muscle, fascia, bone, and organal parenchyma are invaded and laid waste. The massive aorta is devitalized and strained to the breaking point. The smaller arteries are sclerosed and inelasticated. The stiffened capillaries starve the yearning tissues. Bone is necrosed and features are deformed. The neuroglia succumbs to the gumma and a subtle fibrosis, and we have the

blind, the deaf, the halt, the paralysed, and demented.

There is no disease with which we are acquainted that produces one tithe of the destruction of this merciless marauder. Tuberculosis attacks the lungs and thence spreads infection into other organs; but while it taints the blood it does not wreck the artery. Rheumatism will maim the heart, but will not cause an aneurysm. Alcohol will cause cirrhosis of the liver, but will not cause paresis. Carcinoma will send its menacing tendrils deep into the essential elements of the human organism, but except through the accident of location will not destroy the bloodvessel. Lues parallels the devastation of all the chronic pathological processes otherwise denominated and is signalized by a peculiar propensity for ruining the channels of the circulation. Add to this the suggestive circumstance that lues imitates so many other conditions, and it is not so wildly improbable that it may be the grand progenitor of all the ills that flesh is heir to. Coming down through the ages, cross bred, attenuated, modified by collision with powerful idiosyncrasies, diversified in a thousand ways by a thousand metabolic accidents, it is conceivable that it may have given birth to weaker satellites possessed of only part of its malignant activity. Will our habit bound practitioner concede or even entertain the idea of this nosological original sin? Will he concede his impotency to efface it? Will our more recently initiated confrères, imbued with the tremendous and almost omnipotent reputation of salvarsan in the eradication of lues, ever forsake that delusion or will they carry it on to succeeding generations another hideous heresy sustained and sanctified by constant repetition?

Let us pass rapidly over certain flagrant illustrations in general medicine of this blind adherence to hidebound usage, such as the pushing of pressure raising stimulants in cardiac dilatation, where the rational procedure is absolute rest; the administration of stimulating diuretics in acute nephritis, or in the acute exacerbations of chronic nephritis, where the kidney is swollen with water and the indicated remedy is vicarious urination via skin and bowels and the reduction of the colloid swelling by the alkalies and neutral salts; the administration of stimulating expectorants in acute bronchitis where the indicated remedy is relaxing ones; the free handed administration of the nauseating salicylates in rheumatism, when the indicated remedy is the withdrawal of provocative ingesta and the massing of the alkalies; the forcing of the bromides in epilepsy, when the indicated therapy is the reduction of the chloride of sodium and the cessation of all irritating habits, such as smoking and drinking; the persistent douching of the vagina for a ropy leucorrhea, when relief can come only through the repair of a cervical laceration; the administration of tincture of iron in the acute pharyngitis of infectious diseases, such as diphtheria, scarlet fever, and follicular tonsilitis, where the indicated treatment is the avoidance of irritation and the systematic cleansing of the parts; the clumsy, nauseating, and wasteful administration of ether by inhalation, resulting nine times out of ten in a persistent emesis threatening the integrity of the sutured wound, when the rational method is the ether-in-oil enema obviating every one of these objections;

passing over these and sundry other exemplifications of the objectionable practices under discussion, let us direct our investigation to the field of dermatology and determine whether we have advanced to the forefront of original inquiry or are stumbling along in slavish imitation of our predecessors. To facilitate this, let us take the subject of pruritus.

I do not recall whether Dante in his *Inferno* depicts any of the damned as tormented with the itch. If not, he failed to cover the subject properly, for if there is one sensation calculated to drive its victim to the point of insensate fury, it is pruritus. No realization of the eventual aggravation of the torture will restrain the sufferer from the momentary relief of scratching. Tissues are rent and infected and the area of disturbance is extended, but reason, will, and public decorum yield to the overmastering impulse. Self respect cannot stay the disconcerting demonstrations, even in public conveyances. Sleep becomes *terra incognita*; bed becomes a place to be dreaded, wherein all nervous phenomena are more intense and piercing. What diabolical influence is in the fall of night to magnify remorse, to send disquieting thoughts rioting through the brain, to edge and point and multiply the pangs of paresthesia? Shakespeare has been paraphrased to read, "the itch hath murdered sleep." In doing this it has murdered nerves, ambitions, futures, and even life itself. Note the commonest expression on the tongue of the distracted patient, "if I do not get relief I will kill myself." And many patients have carried out the threat. This would appear to be a topic worthy of our closest consideration.

The disturbance is so common and the results are so vicious, that it assumes commanding importance in the field of therapeutics. That its importance has not called forth a corresponding effort is evidenced by the results. If you see a hundred remedies for the same condition, you may be assured that they are shots in the dark, hitting by blind luck, by the fortunate encountering of an idiosyncrasy, or by the coincidental amelioration due to causes beyond our knowledge or control. To be sure, the causes of pruritus are many and various, and the remedies might reasonably be expected to be the same. But the remedy for the causes behind the pruritus are different from the remedies for the pruritus itself. For instance, carbolic acid and bichloride of mercury are used in combination for the cure of lichen. The carbolic acid will not cure the lichen and is added for its antipruritic effect. The mercury is the curative used both internally and externally, but it will not directly influence the pruritus. So the relief of the itching is often an immediate and independent demand on our ingenuity, having nothing at all to do with the cure of the pathological process, except so far as the restraint of persistent trauma will contribute to that end. Conversely, the cure of the pathological process will cure the itching. There are many remedies prescribed for itching, which clearly indicates the inadequacy of all of them. If we had in phenol a reliable antipruritic, it would not be necessary to resort to anything else. The same may be said of menthol. Acetanilid externally exercises some controlling influence over this symptom, but treacherously fails

us on many occasions. Resorcin has been endowed with soothing qualities by clinicians of repute, but is just as tantalizingly unreliable. Hydrocyanic acid is open to the same objection. Sodium bicarbonate and the alkalis in general come to our aid in isolated cases of general pruritus, but the effect is transitory, if appreciable at all. It is contended that hydrotherapy is the element of active value and that the alkalis simply make the procedure fussy and impress the patient. The various preparations of tar are high in favor in the itching of chronic eczema, scabies, and dermatitis herpetiformis. But these agents cannot be called pure and simple antipruritics because they relieve the paresthesia by curing the underlying disease. We are considering now the remedies that relieve the pruritus only.

Camphor and chloral rubbed up together until liquefied and added to a bland base have a great reputation in producing this result. The fact that they have several close competitors is significant. A ten per cent. watery solution of ichthylol is highly esteemed for its soothing qualities, especially about the genitals. Probably in no other situation is itching more insupportable. The mere dread of its occurrence in public places where the poor relief of scratching is interdicted by a sense of shame, to say nothing of the chances of arrest, is certain to precipitate or aggravate it. Aside from the mental torment thus induced, the actual physical distress, even under conditions where there are no restraining influences (in the privacy of one's room and particularly in bed), is utterly inconceivable. Heat, friction, and moisture are responsible for the malignancy of genital pruritus. It is demonstrable that if the solution just described was as highly effective as its proponents maintain, it would speedily rob this symptom of its terrors. As Mrs. Micawber would say, "experientia does it," and in regard to this contention "does it" completely.

The English urge the efficacy of liquor carbonis detergens in a three per cent. solution, but as they are earnest advocates of other agents they must have had some disappointments. Watery dilutions of lysol in proportions of one, two, and three per cent. are vigorously supported. Thymol, three per cent., with liquor potassæ half as strong, in glycerin and water, is a marked favorite. Salicylic acid and borax in about three per cent. solution in alcohol, glycerin, and water (the last three ingredients varied to meet individual requirements), is recommended by our English brethren alike for its soothing qualities and its freedom from odor. Alcohol is suggested in these above mentioned lotions, not only for its solvent action on the contained ingredients, but also because of its refrigerant action in rapid evaporation. Chloroform, one and one half per cent., in glycerin and water, acts in the same way. Sodium sulphide, three per cent., in water and glycerin, does not lack convincing testimony. The dear old revered lead and opium wash has vindicated its usefulness in another direction by allaying pruritus. Some versatility there, to be capable of mastering pain and itch! High frequency currents are in great repute among electrical experts for general or local itching.

Genital outbreaks, idiopathic or associated with eczema, have received some special applications not



usually employed in other situations. Pruritus scroti and pruritus vulvæ are sometimes influenced by being painted with nitrate of silver dissolved in sweet spirits of nitre, five or ten grains to the ounce. A saturated solution of boric acid is highly extolled. Compound tincture of benzoin painted on with a camel's hair brush at night has weighty authority behind it. For pruritus ani everything prescribed for pruritus anywhere else has been exhaustively employed. The name is legion. Cocaine, belladonna, tar, chrysarobin, ammoniated mercury, carbolic acid, menthol, distention of the anal sphincter, the external application of very hot water, the alternate application of hot and cold water, have, among an almost endless parade of remedies, been accorded a small measure of success in lessening the maddening nervous excitation. The results, on the whole, have been so notoriously unsatisfactory that the surgeons have been called on to interfere and have attempted to solve the problem by cutting the cutaneous nerve twigs in the tissue about the anus. With communications severed between the anus and the focus of reflex irritation (be it close as in a strictured urethra or remote as in hepatic cirrhosis), it is, *a priori*, reasonable to expect a cessation of the local disturbance. Whether a *posteriori* (this is not intended as a clumsy joke), the results will be all that is expected is another and very different story. Obviously itching within the rectum will not be controlled in this way. And there is no question whatever that it is sometimes situated there.

Sufficient evidence has been adduced to prove that pruritus, as at present managed by the majority of practitioners, both special and general, is influenced only in a haphazard and uncertain manner, and that the results actually obtained are attributable to other factors perhaps than the particular medication. Despite the lesson of experience, it is so ingrained in our nature to go on doing the things that we have been wont to do that we cannot see the futility of it all. If an itch is to be treated, instantly we reach for carbolic acid. The cerebration here is as mechanical as blinking at the sun. Itch—carbolic acid. No thought. Habit. Failing to relieve—increase the carbolic acid. Persistent failure—switch to menthol, or upon some atavistic inspiration passing all human understanding, add menthol to the unsuccessful carbolic acid. Disappointed again—add thymol to the two unsuccessful agents. If accorded another opportunity by an unusually complaisant patient, abandon this deceptive combination and essay camphor-chloral, or hydrocyanic acid or chloroform in alcohol or acetanilid, or ichthyol or liquor carbonis detergens, or any other of the inexhaustible series erected by purblind persistence. It never occurs to us to analyze the conditions associated with the symptom and its attempted cure, and try to determine why an agent effective in some instances is ineffective in others, why some writers will put forward claims that very few can substantiate. We do not consider all the factors in the problem. Some are overlooked unquestionably or results would be uniform. These factors are four in number; the patient, his ailment, the remedy, and the *manner* of applying it. If you fail to give due consideration to every one of these, you will naturally get a faulty result. It is impera-

tive to approach the task with all preconceptions as to the especial efficacy of any particular remedy ruthlessly cast aside.

Item one, the patient. A great thinker has said that "men resemble one another only in being human." Like most aphoristic utterances this contains a modicum of truth and a plenitude of error; but it serves to impress the fact that in attempting the solution of any pathological problem the peculiarities of the individual must be studied. His various qualities of mind and body must be ascertained and estimated. Habits, sensibility, imaginativeness, degree of resolution and natural vigor, are elements that have a marked bearing on the general result. A hypersensitive person will suffer more from pruritus than a phlegmatic one. Imagination prolongs and accentuates every perversion of sensation. A high strung intellectual person will suffer more acutely from scabies than a sodden homeless outcast, and yet the physical provocation may be incomparably greater in the man of lesser sensibility.

Item 2, the ailment. It is understood, of course, that organic diseases and constitutional dyscrasie may be the cause of the pruritus. Diabetes directly by the irritation of the skin from excreted sugar will set up a most rebellious form of this affliction. Jaundice also produces the same effect by the deposit of the bile salts in the tissues. Chronic nephritis through circulatory disturbance, or the overstimulation of the sweat glands in an attempt to supplement the work of the laboring kidneys; or through the irritation of the cutaneous nerves by the toxins abnormally abundant in the blood, or through the dry and harsh condition so characteristic of such cases, is supplemented in its list of horrors by the addition of a general pruritus. Cardiac insufficiency, producing a general retardation of the circulation, may affect the terminal filaments in the skin with this form of irritation.

It is everywhere acknowledged that intestinal stasis is a fruitful source of abnormal dermic manifestations. So in a persistent pruritus of unknown origin, give a little time to its consideration. It is probable that the importance of this extremely common defect has been grossly exaggerated; it is certain that it has been greatly overdrawn in the imagination of the laity. It is undeniable, however, that some pathological significance attaches to it, and as regards the reactions on the skin, the connection is clear and positive. Itching appertains to several functional and organic nervous diseases. The hysterical are prone to it, and the neurasthenic. It is noted in locomotor ataxia, chronic myelitis, and disseminated sclerosis. Any lesion of the nervous system may induce this perverse sensation. It would appear that itching is rather a broad topic, and that the unreliability of carbolic acid is readily explained.

As noted above, remedies for the itching are frequently entirely different from remedies for the disease that causes the itching. Very often they will not cure the disease; but the cure of the disease will naturally cure the itching. We are often put to it to devise ways and means to check the itching while we are attempting the slower process of removing the cause. The method adopted will vary with the character of the provocation.

In senile pruritus we are confronted with a cause

that cannot be removed. Palliation is our only resource, and it is for the most part utterly unsatisfactory. The skin is dry and keratotic. This nutritional disturbance is reflected in the terminal nerves. It is universal, although it may be especially distressing in hypersensitive locations. Against this implacable embitterer of the evening of life all the legion of antipruritics have been flung in vain—a fair test of the actual worth of any of them in the face of an ineradicable cause. So insignificant are their effects that we are forced to resort to nerve numbing agents administered by mouth. Even the full relief from these is frequently denied us because the patients are at the time of life when such drugs are badly borne. Cannabis indica, gelsemium, and the coal tar preparations are employed with extreme caution. Their danger “makes us rather bear those ills we have than fly to others that we know not of.”

An acute eczema would naturally be managed in a different manner from a chronic eczema; an urticaria from a dermatitis herpetiformis; a lichen from a spinal reflex. It will not do to slap carbolic acid on the lot and let it go at that. Nowhere in the whole range of applied therapeutics is it more clearly shown that “one man’s meat is another man’s poison” than in the application of remedies to the skin. A dry skin will call for different measures from an oozing one, a thickened skin from a thinned one, a hyperesthetic skin from one of normal sensibility, the skin of the normally constructed individual from that of the fussy fidgety introspective *ego ipse* hypochondriac.

Item 3, the remedy. Some of these separated considerations naturally and necessarily overlap. Some reference has already been made to remedies. The sovereign remedy in every pathological condition is the removal of the cause. This is a self evident truth. The remedy for the inflammation from a foreign body in the eye is not an eyewash, but the extraction of the foreign body. The remedy for the pain of a fractured leg is the realignment of the fragments that are poked into the surrounding tissues. The remedy for an itching dermatosis is the cure of the dermatosis. This is practicable sometimes, as in urticaria where an active cathartic eliminates the toxins from the intestinal tract; as in trade eczema when the patient can be made to stop the handling of irritating materials; as in lichen planus where the bold administration of bichloride of mercury will speedily influence the eruption. Where for physical or economic reasons the cause is irremovable, palliation must be attempted. We have seen that there are such causes. Senility is one. Organic disease of the liver exciting pruritus ani is another. The fact that a man must eat even if he itches is another. Men cannot forsake their accustomed toil at will even to escape this evil. The dyer must dye, for it is the only way he has of living. When after a consideration of all the circumstances, we are driven to the necessity of attacking the symptom irrespective of its origin, what shall be the order of our going? First disabuse the mind of all illusions regarding the potentiality of all the warmly advocated antipruritics. Do not be unbalanced by a name, either of a man or his remedy. Think out the individual case before you and attack it on a

common sense basis. It is true that we must be guided in some degree by the experience of others, as life is too short to learn everything at first hand. But we can digest the evidence they adduce; we can analyze it and try it by the fire of our own intelligence. If so many different things control itching on some occasions and fail utterly on others, the rational inference is that (the testimony of the witnesses being unimpeachable), there must be some point of divergence between the methods making for and against success. This brings us to the last item in our summary, namely,

#### THE MANNER OF APPLYING THE REMEDY.

We are agreed that the patient has been carefully studied with regard to his peculiarities, the character of his ailment, and the feasibility of removing the exciting cause, and that we are compelled to resort to the antipruritics in order to accord him a measure of relief. How shall we employ the agents that we may select? It is safe to say that if carbolic acid frequently fails, its actual antipruritic value must be low. Its success then must be attributed to the combinations in which it is made up, and the thoroughness with which these are applied. These combinations are mulls, pastes, salves, powders, and heavy lotions. Thoroughly applied, these afford protection from air, moisture, and accidental contacts. That is the secret of success in treating pruritus. That is the explanation of the success of so many different agents in the hands of so many different investigators. It is probable that any non-irritating substance carefully applied would have yielded the same results. The odoriferous element gets the credit, but it was the liberal use of the protecting mass that actually achieved the result. This too explains why hospital cases do better than private cases, and why private patients who are followed up do better than dispensary patients who use their remedies in a slipshod, careless, and incomplete manner. How often have we seen plain olive oil afford relief unobtainable by more elaborate medication! How dependable have we found compound wool fat ointment, made up of nothing but boroglycerin, wool fat and petrolatum! How surprising has been the response to stearate of zinc, which gives an unctuous coating to the supersensitive skin and excludes air, moisture, and friction! A trial may be made of any of the so called active agents high in favor among dermatologists, and it will be speedily ascertained that, the menstruum being liberally applied, the results will be entirely different from those of a meagre application. And this will not be because we use more of the active agent (for the proportion remains the same in an ounce or a ton), but because you protect the parts with a bland buffer.

The action of lotions would seem, at first glance, to controvert the position assumed above. They are moist and do not exclude the air and do not protect the part to any great degree. Granted! But they act on the principle of refrigeration when they are clear, and upon the principle of refrigeration and the deposition of a protecting powder when they are heavy. Calamine and zinc lotion leaves an evenly distributed bland powder over the surface after the rose water evaporates. The English augment the effectiveness of this formula by adding oil and styl-

ing it calamine and zinc liniment. It is a matter of nice discrimination when the lotion or the powder or the salve is most advantageous. If it cannot be determined in advance, it can be by a little careful experimentation. But always should it be remembered that the application must be generous. A mind emancipated from the shackling misconceptions of the old habit-formed dogmas, will readily grasp the importance of giving serious consideration to the four factors concerned in the therapeutics of pruritus, and will be especially impressed, not with the conspicuous efficacy of any application, no matter how highly endorsed, but with the necessity of employing it in a manner to afford protection to the sensitive area.

323 WEST FOURTEENTH STREET.

# THE GOD-MAN OR JEHOVAH COMPLEX.<sup>8</sup>

BY BERNARD JELLIFFE, M. D.,  
Washington, D. C.

The term "complex" was first introduced into psychoanalytic literature by the Zurich school, and was by that school defined as a group of ideas which belong together and have a common emotive tone. I quote from Freud (1). Brill (2), likewise employing the term in the sense of the Zurich school, defines it as a complex of ideas of marked emotional accentuation which was split off from consciousness and repressed into the unconscious. The concept of the complex has received its most lucid and thorough exposition in the English language by White (3) in his *Theory of the Complex*. According to this author, the term, complex, as used in psychoanalytic literature, is but the recent German clothing of an idea that has found expression for many years in France and later in this country, under the designation of "dissociated state." The term complex, according to him, is employed to designate a group of ideas clustered, constellated, as it were, about a central event, which event has a large content of painful emotional coloring. Combining the definitions above quoted we see that the term, complex, embraces at least three main ideas; first a group of ideas clustered about a central event of a highly emotional content; second, the painful nature of this event; and, third, the splitting off of this system of ideas from consciousness and the repression of it into the unconscious.

Whatever may have been the reason for just such a definition of this term, it is safe to assert that in defining the term, the concept which it was intended to symbolize was largely viewed from the standpoint of its potency for evil. The concept of the complex became popularized because of the psychopathological states which it evoked.

Now we know from actual experience that events of a strongly emotional value and the ideas developed and constellated about them cause psychopathological states in not infrequent instances, even though the event itself with the entire ideational system built around it is in the individual's consciousness and readily accessible to him.

Does the term, complex, apply to such a system of ideas, and if it does, is splitting off and repres-

sion a *sine qua non* of the complex? We know furthermore from actual experience that in tracing the genesis of certain psychopathological states, we frequently wind up by discovering as a causative factor some repressed complex of a highly emotional painful nature. It may be readily conjectured why a painful complex may have a deleterious influence upon the individual's mentality, and by the same token it becomes obvious why dissociation and repression is the regular lot of such complexes. But is it on this account justifiable to assume that a complex is invariably of a painful emotional content? In other words, does the complex always work in a destructive manner because of its painful nature, or, on the contrary, may not complexes be of a decidedly hedonic nature and thus work in a constructive manner? Jelliffe (4), in discussing the paper of Williams at the 1913 meeting of the American Psychoanalytic Society, states among other things: "Like many another I have had to treat a number of patients who were partly aware at least of their conflicts. They lay very obviously at the surface." He cites the case of a woman whom he had carefully analyzed for nine weeks and who, after carefully listening to the psychic reconstruction which he had effected from her dream symbolism, rather naively said, "Well, I know all about that myself," and no doubt she did. This of course did not in any way detract from the therapeutic value of the very thorough analysis, as Jelliffe said—he had probably grouped the material in a way that she had never done. However, the recognition of this fact—namely, that patients do battle with conscious complexes which are at the bottom of their troubles—very strongly suggests that the quality of splitting off and repression into the unconscious is not an essential part of the complex.

I would not have taken the space to bring forward these arguments were I not earnestly of the opinion that the slogan of the pure Freudians, namely, do not expect a cure unless you have analyzed the patient's unconscious mind to its very limits—if indeed such a procedure is possible with the unconscious mind of any member of the human race—is not to be taken literally. I need not emphasize the fact that I fully subscribe to the belief that the more thorough and far reaching the analysis, the better for the patient—but I do believe that a lot of good may be accomplished and is being regularly accomplished by a proper handling of the patient's conscious complexes, if I may use the term complex in this connection. I have handled such complexes in myself and have seen it work well in others. I wish I were able adequately to present Bleuler's theory of ambivalence in defense of my contention that the complex need not essentially be of painful emotive nature.

There is no valid reason to suppose that only events of a strongly painful emotivity have the power of building up the constellations of ideas which we know as complexes. If such expedients and aids are used by the psyche in its function of defense and compensation when dealing with painful situations, is it not reasonable to suppose that the same mechanism takes place in its efforts to perpetuate and hold fast to events of highly pleasurable emotive content? Isolated ideas, unattached ideas,



ideas devoid of an emotional component are ideas of a very low valency, and the human mind at any stage of its development is not the result of such an ideation. It is rather the end result of groups, constellations, complexes, if you please, which have as their central point events of a highly emotional content, either painful or pleasurable. To reiterate, it is very possible that the painful nature of the complex and its repression into the unconscious, have been so largely emphasized because they have been viewed from the standpoint of the psychopathologist. Permit me to say that this argument is not brought forth for the purpose of initiating a controversy about terms—mere symbols whose meaning can only become clear to us when we are thoroughly familiar with the concepts which they are supposed to symbolize. It is rather an effort to clear up the uncertainties concerning this problem which exist in my own mind.

We are concerned in this paper with a certain condition which has been termed the "God man" or "Jehovah" complex, and as the only complete exposition of this subject that I was able to find in the literature is a paper by Ernest Jones (5) in the *Internationale Zeitschrift für ärztliche Psychoanalyse*, I shall quote extensively from this author. Those who are not very familiar with the German language I would refer to the very excellent review of Jones's paper by Emerson (6) in the *Psychoanalytic Review*.

Jones defines this complex as "the belief to be God—and the traits of character developing from such a belief." It is doubtful whether Jones intends to limit the psychopathological state described by him as being based upon this complex just to this idea—namely the belief to be God—or whether one may include in it all those psychopathological traits which result from a patient's striving toward a higher, superhuman goal—toward a state of omnipotence. Neither must one lose sight of the fact that many of the traits described by him under this special state are met with regularly among all sorts of individuals who are far from being abnormal, and it seems to me that here especially one sees a very clear illustration of that well known fact—a fact strongly emphasized in Adler's (7) book on the neurotic character, namely, that the neurotic shows no trait of character which cannot likewise be demonstrated in the normal individual. These traits become pathological in nature when, instead of serving merely as means toward an end, they become endowed by the individual with values which are as high as, or even higher than the very end which they are to bring about. The neurotic defies these traits, and takes them literally as the very guiding principles of his life. Jones, in tracing the evolution of the fantasy of identification with God, says, "Such a megalomaniac fantasy is scarcely to be understood, if one does not recognize the close relation between the idea of God and of the Father. From a purely psychological standpoint the idea of God is simply an enlarged idealized and projected idea of the father. The identification of one's self with the beloved object is a regular thing and regularly takes place with the child in relation to its father. It is only natural, therefore, that a similar relation may evolve with respect to the Heavenly Father, God.

The passage from a mere obedient imitation to identification takes places very quickly and in the unconscious they are practically identical."

According to Jones, the principal root of this complex lies in an enormous narcissism. All of its characteristics come either directly from narcissism or are in close relation to it. Unmeasured narcissism leads inevitably to an overwhelming admiration of one's own power and superiority, physical as well as spiritual, to a trust in one's own wisdom. Autoeroticism and exhibitionism are two psychosexual tendencies especially closely bound up with this. The opposite of exhibitionism, the craving to look and know, is always found with it.

Clinically, these individuals are found to be hiding themselves in a veil of secrecy; they are unapproachable, they will not live near others. Jones was told with pride by one of them that he lived in the last house in the city. They lay the greatest stress on private life, which is on the one hand the direct expression of autoeroticism and on the other a reaction to the repressed exhibitionism. There are therefore two elements in this tendency, the wish not to be seen, and the wish to be remote and unapproachable. Bound up with this desire for inaccessibility is the desire for mystery. Such a man is very slow to tell his age or name or business to strangers. He writes, unwillingly, ungracious letters. In spite of a strong demand for correct speech he seldom expresses his thought clearly and directly. His diction is characteristically long winded, involved, rambling, and so bombastic and dark that the reader can hardly understand what is meant. In striking contrast is that the handwriting is generally clear and readable. Such people are unsocial in the wider sense. They take up only with difficulty any activity with others, be it science or business. Their ideal is to be the man behind the throne. As is to be expected, there is associated a strong tendency to exhibitionism—a complementary tendency, curiosity. Jones says often we meet a higher form, a sublimation of this tendency in the form of a great interest in psychology.

A less direct result of narcissistic exhibitionism is the fantasy of omnipotence. Perhaps this is most closely connected with the feeling of the power of money. Such men set out to be multimillionaires and delight in the thought of their power. The characteristic subgroup in this relation is that of omniscience. This can be regarded as simply one form of omnipotence, for whoever can do anything, knows everything also. The path from the one to the other shows itself most clearly in prophecy.

The difference between a god and a prophet is often indistinguishable. One of the worst characteristics of the type under consideration is the opposition to new knowledge. This follows from the feeling of omniscience. There are two typical forms of reaction: 1. The one to modify the idea, give it a new name, perhaps even spell it differently; 2, the other is to deprecate the newness of the idea, take away all emphasis, distinguishing it from older ways of looking at the subject, and finally maintain that one had always known it. Of special importance is the relation of the individual to time. Age, death, power, wishes, hopes—hopes are naturally of the greatest importance, to one who holds he is

omnipotent and omniscient. The relation to past time concerns his own memory. This he holds to be infallible. The ease with which he prophesies shows his feeling of power over future time. Such people are interested in speech. They regard themselves as authorities in literary style. Two characteristics stand in direct relation to narcissism, their relation to advice and to giving judgment. They give advice reluctantly because of the responsibility. Religion is of the greatest interest to such people. As a rule they are naturally atheists, because they cannot allow the existence of any other god.

One of the characteristics of such people is the overwhelming desire to be loved. It is seldom expressed directly and manifests itself more through a striving for praise and admiration than for love. They busy themselves much in their unconsciousness with their own immortality, whether it be a continuance of their life or a series of rebirths. In general, such people have a passion for romantic idealism, hidden often under a gloss of materialism or realism.

The castration idea plays a quite important role, both in the form of castration wishes against the father and a fear of castration on the part of the younger generation. The latter is as a rule the stronger and leads naturally to a strongly pronounced jealousy against younger rivals. The observance of this is seen in the desire for protégés. Not all gods have the same characteristics, therefore the type varies according to the particular god the person identifies himself with. By far the most important of these variations attaches itself to the idea of God's Son. The three principal characteristics are rebellion against the father, salvation fantasies, and masochism. In other words an Oedipus situation in which the hero son is a suffering savior. In this class the mother plays an especially important part, and her influence shows itself in particular ways. Salvation can often be gained only by a terrible self sacrifice, through which the masochistic tendency gets full satisfaction.

Under the influence of the God man complex, characters develop in two ways. On the one hand we have men who are truly godlike in their characters, and on the other, men who are of almost no use socially.<sup>1</sup>

Jones is to be congratulated upon the masterful description of this group of traits of character as belonging to what he terms the God man complex. All of us have met with these individuals who, while treading the earth in common with us, behave as if they were constantly touching the skies—individuals who in their conduct and every gesture betray the fact that they are laboring under an assumed fictitious habitus which is to mark them as a sort of superman, as a god among mortals. History furnishes us a few notable examples of this type of mortal, who succeeded in not only making themselves believe in their own omnipotence, in their identity with God, but who also acquired an enormous following, and it is extremely gratifying to note this attempt at an individualistic psychological interpretation of a psychological fact which has been a rather common manifestation in the psychology of the human race throughout its centuries

of existence. In the field of psychopathology we see this complex exceptionally well illustrated in the paranoiac. I have a patient under observation, probably known to most of the members of this society, who for the past thirty years or more has been absolutely extrasocial just on account of this exaggeration of his ego to the point of deification. He has never been able to associate with people on a basis of equality—the ordinary mortal could be tolerated by him only when he was able to establish a relationship of master and slave. When he came to us, these traits of course soon brought him into serious and unavoidable conflict with those about him, until now after some four years he has reached a point where he lives entirely aloof as far as the physical arrangement of his ward permits. Although rather negligent about his personal attire, anything which comes in contact with his person must be kept from contamination by others as something holy and as the taboo of old. He has of course a room of his own, he washes his own underclothing, makes up his own bed, and whenever on the ward stays in his room with the door tightly shut, and as far as communication with those about him is concerned, he may as well be living in an entirely different world of his own.

When walking through the grounds with the attendant, he employs a rapid gait so that he always manages to keep a dozen or so paces ahead of the attendant. His library books must be selected and taken from the library by himself. He has a special table in the dining room, a special coffee pot, a special diet, and is extremely unhappy because he cannot have a special dining room. Now this man's seclusiveness and isolation is not the seclusiveness of the patient who is presumably indifferent to his environment, who has lost all interest in the world about him; on the contrary, this man is very vitally interested in the world in which he lives, although his interest is of a peculiar kind. The extraordinary amount of energy and effort which he expends in literally trying to change the world to his cosmic scheme, is ample evidence of his interest in that world. There cannot, however, be any amicable relationship between him and the world about him as it exists, unless he can play the role of master to a world of servants. This withdrawal from a world of mere human beings, this seclusion very probably is the counterpart of exhibitionism which, according to Jones, is one of the basic psychosexual traits of these individuals. As might be expected he has manifested these traits of character from the very earliest days of his life—a fact corroborated by the history given by the patient's relatives. At home, at school, in his professional career, and finally in his last abode, the hospital for the insane, the same traits are cultivated and tenaciously held to, and serve to keep him in constant conflict with his environment. Gods cannot comfortably live on earth.

We have seen at the outset that Jones assumes an enormous narcissism as the root of this complex. There can be little doubt that these individuals are strongly narcissistic in their psychosexuality; the marked evidence of traits of an autoerotic and exhibitionistic nature adds weight to the correctness of this assumption. My notes on the physical examination of the patient already alluded to read among other things—"sexual organs underdevel-

oped; left testicle atrophied; patient extremely sensitive about having these organs examined." His sexual life—patient has been twice married and divorced—and his peculiar attitude toward his son further corroborate the fact that sexual apperception plays a tremendous role in the life of this individual.

It would be carrying coal to Newcastle were I to dwell further on the importance of sexual apperception in psychopathology in a paper presented to neurologists. Having imbibed, however, to some extent Adler's<sup>2</sup> views concerning the neurotic character—I cannot leave this subject without at least attempting to correlate it with these views.

Jones, as we have seen, believes that narcissism is the root, the causative factor of this psychoneurotic state guided by a God man complex. We know from Freud's studies on sexuality what we mean by a narcissistic individual. We do not know why certain individuals remain at the psychosexual level of narcissism. Jung's regression theory is somewhat more promising in this respect.

Adler, while differing very essentially with Freud as regards the etiology of the neurotic constitution, agrees fully with him when it comes to estimate the importance of sexuality in the life of the neurotic. But while Freud sees in the various twists of psychosexuality an etiological moment, Adler looks upon this merely as one of the many tools which the neurotic employs in his effort to reach adjustment, to bring order in that chaos created by a lofty wishing and desiring on the one hand, and an inherent incapacity to attain the assumed goal.

It would lead considerably beyond the scope of this paper to enter into a detailed discussion of Adler's views. Adler does not stop at mere consideration of cause and effect, but lays considerable stress upon the ultimate purpose upon the *raison d'être* of this play between cause and effect. To him the neurotic is primarily an organically defective individual; this he believes to have been fully established by his extensive researches into the developmental, structural, and functional anomalies of somatic deficiencies. The psychic play, the kaleidoscopic array of the psychoneurotic traits is the result of an effort at compensation through the nervous system for these various organic deficiencies—an intensive and as may be readily expected, a hyperextensive utilization of that mighty adaptive organ, the psyche.

The spark which sets this machinery in motion, the stimulus which persistently whips this compensating mechanism into action, is the neurotic, debilitating, and anxiety inspiring feeling of inferiority, of inherent incapacity to cope with the vicissitudes of life. He therefore strives with all his might to attain a goal which, in his groping for security for a sure foothold in life, he creates for himself—a fictitious, entirely too lofty and regularly unattainable goal. This goal, which Nietzsche has seen fit to term the "will to power," is with the neurotic primarily a desire for a heightening of the ego-consciousness, the simplest formula of which is an exaggerated "masculine protest." His cry is, "I wish to be a capable man—I wish to dominate—I wish to

be above." This is the purpose of his psychosis—the object of each and every one of his symptoms and traits of character. According to Adler there stands threateningly at the onset of development of a neurosis, the feeling of uncertainty and inferiority, which demands insistently a guiding, assuring and tranquilizing positing of a goal in order to render life bearable.

Adler's delineation of an *Edipus complex* (identification with the father), of a *God man complex* (identification with God), will therefore not differ in the least from the description by Freud and Jones. Adler does not intend in the least to rob these psychosexual complexes of their importance in the life of the individual—but he furthermore tells us the whys and wherefores, the *raison d'être* of these complexes—for which we ought to be sincerely grateful.

#### REFERENCES:

1. SIGMUND FREUD, *Psychoanalysis*, trans. by J. A. BRILL, *Psychoanalysis*, W. A. WHITE, *The Theory of the "Complex," Interstate Medical Journal*, xvi, 4, 4. S. E. JELLIFFE: *Proceedings of the American Psychological Association*, Nov. 2, 1931; *Journal of Abnormal Psychology*, 26, 1, 1. ERNEST JONES: *The continuous unconscious*, *Interpretation*, 1930; *Zeitschrift für ärztliche Psychoanalyse*, 1, 4, 6. L. E. EMERSON: *Psychoanalytic Review*, 1, 4, 7. ALFRED ADLER: *Über den nervösen Charakter* (authorized English translation to appear soon in White and Jelliffe's *Monographs Series*).

#### GOVERNMENT HOSPITAL FOR THE INSANE.

#### FISTULA ANI.\*

#### *The Diagnosis and Treatment; a Report of 150 Consecutive Cases,*

By J. F. SAPHIR, M.D.,

New York,

Visiting Surgeon, Diseases of the Rectum and Anus, People's Hospital; Chief of Clinic, Diseases of the Rectum, German Poliklinik, Etc.

From the time of Hippocrates to this very day, fistula in ano has been the cause of great inconvenience to mankind. This disease has a worldwide reputation and is known among civilized nations the world over by the same name, *fistula*. This disease in the time of Hippocrates and for hundreds of years after, was looked upon as incurable, and as a disgrace to the sufferer, until Louis XIV of France was operated upon for fistula, when the disease became fashionable and all sufferers confessed.

Fistula ani is no respecter of persons or nationality, occurs at all ages, chiefly in middle age and rarely in childhood, more frequently in men than in women, in all climates and occupations. In better class of patients, fistula is rarer on account of greater cleanliness, lighter occupations, and less exposure to bad weather. The proportion between men and women is three to one, and of all rectal conditions about fifty per cent. are fistulae.

An anorectal fistula is an abnormal or unhealthy nongranulating sinus or channel of communication between the rectum or anus and the neighboring skin. It usually originates in an abscess cavity, which, having been evacuated of its pus, collapses, and forms a canal more or less tortuous. When these fistulae communicate with the rectum or anus, they cannot be healed without operative interference on account of continuous reinfection.

We are all more or less acquainted with complete

<sup>2</sup>Adler, *loc. cit.*

\*Presented before the Eastern Medical Society, June 11, 1931.



and complete fistula, the complete having one opening in the rectum or anus, and the other on the skin surface; and the incomplete fistulae having only one opening either into the rectum or anus or skin surface. Where the opening is in the rectum, it is called a blind internal fistula; and where the opening is on the skin surface, it is called a blind external fistula.

Fistulae may be subcutaneous, submucous, submuscular, or subaponeurotic. They are *simple* when due to ordinary pus infection, *specific* when due to a specific organism as in syphilis or tuberculosis, *complex* when there are numerous fistulous tracts with several external openings, *complicated* when surrounding pelvic bones or organs are involved.

Fistula in ano is usually secondary to a periproctitis or an abscess, for an abscess which has been opened or allowed to rupture by the application of heat or pastes or salves or poultices very seldom heals spontaneously, but shrinks up and is transformed into the ordinary fistulous tract.

Causes of periproctitic abscess are, sedentary life in stout people, sitting on cold and damp seats, horseback riding; foreign bodies such as fish or chicken bones in the rectum; traumatic wounds from external influences such as punctured wounds, a kick or a fall or even an injury by the nozzle of a fountain syringe; infection following rectal operations due to uncleanliness, improper aftertreatment or improper drainage; ulceration of tuberculous, malignant, syphilitic, chancroidal, or dysenteric type; secondary inflammation due to diseases of the ovaries, uterus, Fallopian tubes, vagina, bladder, prostate, seminal vesicles, urethra, or suppurating glands of Bartholin; caries of the vertebra, sacrum, coccyx, or pelvic bones; passage of the child's head during parturition; instrumentation during delivery; subgluteal and psoas abscesses, dermoid cysts of the sacrum, hip joint disease, pyemia, pyuria, enteroliths, typhoid, and puerperal septicemia.

Marginal abscesses are caused by fissures or suppurating thrombotic hemorrhoids, furunculosis, follicular abscess in overworked, emaciated, run down people; alcoholics, those of the tuberculous, gouty, or rheumatic diathesis, and syphilitic subjects who are open to infection and abscess from reduced resistance and infection. Infection may be transmitted through the lymphatics and the smaller veins.

Perirectal abscesses, on being opened up or when they open up spontaneously, do not get well, because, 1, of lack of rest due to acts of defecation and micturition and sphincteric activity; 2, sluggish venous circulation in this region owing to the upright position assumed by man; 3, entrance of feces and gases into the cavity from the internal or rectal opening of the fistula; 4, retention of pus due to the small opening of the fistula; and, 5, in the tuberculous, the extensive pathological process.

Owing to the lowered resistance and faulty blood supply of the perirectal connective tissue, suppuration is liable to occur from irritation or bruising of parts on account of the ever present bacteria. Fistula ani usually follows a preexisting rectal disease, hemorrhoids, fissure, ulceration, polyp, stricture, proctitis, or malignant growth; or in persons in a weakened condition or with lowered vitality, who have received an injury to the mucosa by the pas-

sage of hardened feces, or to the buttocks from some external violence. The majority of fistulae opening about the anus in the posterior median line are due to dermoid cysts.

Patients suffering with fistula give a history of a chill followed by throbbing pain, tenderness, heat, and swelling in the anorectal region. These symptoms of abscess disappear with the escape of pus, whether from spontaneous opening following the application of heat, salves or poultices, or from puncture by the surgeon's knife. Puncturing the abscess and allowing escape of the pus will invariably relieve the patient of his disagreeable symptoms and pain; but the patient has a fistula, and when he comes for relief, you can relieve pain by relieving him of the pus, but he then has a fistula which needs to be operated upon later.

Usually, when a patient comes to see the rectal specialist, he had already seen his family physician who has punctured the abscess and relieved him of the pain and pus, but he now has a discharge of pus; sometimes this fistulous opening closes; the discharge ceases for a while, and the patient thinks he is well, but shortly after the patient has a sudden rise of temperature and pain and swelling, followed by a discharge of pus from the old fistulous opening or from one close to it.

Pain and tenderness in fistula cases are noted only when the opening of the sinus is partly or completely closed, and there is not complete drainage. The nearer the opening to the anus, the more acute the pain owing to the sphincteric contractions after defecation; and when the internal opening is large enough to admit fecal matter, the pain is increased.

Moisture causing itching and excoriation of the skin and mucous membrane is very disagreeable to sufferers from fistula. It is annoying on walking, sitting, riding, and is aggravated by perspiration, and may become so severe and extensive as to prevent the patient from attending to his business and social duties. This moisture causes the retention of decomposing feces in the folds of skin about the anus. The patient becomes anxious because he thinks the disease is incurable, or is worried because a dangerous operation followed by a long convalescence is necessary for its cure, and because if the discharge is stopped, it will cause a disease of the lungs; as a result of which they resort to quacks and quack treatment, various "cures," salves, powders, etc., and suffer much pain and great inconvenience and annoyance before they consent to undertake the radical cure by operation under general or local anesthesia. They lose weight more from worry and loss of appetite than from the fistula proper, except in tuberculous fistula.

Induration is a very safe way of following up a fistulous tract or sinus, is more distinct in long standing fistulae, and is of service to the surgeon in following up the direction, number, and length of sinuses.

A fistula can be diagnosed by the history of an abscess followed by discharge. Palpating the parts about the anus and buttocks will disclose tracts of induration, and on careful examination, slight pressure along the indurated area will force out a drop of pus, usually from a very minute opening lying

in the midst of a mass of granulations projecting from the centre of a slight elevation. If we have a large irregular opening with the edge of a bluish tint and drooping inward, the fistula is of tuberculous origin.

The internal opening of a fistulous tract is usually found posteriorly between the external and internal sphincter muscles, about half an inch above the anal opening; but it may be in any part of the rectum. A horseshoe fistula can be diagnosed from the presence of openings on both sides of the anus.

The prognosis in fistula is usually good, except in cases where the surgeon closes his incision and does not provide for proper drainage and protection against infection. Any wound left open and given means for proper drainage, will heal well from below by granulation without possibility of secondary abscess or infection.

The general surgeon usually closes up the wound after a fistula operation, and therefore does not get as good a result as the rectal surgeon. The general surgeon also fears fecal incontinence after a rectal operation, but this will never occur if, when it is necessary to cut the sphincter muscle, it is cut at right angles to the muscular fibres.

After a fistula operation, it takes from two to three weeks to two or three months for a complete cure, depending on the depth of the incision rather than on the length or the number of incisions.

#### TREATMENT.

The only treatment that will cure a fistula is surgical, although very rarely a case has healed spontaneously. Patients who refuse to undergo operative treatment, can have their suffering alleviated and their discomfort lessened by improving their general condition, by tonics, etc., by keeping their bowels in good working order, by keeping the sinus clean by irrigating with antiseptic solutions and applying silver nitrate five or ten per cent., balsam of Peru, or ichthylol ten per cent. in glycerin, or other stimulating remedies; refraining from too violent exercises; protecting the anogluteal region by placing cotton between the buttocks to absorb the discharge; frequent bathing and general cleanliness of the parts.

Operation in all fistula cases should be the rule, except in diabetic, phthisic, nephritic, or cardiac patients in the last stage.

Injection of astringents and escharotics into and around the sinus, dilatation of the sinus and application of astringents and escharotics, ligation by passing linen thread or silk or rubber through the sinus, and tying tightly, thereby constricting all intervening tissues and cutting through by pressure necrosis, have been tried, and in several cases with success.

This method can be used in tuberculous or anemic patients who refuse an anesthetic, and they can walk about immediately after the operation. Electrolysis has been tried, but should not be used as it cannot effect a cure, and merely prolongs the patient's suffering. Excision, as recommended by Dr. Frederick Lange, which consists in dissecting out the fistulous tract and then closing the wound with catgut suture, followed by a dry dressing, has been tried by me, but the number of cases that result in primary union is small, owing to the very suitable location

for infection, and then we have to resort to the same after-treatment as in division of the sinus or fistulous tract. This operation is usually followed by fresh infection and abscess and the formation of a new sinus. Activity of the sphincter muscle, tension on the sutures, straining during defecation, and difficulty in keeping this area clean, are sufficient contraindications to its use. Excision is the method used by the general surgeon, and that is why so many of these cases already operated in, ultimately come to the rectal surgeon for treatment and cure.

Complete division of the fistulous tract or sinus is the simplest, safest, and most reliable of all methods devised for the cure of fistula. This operation can be performed under local or general anesthesia. Nearly fifty per cent. of the cases I report were operated in under local anesthesia, the rest under general, with equally gratifying results. Objection on the part of some patients to confinement in bed, or to the taking of a general anesthetic, tuberculous or other pulmonary affections, nephritic and serious cardiac cases, and where the fistulae were short and superficial, were the chief reasons for my operating in sixty-nine of these 150 cases under local anesthesia.

In these cases I have invariably used a solution of quinine and urea hydrochloride, 0.25 or 0.33 per cent., for local anesthesia. I have tried ethyl chloride spray, but found it inefficient; cocaine hydrochloride, beta eucaine, novocaine, holocaine, and stovaine in my hands, even in 0.12 per cent. solution, produced toxic symptoms, such as fainting and cold sweat within five minutes after operation, followed by most excruciating pain controllable only by large doses of morphine. Sterile water produces too much pain at the time of infiltration, and very few patients if any will endure such treatment; besides, the anesthetic effect does not last longer than one or two minutes, and water anesthesia should not be used in skin work.

Quinine and urea hydrochloride for local anesthetic purposes is put up in sterile ampoules containing ten c. c. of a one per cent. solution, as well as in tablet form of five grains each, which on the addition of a suitable quantity of sterile water, will give any percentage strength. I usually use a 0.25 or 0.33 per cent. solution, which produces the same effect as the stronger solutions, but it is necessary to wait for five or six minutes before complete anesthesia is produced. I never use stronger solutions in skin work for fear of slough and induration. The anesthetic effect of quinine and urea hydrochloride takes place within three to twenty minutes and lasts for three to ten days, keeps the patient in perfect comfort, and does not prevent him from attending to his business or social duties.

The chief bugaboo among surgeons in fistula is the fear of cutting the sphincter muscle, to be followed by fecal incontinence, but this can be avoided if the sphincter is cut at right angles to the muscular fibres, and in eighty per cent. of cases the internal or rectal opening lies in the posterior anal margin between the external and internal sphincter muscles, necessitating the division of the external and in some cases, of both external and internal sphincter muscles. When cut at right angles to the muscular fibres, the sphincter muscle will stand cutting in two

or three different places during the same operation, as in horseshoe fistula, without causing incontinence.

The operation by division of the tract or sinus under local anesthesia is one of necessity, but the operation under general anesthesia should be the one of choice. After the patient has been prepared and washed under aseptic precautions, the sphincter must be stretched by the fingers, never with instruments, the rectum washed out, a probe-pointed grooved director is passed into the outer opening of the fistula and through the sinus into the opening in the rectum. One finger should be in the rectum to bring out the end of the grooved director, and with a curved bistoury the tissues are cut at right angles to the sphincter muscle, then the grooved director is passed from one external opening to another, and the tissues are divided till all the sinuses are made to communicate with each other and with the main sinus; or the main sinus may be divided first and the branch sinuses located by the dark blue spots of granulation tissue, when they must be followed up and divided. Where the external opening is too small for the admission of a probe, a nick over the opening at right angles to the direction of the fistulous tract should be made, identified by the induration, and then the grooved director is passed.

Blind external fistulae should be made complete by inserting the grooved director as far as possible, and forcing it into the rectum, and then dividing the intervening tissues. Blind internal fistulae should be made complete by forcing the grooved director or probe until it bulges on the skin; an incision is made where the probe bulges, and then the director is passed into the rectum and the tissues are cut as in a complete fistula. Complete external and internal fistulae are operated on by simply passing a grooved director into one opening and out of the other, and severing the intervening tissues.

In horseshoe fistulae, the sinuses between the external openings should be laid open first and made to communicate with the rectum by dividing the main sinus, necessitating the severing of the sphincter but once; but if the director is passed into each opening and into the rectum, the tissues must be divided once for each opening, the sphincter is therefore cut oftener, and the danger of incontinence is increased. In complex fistulae, with multiple openings on the surface and in the rectum, it is necessary to cut the sphincter in more than one place.

Rectovaginal fistulae, when small, can be treated by cleaning the vagina and rectum and cauterizing the sinus with silver nitrate or with the Paquelin cautery. Where the opening is high up, we do incision and curetette or dissect the sinus out by splitting the rectovaginal septum and suturing the rectum and vagina separately. Rectovulvar and rectolabial fistulae should be laid open and allowed to heal by granulation. Rectovesical fistulae rarely heal spontaneously, and when they are due to stricture, tuberculous or malignant disease, a colostomy is the best form of relief. Rectourethral fistulae are very difficult to cure, and when after numerous attempts have failed, a colostomy should be done to divert the fecal current, and then another attempt to cure the fistula should be made; if this is successful, the colostomy opening can be closed. In some of these cases of complex and horseshoe fistulae, it becomes necessary

to make extensive and numerous incisions which look very gruesome during the operation, and the wound seems so extensive that it appears almost incredible that within a short space of time healing will take place, and with a very small amount of scar tissue almost out of proportion to the size and extent of the wound.

Following the division of the sinuses or tracts of the fistula, the undermined and irregular pieces of skin as well as scar tissue from previous operations, should be cut away, then the walls of the sinus are curetted and I always swab the tract with ninety-five per cent. carbolic acid followed by ninety-five per cent. alcohol. I then pack the wound tightly with sterile gauze and apply a T binder. I never bother with tying bleeding vessels because we have none in this area which will cause hemorrhage that cannot be controlled by the carbolic and alcohol treatment and pressure.

Most of the failures in fistula operations may be attributed to careless and improper aftertreatment. The first dressing should be changed twenty-four hours after operation. The patient must be made to move his bowels, and another dressing, of a strip of plain moist gauze to the bottom of the wound, should be applied every day for the first week and every second or third day afterward.

Frequent sitz baths and absolute cleanliness after defecation should be insisted upon. After the first week, packing the bottom of the wound with gauze dipped in or saturated with balsam of Peru or ichthyol in glycerin ten per cent., will materially assist rapid healing, the important point being that the wound must be made to heal from below by granulation. Do not allow any bridging over of the tissues, leaving a channel underneath, or you will have the formation of a new sinus.

When the wound is properly drained, regardless of its extent, infection will never follow. I allow my patients to walk about twenty-four hours after operation, and insist upon their getting out of doors after the third day. The sooner they get out into the sunshine and air and light, the quicker healing takes place and the smaller the necessity for tonics and appetizers.

After a fistula operation or in fact any rectal operation, the patient should be catheterized every eight hours if necessary, because retention of urine is often due to the pressure of the packing or spasm of the sphincter muscle, which acts reflexly upon the levator ani, some fibres of which are attached to the bladder.

I allow my patients to move their bowels the day following the operation, and if they do not, I order some saline the second day before breakfast. They are placed on a full diet twenty-four hours after operation. I prefer not to use opiates, but if a patient has severe pain, I allow one quarter grain of morphine.

Never pack the wound too tightly for fear of arresting healthy granulations; excessive granulations should be destroyed with silver.

Of these 150 consecutive fistula cases, six were in the first decade of life; nine, second; thirty-five, third; forty-nine, fourth; thirty-four, fifth; and seventeen, sixth or later. Forty-two of the cases were in women, and 108 were in men. Sixty-nine



were operated in under quinine and urea hydrochloride locally.

The youngest patient I came across and operated upon was a child three and a half months of age, referred to me by Dr. Philip Jager, and the oldest was a woman, 104 years old, whom I operated on under local anesthesia at the Home of the Daughters of Jacob.

The greatest majority of cases occur in middle age, between the ages of thirty and fifty years; and patients who present themselves in later years with fistulæ usually give a history of an abscess that began during middle age.

237 WEST SEVENTY-FOURTH STREET.

## THE IMPORTANCE OF IMMUNIZING NURSES AND HOSPITAL ATTACHES AGAINST TYPHOID FEVER.

By ELMER H. FUNK, M.D.,  
Philadelphia.

Demonstrator of Medicine, Jefferson Medical College; Medical Director and Physician in Charge, Department for Diseases of the Chest, Jefferson Medical College Hospital.

(From the Department of Medicine, Jefferson Medical College.)

The value of the typhoid vaccine as an immunizing agent against typhoid fever has been established beyond a doubt. The disease has ceased to be the scourge of the armies of the world, and its incidence among enlisted men has been reduced to almost insignificant figures. In the present war the fewness of the cases stands in marked contrast to past experiences. In the United States army at the time of the Spanish American War, among 107,973 men there were 20,728 cases of typhoid fever, with 1,580 deaths. In 1911 only one case occurred among 12,801 immunized men mobilized along the Mexican border. Following this evidence of its efficiency the continued compulsory immunization of the men has caused the disease practically to disappear from the ranks. The case rate in the army in 1913 was five in 100,000, while the death rate among the general population (United States registration area) during the same year, was 16.5 in 100,000 (Russell, 1).

The use of prophylactic typhoid inoculation should be extended to the civil population, particularly to those who are exposed to infection by reason of their occupation, place of habitation, or social condition. The inhabitants of lumber camps, workhouses, asylums, prisons, and almshouses should be immunized by this method, in view of past experiences, regarding the occurrence of epidemics among individuals so grouped together. The immunization of the matriculates of colleges and boarding schools, and of medical students who come in contact with typhoid patients ought to be seriously considered.

Recently a typhoid outbreak occurred in one of the colleges of Pennsylvania, where more than fifty cases and several deaths were traced by the State department of health to a kitchen employee who proved to be a healthy carrier. Another recent startling experience with the typhoid carrier illustrates the danger to the community. Sawyer (2), in 1914, reported an epidemic in Hanford, California, where ninety-three cases of typhoid were found to

be directly traceable to infection at a public dinner, in the preparation of which, a typhoid carrier assisted. Such instances suggest not only the desirability of rigidly looking for carriers among those who come in contact with the food supply by agglutination tests, bacteriological studies, etc., but also the desirability of prophylactic inoculation.

Individuals who are subjected to varying water and food supplies, such as travelers and vacationists, should be protected by this method.

Nurses and hospital attendants form a group who are particularly exposed to infection. Jordan (3) relates of one large hospital in which the nurses were free from typhoid for the first time in the history of the institution in the year after the use of antityphoid vaccination. I dare say, many such histories could be elicited if a careful inquiry were made. Joslin and Overlander (4) found in six hospitals in Massachusetts during a period of five years (1902 to 1906 inclusive), that twenty-six nurses contracted typhoid while in training. They estimated at that time that the typhoid morbidity rate among nurses was 161 in 10,000 living, as compared with twenty in 10,000 living, for the general population. In other words, the hospital nurse in Massachusetts was about eight times as liable to contract the disease as the ordinary citizen. Spooner (5), in an investigation carried out at the Massachusetts General Hospital, in 1909, found that during the preceding ten years twenty-seven cases of typhoid fever were contracted in the hospital. Of this number nineteen were in nurses. During the same period twelve nurses practising outside of the hospital, and in recent contact with typhoid patients, were brought to the institution. Pierce (6) found at the Winnipeg General Hospital that during the ten years prior to 1911, seventy-one cases of typhoid occurred among the attaches, forty-eight of whom were nurses, an average of five a year. At the Jefferson Hospital, Philadelphia, during a period of fifteen years prior to 1912, fifteen cases occurred among nurses, or an average of one a year.

The incidence of typhoid among our nurses, based upon a yearly average of 58.3 pupils during this period, is 1.7 per cent. This incidence coincides closely with that noted by Joslin and Overlander (4) and by Spooner (5) previously quoted, who found 1.6 per cent. and 1.4 per cent. respectively. The slight increase in our Philadelphia observation may readily be attributed to greater frequency of the disease. Typhoid fever in a nurse is usually the result of contact infection. Among our fifteen cases (see Chart) known contact with typhoid patients was established in nine instances. The contact was of the nature of repeated exposure to infection in the direct nursing of a patient or a group of patients with the disease. In the other six instances, definite recent contact could not be established, at least prolonged exposure to infection was not known to exist. It is impossible to rule out the casual contact which might occur, for example, in temporary relief duty in wards other than the regular assignment, or with carriers who are not known as such when they are admitted to the wards, or in the operating room or surgical ward in the surgical typhoid lesions. The following case is of interest as illustrating contact

infection of a nurse from a patient in the surgical service. Miss X. was on night duty in the men's surgical ward, which contained a patient who about three weeks before had been admitted and operated on for typhoid perforation. After the operation a fecal fistula developed which required frequent changes of dressings. During the day this duty was performed by the intern and at night by the nurse. The nurse was informed of the care to be exercised with regard to wearing of gloves, cleansing of hands, etc. In about two weeks she was taken with a severe attack of typhoid fever with profound toxemia and many hemorrhages, and for a while it seemed as if she would probably succumb to the violence of the infection.

Contact infection could be established in sixty-per cent. of our cases and in probably more if the facts were ascertainable. It is interesting to compare this frequency among nurses with the frequency as estimated among the general population. In Philadelphia in 1911, among 1,382 cases of typhoid fever reported to the bureau of health, seventeen were contracted while nursing a patient with the disease, or 1.23 per cent., and in 1912, among 1,514 cases, nineteen were traceable to contact during nursing, or 1.25 per cent. (Philadelphia Bureau of Health Reports, 1912 and 1913.) At the Johns Hopkins Hospital from 1889 to 1906, according to McCrae (7), there were fifteen instances of infection among nurses, of whom eleven had been nursing patients with the disease.

The importance and frequency of contact infection, therefore, must be fully realized in the effort to prevent the disease among hospital attendants.

The danger is in direct proportion to the intimacy and frequency of contact with the typhoid patient, and the care with which the hands are cleansed after such contact. The nurse should be instructed in detail with regard to the disposal of the excreta, the care following cleansing the mouth and bathing the patient, the disinfection of the linen, nursing utensils, etc. In fact, the first nursing lessons to be impressed upon the probationer and junior nurse should cover those principles of preventing disease spread which must be enforced unceasingly if contact infection is to be avoided. It is to be regretted that in spite of such instruction, carelessness occurs, particularly among younger nurses. We are of the opinion that the nursing of typhoid patients should not be intrusted to pupil nurses in the early part of their course. Pierce (6) states that ninety per cent. of all cases are contracted in the first and second years of training, and of these, three times as many occur in the first as in the second year. Spooner (5), however, found that during the ten year period, when nineteen pupil nurses contracted the disease, twelve graduate nurses were admitted to the hospital during the same time. Among our pupil nurses the occurrence of the infection with regard to the year of training was noted as follows: During the first year of training, 9; during the second year, 4; during the third year, 3.

In July, 1912, the prophylactic inoculation of all nurses in training at Jefferson Hospital was made compulsory. Since that time, and during a period of three years, only one doubtful case has occurred. In this instance a mild febrile disturbance of about

two weeks' duration occurred in a nurse who had not been in known contact with a typhoid patient, and who for some time had not been feeling well. Headache, anorexia, and malaise had been present for about two weeks. The temperature on admission, April 1st, was 100, pulse 92, and respiration 24. A few suggestive spots were seen upon the abdomen. Splenic enlargement was not demonstrable. At the end of fourteen days, fever subsided and convalescence was rapid. The leucocyte counts on April 2nd and 14th were 8,400 and 8,200 respectively. The blood culture, April 6th, was negative. The Widal test performed on April 2nd, 14th, and 30th, was reported as "marked cessation of motility with slight agglutination, suggesting a faintly positive reaction."

The average number of pupils in training each year during the period was 104.2, and the disease incidence on the basis of the one doubtful case is 0.3 per cent. We believe the fall in morbidity from 1.7 per cent. to 0.3 per cent. to be largely the result of protective inoculation. A large number of cases were admitted to the wards in 1913, at the time of a mild epidemic in Philadelphia, which totaled 1,698 cases. These cases occurred in rather a short space of time, and in seventy-two per cent. the infection was probably caused by pollution of the city water supply by the dual system of piping in certain large manufacturing plants.

In Spooner's (5) experience during the past three years the morbidity among the inoculated was 0.15 per cent., compared to 1.19 per cent. among the uninoculated. At the Winnipeg General Hospital, where immunization has been practised for three years, only one doubtful case occurred, and one other case in the only nurse who refused inoculation.

In order to ascertain how widely prophylactic inoculation was practised in representative institutions, I addressed a questionnaire to a number of large hospitals in ten large cities. I received replies from seventy-six situated as follows: New York, 13; Chicago, 7; Boston, 8; St. Louis, 4; San Francisco, 7; Cleveland, 7; Pittsburgh, 9; Cincinnati, 4; Baltimore, 5, and Philadelphia, 12. The number of nurses in training in these hospitals totaled 6,318, or an average of 83.1 to the institution. The approximate number of cases of typhoid fever treated yearly in these hospitals totaled 3,385, or an average of 44.5 to the institution. Among these seventy-six hospitals prophylactic inoculation was used among pupil nurses in fifty and not used in twenty-four (two replies were unsatisfactory). Among the fifty institutions practising antityphoid inoculation, in eighteen its administration was compulsory or strongly urged, and in thirty-two voluntary.

From these figures it seems that there is a disposition to regard immunization of nurses seriously in many instances, less seriously in some, and not at all in others. These same institutions would probably be unanimous in their views with regard to vaccination against smallpox. Why not against typhoid fever? The harmlessness of antityphoid inoculation compares favorably with that of vaccination against smallpox. In our experience the majority of individuals experienced no inconvenience whatever; the most frequent disturbance was a transient soreness at the site of injection. A few had slight constitutional reactions, such as headache, malaise, and

a rise of temperature 1, 0.5 or 100° F. for a few hours. Probably less than one per cent. were incapacitated for work and then only for a day. The reactions following antityphoid inoculation have been thoroughly studied by Russell, Weston, Ravenel, Hachtel, and Stoner, and many others. The reader is referred to the excellent paper by Harris and Ogden (8) for a comparative presentation of the experience of various writers with regard to reactions after typhoid immunization.

Finally, with regard to the preparation of the vaccine and its administration. The vaccine is prepared in the hospital laboratories by Dr. E. D. Funk as follows:

A fresh polyvalent vaccine is prepared once every four weeks. The technic used is comparatively simple and follows closely that generally employed by workers at the present time, namely, transfers from several original pure cultures are made on fresh agar slants and grown at 37.5° C. for twenty-four hours. The growth is then washed from the surface of the media with sterile normal salt solution and, to insure the removal of all organisms, the surface of the medium may be lightly scraped with a sterile platinum loop, care being taken not to remove fragments of the medium. This bacterial suspension is transferred to a sterile flask containing glass beads and shaken in a shaking apparatus for a half hour or until the bacterial clumps are broken up. This procedure insures a uniform suspension. Having prepared the suspension, it is sterilized by heating in a water bath to 60° C. for one hour. The vaccine is now tested for its sterility by transferring a half dozen or more loopfuls of the suspension, to bouillon or slant agar and incubated for twenty-four hours. At the end of that time the culture is examined and, if found to be sterile, the vaccine is standardized. The method is that of Wright in which the number of bacteria in a definite volume of the suspension is compared with the number of red blood cells in an equal volume of known blood. The desired strength of the vaccine is obtained by diluting the suspension with sterile normal solution so that one c. c. will contain 500 million of the killed typhoid bacilli. The vaccine is now transferred to sterile vaccine bottles and to each 0.25 per cent. tricesol is added as a preservative. The preparation is kept on ice and is always ready for use.

Three doses of the vaccine are given at ten day intervals. The first dose consists of 500 million, and the second and third doses one billion each. The inoculation is made subcutaneously on the outer side of left arm about the level of the *deltoid* insertion after the skin has been painted with tincture of iodine. The inoculations were made as a rule in the evening, so that any mild reaction might not be experienced during the night's rest. As a rule the only inconvenience of note was a slight soreness of the arm, which usually occurred after the first injection and promptly disappeared.

In conclusion, it is our belief that a wider application of antityphoid inoculation among nurses will result in a distinct reduction in the incidence of the disease among them; a reduction which has not been accomplished in the past by instruction in the application of sanitary measures alone. We have been in possession of facts with regard to the source and frequency of contact infection, but have been unable to reduce the incidence of the disease. The combination of sanitary measures with prophylactic inoculation has seemed to accomplish results not hitherto attained.

The writer wishes to acknowledge with appreciation the very valuable aid of Miss A. E. Laughlin, formerly directress of nurses of Jefferson Hospital,

and Miss C. Melville, present acting directress, in the compilation of the statistical studies from the records of the training school.

TABLES DEVIATING FROM THE NORMAL

| Name     | Age  | Date of Exam. | Sex | Weight | Height | Temp. | Pulse | Remarks   |
|----------|------|---------------|-----|--------|--------|-------|-------|---|
| I. H. H. | 1900 | 1900          | 24  |        |        |       |       |   |
| B. P.    | 1901 | 1901          | 24  |        |        |       |       |   |
| M. C.    | 1905 | 1905          | 24  |        |        |       |       |   |
| R. H.    | 1904 | 1904          | 24  |        |        |       |       |   |
| C. S.    |      |               |     |        |        |       |       |   |
| V. W.    | 1906 | 1906          | 28  |        |        |       |       | Private service. Nursing typhoid patient at time.                                 |
| Z. O. K. |      |               | 27  |        |        |       |       | of women typhoid patients about   |
| M. H.    |      |               |     |        |        |       |       | Maternity service. Had just been removed from children's ward, a typhoid patient. |
| A. T. S. |      |               |     |        |        |       |       | Private service. Had just been removed from children's ward, a typhoid patient.   |
| M. Y.    | 1909 | 1909          | 24  |        |        |       |       | Women's med. ward. Nursing typhoid patient.                                       |
| M. B. M. | 1907 | 1907          | 24  |        |        |       |       | Men's med. ward, which contained ten typhoid patients.                            |
| D. T. R. | 1908 | 1908          | 21  |        |        |       |       | Children's ward. No known contact.  |
| M. A. M. | 1909 | 1909          | 24  |        |        |       |       | of fecal fistula following operation for typhoid perforation.                     |
| D. M. V. | 1909 | 1912          | 24  |        |        |       |       | Men's typhoid ward.   |
| M. G. B. | 1911 | 1911          | 24  |        |        |       |       | typhoid patient.  |

<sup>1</sup>All of the nurses on this table completed the course in nursing and graduated from the hospital except those marked (1), who graduated after a special course in typhoid nursing.

#### REFERENCES.

1. RUSSELL: *Journal of M. A. A.*, 1914, 3, 1514.
2. SAWYER: *Ibidem*, lxiii, 1537, 1914.
3. JORDAN: *Ibidem*, lxiii, 1772, 1914.
4. JOSLIN and CAMPBELL: *Ibidem*, lxiii, 1772, 1914.
5. SPOONER: *Amer. Jour. of Public Hygiene*, xix, 616, 1909; *Journal A. M. A.*, lix, 1359, 1912.
6. PIERCE: *Canadian Med. Assoc. Jour.*, 1913, 19, 1095, 1913.
7. McCRAE: *Modern Medicine*, by Osler and McCrae, 2d ed., i, 73.
8. HARRIS and OGDEN: *Journal of M. A. A.*, 1914, 3, 1514.

1318 SPRUCE STREET.

#### RICKETS.

##### Early Manifestations and Treatment.

By WILLIAM L. ROST, M. D.,  
New York.

Chief of Clinic, Mount Sinai Dispensary, College of Physicians and Surgeons, New York.  
Adjunct Attending Pediatric, Boys' Hospital, Dispensary.  
Instructor in Pediatrics, New York Polyclinic Hospital.

The most interesting chapter in the study of pediatrics, is that on nutrition and metabolism; that this subject is extensively studied throughout the civilized world, is significant of the fact that upon this very vital problem depends the future individual, the future nation. Moreover, I believe that the economic status of the State depends directly upon the foundation, whether good or bad, the children born in that community receive. Bearing these facts in mind, we can appreciate the importance of recognizing the slightest variation from the normal in any nutritional disturbance.

The most common and widely distributed of these disorders is rickets; fundamentally a nutritional disease in which there exists some derangement in the metabolic processes.

It was during the first half of the seventeenth century that this disorder made its first appearance in England. The attention of the Royal College of Physicians having been called to this disease, they appointed a committee to investigate and report

(Read before the New York Academy of Medicine, May 1, 1914.)



It was a French physician, the first authentic record of the malady was published by Cassou, Galt, and Regemorter. Since then, various observers have modified this disease and various have been written on the etiology and pathogenesis; but nothing conclusive has been established. In our own country no one has written more on rickets than the venerable Dr. A. Jacobi. He was a pioneer investigator, having published the first paper on this subject in America.

Rickets is a disease of the temperate zone, most frequently observed amongst the poorer classes of society, although the well-to-do are not exempt. It occurs in breast fed infants as well as in the artificially fed; less in the former and to a milder degree. Occasionally a very severe form of the disease may be observed in a breast fed infant; Italian and negro children are especially prone to this disorder. Still, of England, asserts that 44.6 per cent. of all patients observed by him under three years of age had rickets; Thompson, of Edinburgh, states that more than fifty per cent. of all children he saw under three years of age had the disease; Ritchie, of Manchester, gives 30.3 per cent. of all sick children he observed; Kassovitz avers that eighty per cent. of all infants in the Vienna Maternity Hospital showed evidences of rickets; Morse, of Boston, reports that eighty per cent. of all the infants in his dispensary class showed the disease; most American observers give from thirty-three to eighty per cent. of all cases coming under their supervision. The disorder usually attacks infants between the ages of three and eighteen months; rarely may it set in after the second year.

#### PATHOLOGICAL ANATOMY.

Although this malady makes itself evident through its effects on the osseous system mainly, there is not a tissue in the body that is not affected by it; bone, muscle, cerebrospinal, vascular and glandular systems all show certain changes, depending of course upon the severity of the rickets; some cases are so mild that unless we are on the alert we will experience difficulty in differentiating them from a physiological state; others are so severe, that we are able to bend the long bones as we should a piece of rubber; between these two extremes are many varieties.

It is not the object of this paper to go into the minute details of the pathological processes; a few casual remarks, however, may not be amiss, and may aid in establishing the cause of certain physical phenomena. Primarily there occurs hyperemia of the periosteum, marrow, cartilage, and the bone itself; this is followed by excessive proliferation of the cartilage cells, then imperfect calcification, which may occur in isolated spots; the calcium salts are reduced from twenty-five to seventy-five per cent.; undue vascularity occurs; ossification is less perfect than calcification; the osteoblasts fail in their bone construction; at the same time the osteoclasts become overactive in their resorption.

Let us now see whether we can account for the gross anatomical lesions. The epiphyses are enlarged and the diaphyses thickened because of the undue cell proliferation and increased vascularity;

the cranial bosses or prominences are produced in the same manner, while craniotabes represents an overactive resorption process. The lessened amount of mineral salts and the still less perfect bone formation, render the bones unduly soft; hence, deformities are readily induced by the following forces:

1. Underlying growth of soft tissue (brain);
2. Atmospheric pressure (thorax);
3. Muscle force (Harrison's groove);
4. Superimposed weight of the thorax, causing deformities of the spine, pelvis, and lower extremities. The liver and spleen show hyperplastic changes in the pulp and follicles; the lymph nodes are enlarged; the muscle tissue shows excessive nuclei and distorted longitudinal striae, thin immature fibres. Mild hydrocephalus and hyperplasia of the brain occurs.

#### PATHOLOGICAL CHEMISTRY.

It has been found that the water content of rhachitic bones is higher than normal and that the fat content shows no constant difference. This is significant in view of the fact that some observers in this and other countries believe rickets to be the result of fat starvation. The most important change in rhachitic bones is the demineralization, especially in calcium and phosphorus; the ash content of the dried substance of ribs and vertebrae is reduced from twenty to sixty per cent. The urine is faintly acid during the acute stage, the calcium content is diminished, while the percentage of calcium in the feces is always slightly increased.

#### ETIOLOGY.

The underlying cause of this disease is not known; many theories have been advanced and numerous metabolism experiments performed, but none has been entirely satisfactory. Many observers contend that improper food, protracted nursing, poor hygiene, crowding, lack of sunshine, and change in the customary environment will cause rickets; others believe in hereditary predisposition, particularly maternal; syphilis has also been accused. Still, who has a large experience, believes it is the result of fat starvation, brought about by insufficient food supply or lack of assimilation, and the excessive use of carbohydrates. Winters is of the opinion that protein causes gastric disturbances, and that, as a result, the salts in the food are not properly metabolized; this and fat starvation are the factors. Holt states that the essential cause of rickets is dietetic, although hygienic influences play a very important role; the diet is usually very deficient in fat and often in protein, while it contains an excess of carbohydrate; where both fat and protein are low, rickets is more liable to result than where fat alone is deficient. Monti and Zander have shown that an increase in lactic acid and a diminution in hydrochloric acid in the stomach result in intestinal disturbances; these disturbances cause the elimination of certain salts from the food, hence the blood fails to receive what is necessary for normal bone structure. Several investigators have proved by animal experimentation, that disturbances in the internal secretions cause rickets; thus, Klose, Matti, and Vogt have shown that the

extirpation of the thymus gland in dogs brought about changes in the skeleton of the animals similar to those observed in rachitic children. Claude and Rouillard showed that rickets may develop in animals born of parents one of which has been thyroidectomized fourteen days to three weeks before copulation. As to my own observations although limited, I must take exception to fat assimilation or poor hygiene as the sole cause of rickets. We have all observed mild grades of this disorder in children well nourished, of good color and firm muscle; as well as cases of atrophy with no evidence of this disease. Permit me to cite an example of each type.

CASE I. H. B., boy, aged five months, breast fed every three hours, no vomiting, normal labor, full term, weight at birth 7½ pounds; child was kept in the open all day long and brought in for nursing only. Mother thought infant had umbilical hernia. Physical examination showed marked craniotabes, thorax normal, extremities normal, heart and lungs normal, throat normal; on further questioning the mother stated that the child perspired profusely about the head, and was very costive, weight 18¼ pounds. Surely this infant was getting and apparently taking care of his quota of fats in the maternal milk; he was also getting all the fresh air and sunshine possible and was not confined to crowded quarters and yet he had a typical case of rickets; what is the cause?

CASE II. D. H., girl, aged four months, a case in contrast, brought to me because she did not thrive, cried a good deal, was restless and looked old; weight at birth six pounds; breast fed every three hours; was kept out in the air all day long. Physical examination showed an infant with senile features, wrinkled skin, harsh and dry. Temperature 98° F. rectal. Constantly sucking her hands. Heart and lungs, abdomen, chest, head, and extremities normal; no evidence of rickets; weight seven pounds. This surely was a case of fat starvation and still there were no signs of rickets. In view of these and similar observations many times over, how can we become reconciled to those theories?

#### SYMPTOMATOLOGY.

The earliest diagnostic manifestations of rickets are sweating about the head, craniotabes, constipation, irritability, and restlessness. The most valuable sign is craniotabes. These symptoms should be looked for in every infant examined; we cannot emphasize this point too much nor repeat it too often, because these symptoms are frequently overlooked or forgotten. The rest of the phenomena may be divided into osseous, visceral, vascular, cerebrospinal, and glandular.

*Osseous manifestations.* Rachitic rosary, a fairly early sign, occurs at the junction of the cartilaginous and osseous portion of the ribs; they may be present on the posterior surface and therefore not palpable. Epiphyseal enlargements are found, usually at the lower ends of the radius and ulna, tibia, and fibula. Cranial bosses, Harrison's groove, pigeon breast, large anterior fontanelle, delayed dentition, softening of the long bones, cause deformities in all directions, such as X legs, O legs, flat feet, cyphosis, and rachitic dwarfism.

*Muscular manifestations.* As a result of the weak and flabby musculature, in severe cases the children cannot hold their heads erect for any length of time; they are unable to stand or walk until later than normal; hyperextension of the joints is due to lax ligaments as well as to weak muscles. The so called "pot belly" is due in part to weak abdominal muscles, as well as the distended gut, and is also due to the poor muscle tone in the intestine itself.

*Visceral manifestations.* Enlargement of the liver and spleen is noted, extending from two to four fingers' breadth below the costal margin; this factor also aids in the production of "pot belly."

*Vascular manifestations.* Prominence of the veins about the head is a marked sign, sometimes of the chest, or in the region of the umbilicus.

*Cerebrospinal manifestations.* Under this category we include laryngismus stridulus, tetany, eclampsia, mild hydrocephalus, and nodding.

*Glandular manifestations.* The cervical, axillary, and inguinal lymph nodes may be felt to be enlarged.

#### DIFFERENTIAL DIAGNOSIS.

Rickets must be differentiated at times from the following conditions.

*Mongolian idiocy.* These cases are so typical that when we see one we have seen them all; the slanting eyelids, the small flat nose, the sucking of the tongue, the flattening of the occiput, and the very flabby musculature will clear the diagnosis.

*Infantile myxedema.* Here the pugnacious physiognomy, macroglossia, subnormal temperature, thickset body, and spadelike hands will clear the diagnosis.

*Hydrocephalus.* These cases are difficult to differentiate at times, and it is only by repeated observations and head measurements that a definite diagnosis may be arrived at.

*Flaccid paralysis.* In these cases the reflexes are absent, there is no motion in the extremities affected; in rachitis the children may not be able to stand or walk, but motion and reflexes are present.

*Syphilis.* Particularly the pseudoparalysis of Parrot may be confounded with rachitic enlargements; the location and character of the swelling are unreliable as differential diagnostic points; important, however, is the fact that luetic enlargements are as a rule unilateral, while epiphyseal enlargements due to rickets are almost always symmetrical; the pseudoparalysis is mostly a disease of the first three months of life, while the rachitic enlargements occur at a later period. When in doubt, the Wassermann or Noguchi test should be employed; finally both diseases may occur at the same time in the same individual.

*Congenital dislocation of the hip.* Rachitic coxa vara may simulate this disease where we note the waddling gait and high position of the trochanter major; here other signs of rickets as well as radioscopy will aid us.

#### PROGNOSIS.

Where complications do not exist, the prognosis is good; most children recover when properly cared for; in very severe cases the outlook as to life is good, but deformities remain.

#### MANAGEMENT.

Although Still asserts that few diseases are more readily preventable, we fail to understand how any observer can be certain of its prevention, in view of the limited knowledge we possess of the etiology of the disorder. One point, however, is worth remembering and that is, that all mothers during pregnancy and the lying-in period, should be allowed a generous diet such as meat, vegetables, cereals, milk, fruits, etc., except where contraindicated by

in this way may we hope to bring about maternal nursing more readily and perhaps a good quality of milk; this might possibly help diminish the number of cases of rickets in nurslings. The physician should insist on the mother nursing her offspring if it is thriving; if not, regulate the mother's hygiene and try again; perhaps a change in her habits or in her diet will bring about a beneficial result. Where a mother cannot nurse, and artificial feeding must be resorted to, the cleanest raw milk obtainable should be given, simple uncomplicated formulas employed, and a very close watch kept for the earliest manifestations of rickets. Only by these means can we prevent severe forms of the disease.

When confronted with a case showing the earliest symptoms, a slight change or regulation in diet and the addition of orange, prune, or pineapple juice may bring about a happy result. Sometimes small doses of phosphorus are beneficial, preferably the one per cent. solution in oil, because it is best tolerated in this form. Some clinicians state that it acts almost as a specific. We have found the early addition of animal broths or juices very satisfactory, particularly beef juice; this is prepared by broiling a piece of thick steak (about one half pound) for three to five minutes and expressing the juice with a lemon squeezer; we begin with half a teaspoonful daily, plain or in barley or oatmeal water, and gradually increase the amount up to one or two ounces daily. It has been observed that certain cases of marked craniotabes in infants, five months and older, do exceptionally well under this treatment; in older children vegetable and lamb broths, as well as fresh vegetable purées are beneficial; eggs, scraped beef, and cereals should be given; in the thin, poorly nourished type, malt extract may be added to the milk; thyroid extract cautiously given, has been found beneficial in rachitic dwarfism and the obese. Koplik recommends the careful use of thyroid extract in combination with the saccharated ferrous carbonate in extreme anemia with enlarged spleen. Stoeltzner thinks that adrenaline has acted as a specific in some of his cases; organotherapy, however, is still in the experimental stage and we should await confirmation. Salt baths for stout infants are useful; massage at regular intervals should be given; during the acute stage of the disease, when the bones are soft, keep the children off their feet; when deformities occur, the cases belong to the orthopedic surgeon.

104 TOOLE STREET.

## DIASTOLIC PRESSURE.\*

### *Its Determination and Importance.*

By LOUIS M. WARFIELD, M. D.,  
Milwaukee.

Within the past few years, wide interest has been shown by both profession and laity in the general subject of blood pressure. Emphasis has been laid so persistently on the dreadful result of high blood pressure (that is high systolic pressure) that the average patient is greatly concerned if he hears that

his pressure is above the normal systolic for his age.

Altogether too little attention has been paid to the determination of diastolic and pulse pressure. The difficulty in accurately measuring diastolic pressure has no doubt contributed to this neglect. Blood pressure estimations should register three values; the height of the systolic; the height of the diastolic; and the difference between the two, the pulse pressure. This I have called the pressure picture. Any report which does not register the three figures is incomplete and may lead to fallacious conclusions.

Before the advent, in 1905, of Korotkov's (1) auscultatory method of reading blood pressure, there was no accurate means of estimating the diastolic pressure except with cumbersome instruments which were not applicable to bedside use. Marey, in 1876, had already convinced himself, by placing an arm in a plethysmograph and making connections with a recording lever on a revolving drum, that on raising the pressure on the arm the point where the oscillations of the lever ceased was the systolic pressure. When the pressure was decreased the place of maximum oscillations of the lever was the diastolic pressure. Erlanger (2) and others showed that with an arm cuff the diastolic pressure corresponded to the maximum oscillation of the tambour lever on a revolving drum, and Erlanger also showed that at this point there was a dull sound in an artificial circulation apparatus.

When the auscultatory method is employed to measure blood pressure, all observers are now agreed that the very first sound heard through the stethoscope when the air is gradually released around a compressed brachial artery, is the point where the systolic pressure should be read. When the systolic pressure is high or the pulse wave very large, a dull sound may be heard as soon as the pressure in the cuff exceeds maximum pressure. With ordinary attention this should not be confounded with the click sound which is produced by the first pulse wave to pass under the cuff as the pressure is reduced. The cause of the pseudo first sound is the transmission of the beat against the upper part of the cuff through the air under pressure in the cuff to the arm upon which the bell of the stethoscope is placed.

Until recently there was no such unanimity of opinion concerning the point where diastolic pressure should be read. Korotkov himself thought it should be at the fourth phase. His reasons were theoretical. Fischer (3), Lang, and Manswetona (4) agreed. Ettinger (5), in an elaborate article, maintained that the fifth phase or disappearance of all sound was the place to take the diastolic reading. American investigators followed his lead. Some work done by fourth year students at Johns Hopkins Hospital under Hirschfelder's direction seemed to confirm this view.

While taking blood pressures by means of the auscultatory method, in 1911, it was noticed that the disappearance of sound was below the point of maximum oscillation of the mercury or of the dial hand. Investigation of this observation was begun. The Erlanger instrument was used. It soon became evident that the point of maximum oscillation by the method of continuous escapement did not coincide



with the disappearance of sound. In practically all cases it was below maximum oscillation. Numerous records were made, and I could say at that time, "The diastolic pressure is not usually at the point of disappearance of all sound—the fifth phase" (6).

The problem was then undertaken from the experimental standpoint upon dogs. An apparatus was arranged so that the blood pressure could be taken in one femoral artery, while the other was being compressed by a water chamber attached to a vessel which could be raised or lowered. A maximum and minimum pressure recorder was interpolated in the arterial pressure system. An electric marker key was attached to a lever in order to note when sounds were heard. The stethoscope was placed below the femoral artery, pressure made by raising the water bulb, and the arterial pressure lever made to record constant minimum pressure. With this apparatus it was possible to draw the following conclusions:

There are auscultatory tone phases in the femoral arteries of dogs which correspond in a general way to those in man. The systolic pressure is at the point where the first tone is heard as the blood rushes under the site of compression. The diastolic pressure is not at the point of disappearance of sound when the pressure is gradually reduced, or at a point corresponding to that, but occurs when the first dull tone is heard following a loud, sharp tone (7).

After this point has been settled, further clinical observations were made with the large material available at the Milwaukee County Hospital. These results were reported before the section in the practice of medicine of the American Medical Association, at Minneapolis, June, 1913. The same method was used as in the previous clinical determinations, but greater accuracy was maintained because of larger experience. As the result of these observations it seemed possible to conclude "that there is both clinical and experimental evidence to prove that the point at which diastolic pressure should be read, when using the dial instrument, is where the fling of the lever during the gradual lowering of pressure suddenly becomes less, or better, with the auscultatory method, where the clear, sharp, third tone suddenly becomes dulled" (8).

Since these investigations, practically all workers have consented to read the diastolic pressure at the change from the sharp third tone to the dull fourth tone. Hooker (9) has questioned this and believes that, as a result of his experiments, the fifth phase or disappearance of tone is the proper point. I have recently called attention to the fallacy in his argument. It should now be possible for observers to compare results and to gather data which may lead to valuable information. Several years ago I called attention to the importance of the diastolic pressure reading and I have recently said "the conviction is growing that it is the height of the diastolic pressure rather than that of the systolic pressure which is the really vital point in blood pressure estimations" (10).

The systolic pressure measures the maximum force of the heart beats. It is the force necessary to overcome the peripheral resistance plus the force actually expended in driving the blood through the body. It is the sum of two factors. One is the general resistance offered to the opening of the aortic

valves, which is the diastolic pressure. The other represents the head of pressure which actually is forcing the blood through the vessels of the systemic circulation.

The systolic pressure is subject to sudden and rather wide fluctuations from a variety of causes, physical, psychical, mental, physiological. The sudden fluctuations of the systolic are not, as a rule, paralleled by the diastolic pressure. While it is perfectly true that the diastolic pressure in the brachial artery does not give any knowledge of the peripheral resistance in the kidneys or the intestines, yet it registers what one might call the average peripheral resistance. Given vasoconstriction in a wide area, such as the skin or the splanchnic area, we should expect increased diastolic pressure.

To say that under all conditions of fluctuating systolic pressure, the diastolic remains steady is to misstate the facts. Numerous observations on patients suffering from a variety of diseases show that the fluctuations of the diastolic pressure are present, but are never so large as are those of the systolic pressure. It certainly does not respond so readily to stimuli of various kinds.

The volume output of the ventricle is proportional, to some extent, to the size of the pulse pressure. A study of our very high pulse pressure cases reveals the fact that all have occurred in one of two diseases; either aortic insufficiency or the large hearts of chronic nephritis. In both conditions the capacity of the left ventricle is much increased, and more blood than normal is thrown into the aorta at every systole. Increased volume output and increased velocity are not the same under all conditions. For a normally beating heart with normal vessels and normal peripheral resistance, the product of pulse pressure times pulse rate equals the velocity per unit of time. Pathological changes in the heart or bloodvessels make this formula of no value. In fact, no formula which has yet been proposed to calculate the work of the heart or the velocity of blood flow (except Hewlett's (11) method for the arm) has been applicable to the majority of pathologically functioning hearts. High systolic pressure in itself has ceased to cause alarm. This is a compensatory process and represents the attempt on the part of the heart to maintain the circulation in equilibrium against conditions which tend to raise general peripheral resistance. What the nature of these various factors is, we do not at present know. It is significant that Voegtlin and Macht (12) have isolated material from the normal blood which raises the blood pressure. It is a substance regarded by them as lipid and closely related to cholesterolin. They have isolated it from the cortex of the adrenal gland.

Since the diastolic pressure measures the general peripheral resistance and is not subject to such wide and sudden fluctuations as the systolic pressure, it is my belief that estimation of the diastolic pressure is more important than estimation of the systolic pressure. A high diastolic pressure invariably means constant increased work on the part of the heart and leads to hypertrophy of the left ventricle. For a long time it was not believed that there was such a condition as pure work hypertrophy. Experiments made on dogs (cited by Hirschfelder)

have proved that the old view was erroneous. Hypertrophy, however, occurs much more readily when there is some residual blood in the left ventricle after the systole. Systolic pressure may be high for a short while (even days), but if the diastolic remains normal, the systolic will come back to normal when the stimulus, whatever it may be, is withdrawn. Recently I have observed a case of toxemia of pregnancy in which wide fluctuations of the whole pressure picture took place. The figures were normally 120 and 80. When the diastolic rose to 90 the systolic was around 150. Once during a period of headache and mild dyspnea, with evidence of slight cardiac dilatation, the figures were 190 and 110. The diastolic had risen 30 mm., the systolic 64 mm. In no case have I ever seen high systolic without high pulse pressure. A steadily rising diastolic pressure seems to be of more importance than an apparently steadily rising systolic pressure. This follows from the reasoning given above. The maximum pressure may be high, but if the minimum is only slightly increased and the pulse pressure therefore greater than normal, the heart is better able to carry on the circulation than when the minimum and maximum approach each other and the pulse pressure is consequently low. As the blood travels toward the periphery and is spread out over a widely flowing bed, the maximum pressure approaches the minimum, but is never quite equal to it except at the openings of the great veins into the heart.

In a failing heart the maximum also approaches the minimum until the pulse pressure is nil. The heart has then ceased to carry on the circulation and the individual dies.

Practically, hypertension is both high diastolic and high systolic and increased blood pressure. To attempt a reduction of the systolic pressure alone may cause collapse, owing to the decrease in pulse pressure. As a matter of fact, I have not yet been able with drugs to reduce markedly the pressure picture. I have seen reduction take place without drugs oftener than with them. Reports of marked reduction in the systolic pressure after baths, electricity, d'Arsonvalization, etc., are found in the literature. These reports lack the thoroughness of complete blood pressure readings, and the observers fail to take into consideration the factors of physical and mental rest which play such a large part in steadying the circulation and reducing some high pressures.

I am cognizant of the great mass of data tending to show that persons with high systolic pressure have not the same expectation of life as those with normal pressures. I think it fair to criticize the conclusions in many cases for the reason that no account was taken of the diastolic pressure. The systolic pressure, as has been said, may be temporarily high from a number of causes not pathological. In life insurance I feel that injustice has undoubtedly been done to many persons because of the refusal by companies to all who show systolic pressure above arbitrary figures.

It is now generally conceded that a high pressure picture, i. e., high diastolic, high systolic, and increased pulse pressure, indicates chronic interstitial changes in the kidneys in the face of normal urinary

findings. This is doubted by an individual here and there. The doubt is usually based on the fact that not all high systolic pressures go hand in hand with chronic kidney disease, as some have held. Those who question the relationship between high pressure pictures and chronic nephritis, have the burden of proof laid upon them.

There is much yet to be learned concerning the blood pressure picture. It is more difficult to explain the sudden fluctuations of the whole pressure picture than to account for the wide variations of the systolic pressure alone. We have seen three patients with high pressure picture, in all of whom there were evidences of chronic nephritis of a marked degree; all had convulsions, and no phthalein excretions in two hours. One was thought to be *in extremis*. All were men under forty years of age and all apparently recovered completely. The remarkable feature in all was the subsidence of the pressures to normal value. Careful analysis of these cases has not shown in what manner they differed from the ordinary cases of chronic nephritis with high pressure, convulsions, coma, and early death. Again, there are many persons who for years have a high pressure picture, carry on their daily occupations, and seem fairly well. The prognosis in cases of high pressure should therefore be very guarded. I have in mind several patients who for a period of five years that I know of, have had systolic pressures above 170 mm. and diastolic pressures above 110 mm. Regulation of diet and attention to hygiene have actually made these people feel much better without materially reducing the pressure pictures.

A study of our records for the past three years leads us to believe that we can formulate a few working generalizations; further than this we do not seem justified in going at this time:

The diastolic pressure for any individual is more constant than the systolic. As it measures the peripheral resistance, it seems to be a more accurate index of high or of low tension than the systolic pressure.

The pulse pressure, which represents the actual head of pressure forcing the blood to the periphery, can be obtained only by measuring both the systolic and diastolic pressures. It is therefore of the greatest importance to be able to measure accurately the diastolic pressure.

Gradually rising diastolic pressure is of more significance than high systolic pressure. Large pulse pressures are essential for the compensation of hypertension cases. Decreasing pulse pressures in such cases is a sign of failing heart.

Attempts by any means to reduce hypertension without proportional reduction of the diastolic pressure may be productive of great harm.

Any pulse pressure below 30 mm. Hg. must be regarded as low, above 50 mm. Hg., as high.

The diastolic pressure should be taken by the auscultatory method at the sudden transition from the loud third tone to the dull fourth tone. In many cases the fifth phase or disappearance of all sound so closely follows the fourth phase, that practically the diastolic can be taken at that point.

No accurate observation of either systolic or di-





tion. Any purpose in writing is to discuss this question.

At present, adequate provision for complete and thorough team work is only to be found in a well equipped hospital. Even here, the outpatient department is usually treated like a stepchild. It is commonly allowed very insufficient funds, an insufficient and too often inefficient medical staff, and poor general equipment. The outpatient department of a hospital must be given recognition as being equal in importance to the in patient service, and must be as thoroughly equipped and manned as the latter. Given, then, a hospital properly manned and served in all its branches, the opportunity for thorough team work is ideal. Such service must be rendered available at a cost that can be met by the large class of patients spoken of above, who are not rich, and yet do not want charity.

For bedridden patients some such provision is now made in most hospitals. For ambulant patients, no such arrangement is anywhere available. A service for pay patients in a well managed outpatient department of a hospital should be possible, and might have advantages in more directions than one.

Individual clinical medical specialism, as practised today, is an almost unmixt evil, the fault lying, first and foremost, with the specialists who abuse the public knowingly, and secondly with the public, who are so blind and lacking in understanding, as deliberately to invite and encourage the abuse. The consequent unreasonable fee demanded and obtained by specialists is, in most of the specialties, entirely out of proportion to the services rendered, when compared with the fees charged by practitioners of general medicine, of comparable experience and ability. In general, the fees at present charged by general practitioners are altogether too small, and the fees charged by most specialists are too large. The latter fact is the great obstacle to proper team work in private practice, and the reason why many general practitioners continue to do a certain amount of work in all the special fields. They cannot be sufficiently trained to do good work in all these minor branches, and would gladly turn all special work over to the better trained specialists, were it not the present day fashion for the latter to have, or to pretend to have an exalted idea of the value of their services and to demand fees that most people cannot afford to meet.

It is a common argument that the specialist is a man who has had a general training, the same as the general practitioner, and in addition, special training in his special field. He has therefore become particularly proficient and is entitled to advanced honor and fees. We may grant at once that he has acquired marvelous skill in a certain branch of practice; but we must not lose sight of the fact that his field (and I here want to except from all my argument the fields of pediatrics and neurology) is very narrow, making it possible, without any particular amount of application and without any marked degree of natural ability, to learn all there is to the subject, in comparatively short time. This is particularly true, in view of the most regrettable fact that astonishingly few specialists (always bearing

in mind the exceptions mentioned) keep up any acquaintance with general medicine and surgery. The sum total of all this is, that a young man five or six years out of college, may have acquired considerable skill at cutting tonsils or nasal septums or tympanic membranes (while he forgets all about the considerable remainder of the body), and may very seriously esteem himself entitled to, and usually demand and even get a very respectable fee. On the other hand, a young man of as much natural ability, who has devoted twice as many years and twice as much study to general medicine, is looked upon by specialists and the general public with pity, and often contempt, and compelled to content himself with about twenty per cent. of a specialist's fee. I realize that this situation is a matter of fashion, and like all fashions will shortly pass away. The pendulum has swung for the specialists altogether too far, and will very shortly swing back and the situation will finally be properly adjusted. The result at present is, that the patients of moderate means who do not want charity cannot have the benefit of thorough modern medical care.

The public must in the first place be made clearly to understand that a modern study of a diseased body is a much more complicated and laborious matter than it was a generation or even a decade ago, and hence must cost more; and in the second place, they must be taught properly to estimate the relative values of the services of their general medical adviser and of the specialists.

It must be understood that it frequently requires a whole team of medical practitioners to determine accurately the nature of a malady and to decide on its proper treatment, *and that the captain of the team is the general practitioner.*

It thus seems, that to render the large, self respecting, financially middle class population, adequate and modern and complete medical service, should be possible, and in one of two ways. Either clinicians working in special fields must reduce the scale of fees at present fashionable for them, and so, though earning as much as, and perhaps more than they now earn, they must do more work for the same amount of money; i. e., render service to a greater number of patients; or else, hospitals and dispensaries must establish facilities for rendering efficient team service to *pay patients*, at reasonable prices, the doctors rendering the service being employed and salaried by the institution.

It is conceivable that an extension of the latter plan might lead to State medicine. Let us hope, that if State medicine has to become a fact in the United States, it will bear no resemblance to similar institutions in Europe. The quality of service rendered by the institutions there established and the only quality possible, is exactly what we are trying to eliminate here. State medicine as practised and paid for in Europe entirely ignores the very material facts above emphasized, namely, that the study of a diseased body in the light of modern developments in the science and art of medicine requires time and work and team work. The persons giving this time and work are human, and require food, rest, and recreation. These latter must be paid for, hence the doctors must be so remunerated as to have the wherewithal to pay for rest and recreation,

as well as for food. When one man, doing general practice, is compelled to see forty or fifty patients a day in order to earn a modest living, it is a physical impossibility to give his patients decent attention, and they consequently do not get it. *The attention they get is commensurate with the pay the doctor gets.*

An institution that cannot fail to be aware of these facts, and yet ignores them, is worthy of the utmost condemnation. A State that undertakes to render its citizens medical service, must reckon on giving *proper* service and must realize that this has to be adequately remunerated.

Now, if all of today's hasty clinical medicine was supplanted by proper practice, there would be a considerable dearth of clinicians. It is my belief that the number of clinicians in New York city, for example, is insufficient *properly* to handle the number of sick. On the other hand, were all the patients now being regularly mistreated, properly treated, the incidence of disease would in a decade be considerably reduced. This would occur as a consequence of the forestalling of the development of diseases and complications now neglected and overlooked because of hasty and slipshod work.

A visit to any average dispensary and an examination of the work and records, would soon prove this to the most skeptical. Similarly convincing is a study of the methods and work of the average lodge doctor. Both the dispensary and the lodge doctor have too much to do, to be able to do it properly.

A State medical service, provided with proper equipment and a medical staff decently salaried and sufficient in number to handle without haste all the sick requiring care, would be a very satisfactory substitute for our present day medical service, and would be objected to by none. Such a service would not in the least resemble the present State medical services of Europe, for the latter are not adequately manned and not adequately paid for. A sufficiently large staff sufficiently paid—that is essential. And I emphasize *quantity* more than *quality*, when speaking of the medical staff, because I have no hesitation in stating that with our present day methods, for every clinical error due to ignorance, there are ten errors due to haste and carelessness.

1815 SEVENTH AVENUE.

## SQUAMOUS CELL CARCINOMA OF THE LARYNX.

### *Report of a Case.*

By L. J. GOLDBACH, M. D.,  
Baltimore.

CASE. J. W. C., aged seventy years (clinic No. B1725), applied for treatment in my clinic at the Presbyterian Eye, Ear, and Throat Charity Hospital, September 5, 1914. His complaint was "hoarseness for four months and last two months difficulty in breathing." Had lost fifteen pounds weight, but was not suffering from pain. His past history was negative, except for occasional rheumatic attacks. His mother, brother, and sister died from "throat trouble," the exact nature of which we were unable to ascertain. Moderate drinker and smoker. Occupation, mounted policeman, retired.

Examination—Ear: Pinna, external auditory canal, and membrani tympani, normal. Nose: Septum showed slight deviation, otherwise normal. Throat: Pharyngeal mucosa

granular. Nasopharynx normal. Larynx: Indirect laryngoscopy, on the left side within the larynx, and above the left arytenoid and cord, a growth about 20 mm. in diameter, vascular, and papillomatous, with a portion of the right cord was visible near the anterior commissure about 3 mm. By direct laryngoscopy, a piece of the growth was removed for pathological examination; free bleeding followed with large amount of mucoid expectoration. Doctor Maldeis reported squamous cell carcinoma. September 19, 1914, fourteen days after his first visit to the clinic, direct laryngoscopy showed an increase in the size of the tumor. We advised him to enter the hospital.

On October 6th, patient returned with marked dyspnea. Laryngoscopically, the small aperture in the larynx was almost closed and the growth undoubtedly larger.

A low tracheotomy was done under 0.5 per cent. novocaine anesthesia the same day. Owing to the short neck it was with some difficulty that we opened the trachea between the second and third tracheal rings. The extra manipulation of pulling the trachea upward and forward caused postoperative trauma and cellulitis; this was troublesome for a few days, and the patient appeared quite exhausted, but his breathing was easy and not labored. Through the kindness of Dr. J. M. Lewis, at Doctor Kelly's sanatorium, radium was applied for three hours on the afternoon of October 27, 1914. We were very anxious to note the action of radium, so the days following were for observation and study with the laryngoscope. The patient stated that he felt better and was in better spirits. It appeared that the growth, on October 30th, was less vascular, more fibrous, and more defined. The aperture at the cord appeared wider; whether this was due to the tracheotomy allowing the larynx to rest, or to radium, is hard to say. November 12th, the growth appeared larger and his larynx was closed. We advised him to have an operation completely to remove the growth. He was urged not to wait, but to reenter the hospital. Inquiries as to why he did not return were answered by statements that he was comfortable, and would visit the clinic in a few days.

On December 21st, I was called by telephone, requesting me to see the patient at his home. As it was impossible for me to go at that time, I requested Doctor Smith to visit him. Doctor Smith reported him to be in a pitiable condition, with respiration 40, pulse 120, temperature 99° F. During the night the patient died.

This was three months and seventeen days after his first visit to the clinic. We were successful in obtaining a post mortem examination. The larynx and trachea down to the third ring and part of the esophagus were removed. The posterior wall of the trachea beyond the tracheotomy wound was covered with the growth. No evidence of any glandular involvement was palpable. The cause of his death was closure of the trachea below the tracheotomy tube.

322 NORTH CHARLES STREET.

Treatment of Trichocephalosis.—P. Berrio, in the *American Journal of Tropical Diseases and Preventive Medicine* for September, 1914, it is stated, highly recommends the milk or sap of the fig tree. The sap is obtained by incision of the bark, and is administered in a dose of six or eight drams (25 or 30 c. c.), followed by castor oil.





The writer acknowledges at the onset of this as well as in the other diseases, that the number of cases under observation is sufficient to support conclusions. The proportion of the numbers in the occupations as figured from the foregoing table is as follows:

Fishberg made an epidemiological study of tubercularization and immunization. He gives a lengthy discourse on tuberculosis among children, primitive people, and civilized people. He shows that tubercularization goes hand in hand with industrial developments; he shows further that among the Jews the mortality was high in the medieval ghettos, while today it is lower than that of any other people who are exposed to the infection. In other words, he brings out the fact that immunization is in inverse ratio to tubercularization, if sanitary conditions of living and working are similar.

The tubercle bacillus is frequently harbored within the body from childhood and never causes an active lesion, for the reason that an acquired immunity exists. This acquired immunity may be diminished or disturbed by exposure to vitiated confined air, overcrowding, excessive heat, cold, darkness in rooms, fatigue, inactivity, excessive dust, direct infection from the dust containing recently excreted bacilli, etc.

Tuberculosis among tailors, cutters, pressers, furriers, and workers in allied industries is frequent, as is shown by our table. In these occupations direct infection, overcrowding, fatigue, unsanitary home environments are the main factors. Woolen clippings are thrown about the floor; these are picked up at night and placed in barrels where they remain for a few days, then they are placed in large bins or bags. Then men often expectorate on these clippings when they are on the floor or in the barrels; they do this, even though cuspidors are provided in the work room, because of convenience. When the clippings are sold they are taken out of the bins or barrels, at which time a large amount of dust is created through carelessness, and with the dust the tubercle bacillus is disseminated in the room. It is, of course, taken for granted that one or more tailors are infected. The woolen clippings are sold, woven into cloth, then are dyed. During the dyeing process some of the tubercle bacilli are killed, while at times they resist the effect of the dyes and remain alive. When this occurs the cutter may readily be infected, because some fine dust is created in cutting the cloth. The tailor may also be infected when handling this cloth.

Freudenthal has studied 1,576 cases of tuberculosis at the Montefiore Home; 1,152 in males and forty-two in females. Of the males he enumerates

according to occupation as follows: Tailors 183, operators 90, pressers, 52, cloak makers 30, shirt makers 18, cutters 12, cap makers 13, paper box makers 5, cigarette makers 4, painters 27, waiters 11, tinsmiths 11, and the rest of the occupations range from 13 down to one. He discusses the cause of tuberculosis among tailors at length, and in speaking of other occupations, home environments, etc. He includes in the etiology nose and throat affections. He says: "For years and years numbers of these men come to my nose and throat department for treatment; their complaints are so uniform and so characteristic that I need not ask them for their occupation; I know they are tailors. They all have a more or less atrophic condition of the mucous membranes of the nose and throat, and they all have a postnasal catarrh. That this catarrh with its stagnating, adhesive, dried secretion which lies at the retropharynx for weeks, is the best culture medium for tubercle bacilli, I have shown elsewhere." He saw tuberculous ulcers frequently develop in this region.

In many of the occupations enumerated such as those of painters, plasterers, iron workers, longshoremen, and drivers, tuberculosis is frequent and is due at times to dust, at times to exposure to atmospheric changes; added to these insanitary home environments and devitalization by alcohol. Of the atmospheric changes it may be said that certain occupations require the person to dress lightly, therefore he is exposed to sudden changes of temperature. Then, again, he may be required to be in certain positions for hours, making it impossible for him to create a proper circulation of the blood in the superficial skin areas, for example, a house painter.

## GASTROINTESTINAL DISEASES.

|              | Per cent. |              | Per cent. |
|--------------|-----------|--------------|-----------|
| Painters     | 100       | Waiters      | 100       |
| Plasterers   | 100       | Iron workers | 100       |
| Longshoremen | 100       | Drivers      | 100       |
| Carpenters   | 100       |              |           |

This table demonstrates without question that the sedentary occupations of tailors, cigarmakers, etc., are causative factors in gastrointestinal disorders. Especially is that true in the foregoing occupations, considering that not only are the occupations of a sedentary nature, but men are required to be in a sitting and stooped position for long hours at a time, say from 7 a. m. to 12 m., and from 1 p. m. till 6 or 7 p. m. Abdominal pressure and lack of exercise diminish the circulation in the viscera. The impeded circulation may directly cause constipation and indigestion; it brings out an acquired predisposition for gastritis, gastric and duodenal ulcers, enteritis, cholecystitis, cholelithiasis, hepatitis, appendicitis, and tumors of the viscera and mesentery. The stooped position causes direct pressure on the viscera, therefore, like injury, it may be an exciting cause of ulcer of the stomach and duodenum, cause of tumors of the viscera and mesentery, also an exciting factor in appendicitis when a foreign body lodges itself in the appendix; of course, this is not a frequent form of appendicitis. I may state that I have seen a case of fibroid cyst of the omentum in a tailor, where to my mind

there was no doubt that occupation was the etiological factor. It will be noticed that not one case of alcoholic gastritis is found among tailors, and that not one case of alcoholism is recorded.

The cause of much of the gastrointestinal disorders of the iron worker, carpenter, painter, driver, baker, and bartender is to be looked for in alcohol. Friedenwald says that "indiscipline in diet, such as the use of food of a very heavy character, as well as the abuse of alcoholic drinks and tobacco are the causes of the largest proportion of cases of hyperchlorhydria." Alcoholism is also very frequently the cause of acute and chronic gastritis.

## ALCOHOLISM.

|                       | Per cent. |            | Per cent. |
|-----------------------|-----------|------------|-----------|
| Painters              | 100       | Printers   | 100       |
| Plasterers            | 100       | Plumbers   | 100       |
| Longshoremen          | 100       | Bakers     | 100       |
| Carpenters            | 100       | Tailors    | 100       |
| Building constructors | 100       | Waiters    | 100       |
| Iron workers          | 100       | Bartenders | 100       |
| Drivers               | 100       | Carpenters | 100       |

From this picture it can readily be seen that the longshoreman, owing probably to his exposure to the inclemency of the weather, drinks to excess. The same holds true of the roofer, the driver, the iron worker, the painter, and the porter. The waiter and the bartender, on the other hand, permit themselves the pleasure, no doubt on account of their proximity thereto.

Again, in some occupations where excessive dust is in the air, the worker feels he can best overcome his peculiar throat uneasiness with beer; a habit is formed and for that reason he indulges too freely. The writer has obtained this information from bakers, plasterers, cigar makers, etc. It may be mentioned here that the presser in the tailor shop sends out for his pint very frequently. He says that his throat is dry on account of the excessive heat around the pressers' table and emanation of coal gas from the stove. It will be noted in our table that pressers are credited with a high percentage of tuberculosis.

Workers that are confined indoors constantly develop a chronic lethargy; the cause of the lethargy is vitiated air with gastric and hepatic disorders. It has been shown that where illuminating gas is used, carbon monoxide is present in the air. In addition to carbon monoxide there are body emanations, namely, the breath, perspiration, and gases from the bowels. Therefore, the chronic lethargy is really a chronic poisoning in the instances where it is due to the carbon monoxide poisoning; it is a chronic autointoxication when due to gastrointestinal disorders; and it is a general debility when due to the sluggishness of the functions of the abdominal organs. The worker endeavors to overcome the drowsiness and resorts to liquors to accomplish his object. Constant repetition of the liquor only increases the lethargy by increasing the intoxication, and eventually creates intemperance.

Therefore, the causes of alcoholism in the worker from an occupational standpoint can be summed up as five in number: 1. Exposure to inclement weather; 2, proximity; 3, dust; 4, vitiated air; 5, gastrointestinal disorders caused by sedentary occupations.

## ANEMIA.

|           | Per cent. |          | Per cent. |
|-----------|-----------|----------|-----------|
| Chlorosis | 100       | Plating  | 100       |
| Palatals  | 100       | Washing  | 100       |
| Chlorosis | 100       | Painting | 100       |
| Chlorosis | 100       | Foundry  | 100       |
| Chlorosis | 100       |          |           |

We should not place too much reliance in these figures, because clinicians have not made particular efforts in the direction of properly determining anemias. The diagnosis has been made mainly on inspection of mucous membranes; only in a few instances has there been a differential count or a hemoglobin test. The writer frequently observed anemia in patients suffering from gastrointestinal disturbances, which lead him to conclude that inanition from chronic dyspepsia often causes anemia. Another cause of anemia in factories is poor ventilation and overcrowding. In such cases, there is a gradual pallor, languor, and then an anemia, and this is ascribed to improper oxygenation of the blood from vitiation of the air by gases from the intestinal tract, from eructation and exhalation, and also from organic matter given off with perspiration. In certain occupations anemia is due directly to the toxic nature of the gases or dust arising in the process of work, as in metal plating, smelting, printing, foundry work, etc.

The subject of occupational anemia is very important and deserves special investigation.

## LEAD POISONING.

|                 | Positive. | Doubtful. |
|-----------------|-----------|-----------|
| Painter         | 17        | 7         |
| Printer         | 12        | 4         |
| Plumber         | 3         | 3         |
| Roster          | 1         | 0         |
| Tinsmith        | 2         | 0         |
| Tin foil worker | 1         | 0         |
| Pipe fitter     | 1         | 0         |
|                 | 27        | 14        |

It will be noticed that a total of forty-one cases of plumbism were treated at Bellevue Clinic within a period of two to three years; of these the diagnosis in fourteen cases was doubtful, and twenty-seven were positive.

An intensive investigation of lead poisoning in greater New York is at present being conducted by the New York State Department of Labor. The findings will be compiled by John H. Vogt, chemical engineer of the department, and the writer; therefore, no comment will be made at this time on lead poisoning.

## SKIN DISEASES.

The record of skin diseases obtained for our tabulation was from Mt. Sinai Hospital Clinic, where the writer has served for three years as an assistant attending physician. When a skin lesion is occupational, the diagnostician designates it "occupational" or "trade" in character, e. g., our tabulation shows "occupational eczema" and "trade dermatitis."

A vast number of cases of eczema lotricum of the hands were treated, especially in the female department. Water repeatedly in contact with the skin is an exciting cause of eczema in its different manifestations. According to Fordyce, the excessive use of soap and water extracts the fats, and macerates the horny layer of the skin, thereby reducing the resistance of the skin. These agents, therefore,

may be direct excitants or prepare the way for washing powders to cause eczema.

This theory explains the cause of ordinary alopecia. Constant use of water in combing the hair produces a seborrheic eczema of the scalp, with an involvement of the hair follicles and a consequent alopecia. If people adopted liquid petrolatum in small quantities for making the hair moist when combing, it would prevent many an early alopecia.

The varnisher acquires dermatitis of the hands sooner than does the washwoman, on account of the more irritant substance that is present in the varnish. The metal polisher handles a number of acids during the process of plating, and it is this irritating action of the acids that produces his eczema. The hat maker gets eczema of the hands owing to his use of the hot water acidulated with sulphuric acid. The painter, like the varnisher, acquires an eczema of the hands on account of the irritating substances contained in the paint. The furrier gets eczema, dermatitis, and dysidrosis of the hands, from the irritating effects of handling furs, which contain anilin colors. The tailor ascribes his trade eczema to the same cause. The presser has dysidrosis and hyperidrosis. And while we have not tabulated any cases, he too acquires eczema lotricum, which is due to his handling a sponge soaked with water. The water and hot iron cause a disturbance in the secretory action of the sebaceous glands, at first increasing its activity, and later diminishing it. Baker's dermatitis of the hands and forearm is known as baker's itch. The cause of this disease is moisture and heat. Fordyce also mentions saccharine solutions and a mite that lives in the flour as attributing factors. Benzine dry cleaners, owing to the handling of benzene and ammonia, frequently manifest on the hands and forearms a folliculitis, a dermatitis, or an eczema with vesicular and pustular lesions.

In conclusion, the writer wishes to state that there is a large field for research work in industrial diseases, but as yet the clinicians in public institutions are entirely unprepared to assist the public health officers in their research work. However, the work is progressing with rapid strides. The first industrial clinic was only recently established by the New York city health department. Let us hope that other cities will follow suit and that all clinics and hospitals will hereafter take clinical histories to be utilized in studying occupational diseases.

The writer wishes to extend most cordial thanks for assistance and suggestions kindly accorded him by Professor George B. Wallace, of New York University and Bellevue Medical College, and Dr. A. A. Berk, of Mount Sinai Hospital.

868 DAWSON STREET.

**An Analgesic Ointment.**—A writer in *Paris medical* for February 14, 1914, recommends for local anodyne effects:

R Mentholis, . . . .  
Methylis salicylatis . . . .  
Adipis hanc laticis . . . .  
M et et unguentum

The menthol (in crystals) should be first dissolved in the methyl salicylate.



## Our Prize Discussions.

CLXII.—How do you treat the effects of excessive smoking? (Answers due not later than September 15th.)

CLXIII.—How do you treat pernicious anemia? (Answers due not later than October 15th.)

CLXIV.—How do you treat insomnia? (Answers due

Whoever answers one of these questions in the manner most satisfactory to the editors will receive a prize of \$25. No importance whatever will be attached to literary style, but the award will be based solely on the value of the substance of the answer. It is requested (but not required) that the answers be short, if practicable no answer to contain more than six hundred words; and our friends are urged to write on one side of the paper only.

All persons will be entitled to compete for the prize whether subscribers or not. This prize will not be awarded to any one person more than once within one year. Every answer must be accompanied by the writer's full name and address, both of which we must be at liberty to publish. All papers contributed become the property of

to Question CLX was awarded to Dr. F. Richard Newman, of Wheeling, W. Va., whose article appears below.

### PRIZE QUESTION CLX.

#### THE TREATMENT OF FLATULENCE.

By F. RICHARD NEWMAN, M. D.,

Wheeling, W. Va.

Flatulence may be divided into gastric and intestinal. As a rule it is due to gastric or intestinal indigestion, excessive fermentation from imperfectly cooked cereals and vegetables, especially potatoes, sugars, and starches, slow or imperfect digestion, intestinal sluggishness arising from functional derangements of the liver or portal circulation, deficiency of enzymes in the intestinal tract, hyperacidity, achylia gastrica, etc.

The direct cause in a majority of cases being unknown, the treatment must be based upon temporary relief, with a close study of the case to ascertain the exact cause and its removal if possible. In gastric flatulence give a hypodermic injection of apomorphine, grain one tenth, which will, in a majority of cases give instant relief. Hoffman's anodyne, in dram doses repeated every fifteen minutes until relief is obtained, is the best carminative we possess, for general use. Spirit of chloroform is also useful. In intestinal flatulence camphor, asafoetida, and pancreatin will be found beneficial. For flatulent colic in old persons and adults, capsicum is the remedy; it not only acts as a carminative, but will prevent the development of gas. In all cases of intestinal flatulence an enema of castor oil and sodium bicarbonate and hot applications to the abdomen will give wonderful results. Intestinal antiseptics are very disappointing, and prevention of stagnation is the most reliable antiseptic we possess, drugs being as a rule highly deleterious to the gastrointestinal mucosa.

Dietetic treatment is of the greatest importance. Careful dieting should be insisted upon; tea, pastry,

and vegetables should be forbidden and preference given to articles of food which have comparatively high nutritive value in a small volume. Lean animal meat, fish, poultry, and eggs, when properly prepared, are the most suitable foods. If this routine of treatment is carefully carried out, a majority of cases can be permanently cured.

JOHN CHARLTON SACKET.

Dr. John B. Casale, of Newark, N. J., writes:

Intelligently to treat a person suffering from attacks of flatulence, we must first determine the underlying cause by examining the stomach in regard to position, mobility, retention of contents, and free, total, and combined acidity. With this knowledge we can hope to aid the patient materially.

Gastric atony stands out preeminently as an exciting cause. I always begin treatment by putting the patient on a Carrel diet. Eight ounces of milk are given every two hours, and this is kept up for a week or more until gastric fullness, distention, and distress absent themselves from their host. Then a mixed diet is gradually begun, always bearing in mind the pathological findings. In achylia meats should be prohibited, but if the gastric acidity is quasinormal proteins may be allowed. The stomach should never be overburdened, and patients should be warned against hasty eating and bolting of food. No fluids should be taken with meals and only in small quantities between times. Tincture of nuxvomica, minimis x, in a little water is indicated before meals to increase the motor activity of the stomach. To combat fermentation and putrefaction in an acidity, give dilute hydrochloric acid minimis xx in a half glass of water, to be sipped through a straw during the meal. Substitute sodium bicarbonate or calcined magnesia if the flatulence is associated with heartburn. Patients should be advised to rest in the reclining position for an hour or two after meals until the treatment is well under way. Mental and physical rest is especially a curative factor in neurotics. Constipation should be controlled by diet and massage rather than by drugs.

Flatulence is also a common symptom of cardiac disorder during the stage of decompensation. Rest in bed together with infusion of digitalis half an ounce every four hours to toxicity helps to reestablish the vascular equilibrium.

Sometimes a surgical condition is the underlying cause, such as a chronic appendicitis or gallstones. Pyloric stenosis due either to ulcer or cancer also calls for surgical interference.

Dr. Herman Eichhorn, of New York, observes:

Flatulence may be considered first, in the acute, severe form, often called meteorism and met with in the acute fevers as pneumonia, typhoid, etc.; or post-operatively in abdominal surgery. Here the best treatment is a thorough cleaning out of the gastrointestinal tract with small repeated doses of calomel followed by salts, turpentine stupes, the use of the colon tube, soapud enemas, and what is not to be forgotten, treatment directed to the primary disease of which meteorism is only a symptom.

Then we have, secondly, the more or less chronic form of flatulence, which often taxes our therapeutic

tic measures. To treat this symptom (for it is not a disease) intelligently, we must know the cause or take into consideration the disease of which it is a symptom. Let us consider the stomach first. Too much gas in the stomach may result from acetylogy, usually coming on in hysterical patients after a sudden shock or emotional disturbance. This is best treated by gaining the confidence of the patient, explaining the cause to him, putting him on no diet but letting him eat everything, giving bromides and general sedative treatment, and removing, if possible, the cause of the nervous disorder.

Gaseous fermentation in the stomach sometimes takes place in marked atony and dilatation or in pyloric obstruction with retention and stagnation of food contents with a consequent putrefaction and fermentation. For this condition in dilatation of the stomach, daily lavage with antiseptics such as boric acid, resorcin, and salicylic acid, together with carbolic acid and charcoal by mouth, will give relief. But where there is pyloric obstruction, only surgical intervention with a gastroenterostomy will help.

The gastrointestinal form of flatulence is the commonest one we are called upon to treat and is accompanied by fluid or semisolid stools, which are sour with many bubbles of gas; microscopic examination shows that the starch is not digested. Since the bacteria of fermentation are normally in the intestines, we must logically put most reliance on diet, as very little can be accomplished with antiseptic drugs. At first, place the patient on fat and proteid food and for a few days exclude as much carbohydrate as possible. Begin with bouillon, beef tea, eggs, tender chopped meat, lean beef, chicken, butter, oil, and plenty of water. Then gradually add crackers, toast, zwieback, vermicelli, well cooked rice, and cream of wheat, and lastly add vegetables. Particular care should be taken to prohibit potatoes, pastry, turnips, carrots, celery. Vegetables containing a good deal of cellulose are especially to be avoided. Milk is to be given carefully and watched for its effect as it contains lactose which undergoes fermentation.

As far as drugs are concerned, if there is constipation use a laxative, the choice depending on the individual case. In mild cases carminatives are more or less useful, such as caraway seed, anise seed, peppermint, asafetida, sassafras, etc. A useful combination is strontium bromide grains x, charcoal grains v, milk of magnesia, one dram, to be taken three times a day after meals. The colon tube, which stimulates the contraction of the intestinal musculature and therefore the expulsion of the gas, and enemata medicated or plain, have their proper use.

Lastly we have flatulence due to chronic intestinal stasis. Sir Arbuthnot Lane certainly has opened up an interesting field worthy of further study. The inflated ileum and duodenum will yield to measures directed to the correction of the stasis, suitable, small, often repeated meals, massage, exercise, posture, Russian mineral oil (now a good American product must be used), some abdominal support and in the most desperate cases the scalpel of the skilled surgeon to straighten out the kinks or overcome the mechanical obstruction.

*Dr. M.H. P. J. Nathan of Hamilton, N. Y., writes:*

As flatulence is usually caused by constipation, decomposition, or fermentation or biliousness, the treatment consists in removing the cause, proper dietetics, and overcoming the fermentation or decomposition.

*Removing the cause.* If due to constipation, give an initial dose of castor oil; after the bowels have moved, give the following:

R. Tincture belladonnae ..... 100  
Fl. ext. cascara sagrada ..... 100  
Fl. ext. rhubarb ..... 100  
Fl. ext. glycyrrhiza ..... 100  
Glycerin ..... 100

M. Sig. One dram before each meal. If condition is chronic, continue for six to eight weeks, gradually reducing dose.

*Dietetic.* 1. Eat slowly and thoroughly masticate food.

2. No fluids for one hour before and two hours after meals; only six ounces of fluid with meals.

3. Skimmed milk only for a few days, then gradually permit strained soup, boiled onions, Brussels sprouts, spinach, cauliflower, potatoes, bread and butter (sparingly), asparagus tips, green corn, green peas. As desserts, give stewed prunes, figs, stewed rhubarb, baked apples, ripe peaches, oranges, and pears; add beef, lamb, and game sparingly.

4. One glass of cool water on arising, one hour after meals, and one glass at bedtime.

*Dr. William Martin, of Atlantic City, N. J., remarks:*

In the starchy fermentations there is probably an insufficiency of the succus entericus, therefore the intake of the starches and sugars must be reduced to the proper proportions, this point being ascertained by repeated examinations. If the fermentation is of the putrefactive type, the reduction or entire elimination of the proteids is necessary, according to best judgment. Digestive ability may be determined by the test meal method, alone or in conjunction with the bismuth and x ray. If flatulence is caused by delay in digestion as the result of nerve innervation, treatments which will be mentioned later, are in order. If due to faulty posture or postures, mechanical measures must be resorted to in order that these defects be remedied. Faulty elimination due to intestinal stasis, being one of the greatest factors, must receive attention.

All remedial measures must necessarily be directed in the line of stimulation and toning up of the processes of metabolism, the secretions of the digestive organs, local and general circulation, and the restoration of the nerve and muscle tone. Past efforts to do this with the aid of drugs have been failures, listed with which are the much vaunted intestinal antiseptics, therefore, it behooves us to look around in order that some measures may be found that will prove effectual.

To improve metabolism and stimulate secretions and restore tone, the static wave current must be applied intelligently, not empirically. The flat metal electrode, connected to the positive pole of the apparatus, with the negative grounded, should be applied to the areas covering the digestive organs, and

with a slowly discharging current, the contractions and release will be regular, giving the mechanical as well as the electrical effects. The amount of current is a matter of experience and judgment. The treatments last twenty minutes, and may be given daily to advantage. This particular current has the happy effects that are needed in these conditions, especially in the cases where there is a relaxed condition of the abdominal walls with nerve innervation.

When we find flatulence is partially or wholly caused by hepatic and splanchnic engorgements, in addition to the wave current, we can use to great advantage the application of the high frequency current, by the method of diathermy, for hyperemic effects. This can be used for twenty minutes to a half hour daily, in the strength of from 1,000 to 1,200 ma. according to the operator's judgment. For the same purpose may be added the use of the high frequency lamp of the proper construction. This device is of great value in the treatment of flatulence, as the hyperemia is quickly produced.

Mechanical vibration of the abdominal inter-spaces of the splanchnic area will add much to the efficiency of the other methods just enumerated.

In the prone, mechanical supports are of use, but they must be fitted individually. The uplift of the organs will measurably relieve the nerve tension which is the result of the dragging down, and help toward a restoration of function. Postural defects must be corrected by the use of proper exercises.

In the putrefactive forms of flatulence, in addition to the dietary and other regulations, there may be added the Bulgarian lactic acid bacillus. In cases where there is a suspected lack of succus entericus, the use of secretion has been recommended, but this has not been proved to be positive in its results.

For the correction of stasis, which is an important etiological factor, the use of a pure grade mineral oil is advisable in the place of the usual laxatives. Acting as a lubricant, it is also supposed to retard fermentation.

To sum up the treatment of flatulence, it seems important to improve metabolism and tone up the organs of digestion, as well as to use dietary regulations, and this end is best reached by the use of mechanical and surgical measures.

## Therapeutic Notes.

**Treatment of Fracture of the Femur.**—L. E. Fitcham, in the *Providence Medical Journal* for March, 1914, asserts his belief that unless, in fracture of the middle of the femur, the case is treated in the first few hours, under an anesthetic, it is impossible to draw the thigh out to its original length, where there is one or two inches of overriding, because of the powerful contraction of the muscles. Continuous efficient counterextension, as well as extension, is required gradually to relax these muscles and secure replacement of the fragments. The patient should be placed on a fracture bed and extension applied, the straps, as usual, extending up to the level of the fracture, and the amount of weight applied being somewhere between twenty and forty pounds. To procure counterextension, much more

than elevation of the foot of the bed is required in these cases. A well padded perineal band should be fitted against the groin of the affected side, with straps of webbing extending from each and beyond the shoulder to a pulley at the head of the bed, where additional actual weight should be applied. Under the influence of the two weights, pulling in opposite directions, the muscles slowly extend, and within two weeks the bony fragments fall into an end to end position. Coaptation splints may then be carefully adjusted, no other having been necessary at any stage of the treatment. In two more weeks union will have become sufficiently firm to permit of allowing the patient up on crutches. Even in an oblique fracture the treatment just described would draw the fragments into good position, coaptation splints being employed in addition to prevent lateral displacement.

**Treatment of Intraurethral Chancroid.**—N. E. Aronstam, in the *Indianapolis Medical Journal* for March, 1915, states that by far the worst cases of chancroid to treat are those with the lesion located at the meatus or within the urethra. In these cases the author begins treatment with an alkaline diuretic, such as potassium citrate, acetate, or bicarbonate, in conjunction with hexamethylenamine. The pain on micturition is thus lessened, the urine having been rendered alkaline. As in other chancroid cases, an easily digested but nutritious diet is ordered, with abstinence from stimulants.

After the foregoing measures have been applied for a day, local treatment is administered as follows: The patient having been requested to urinate, the prepuce is retracted. The parts are washed off with a hot solution of boric acid, and a small, well lubricated, soft rubber catheter is passed down the urethra beyond the chancroidal lesion. A pint (50 c. c.) of a very dilute solution of an organic silver compound is injected by means of an Ullmann hard rubber hand syringe or irrigator. The urethra is thus washed out from behind forward, the solution escaping at the meatus, where it is received in a suitable vessel. Boric acid is next blown into the urethra, or the following ointment introduced by means of a long nozzled collapsible tube:

R Argenti nitrat. .... gr.iii (0.2 gram);  
Balsam. peruvian. .... 5ss (2 grams);  
Petrolat. .... 3i (30 grams).  
Ft. ung.

Finally the organ is enveloped in sterile gauze.

**Lactic Bacilli in the Treatment of Cystitis.**—Marion and Vivet, in *Progrès médical* for May 30, 1914, are credited with having found local treatment with lactic acid bacilli of decided utility in tuberculous cystitis. The procedure followed by them was merely to inject milk subjected to the action of *Bacillus bulgaricus* into the bladder. In a portion of the cases the injections were perfectly borne; in others, momentary pain followed. This discrepancy is apparently due to the fact that the amount of lactic acid in different tubes varies widely, even where the tubes have been incubated for the same period of time. The beneficial influence of the measure was noted in all cases treated, the frequency of micturition showing a rapid and marked diminution and the pain being quickly obtunded.



**Treatment of Syphilis.**—W. K. Sibley, in the *Urologic and Cutaneous Review* for August, 1911, states that in his opinion iodides are useful during all stages of syphilis. In the secondary stage, he gives them to bring mercury deposited in the tissues back into the circulation, the iodides dissolving the accumulations of insoluble mercury albuminate formed through previous administration. The capacity of iodides to bring about disintegration and absorption of gummatous lesions in the tertiary stage is a matter of common observation. Sibley asserts that, in general, the larger the dose of potassium iodide given, the less iodine will be liberated and absorbed in the system. He advises, therefore, the use of relatively small doses. A full dose, in his estimation, would be twenty grains (1.25 gram) of potassium iodide dissolved in a tumblerful of water, given once daily immediately after breakfast. If this dose be followed in four, six, and eight hours by a draught of chlorine water, given in a tumblerful of lemonade, a large portion of the iodine held in solution by its combination with potassium will be liberated and absorbed. The chlorine water may be made by mixing one dram (4 grams) of powdered potassium chlorate with two drams (8 c. c.) of strong hydrochloric acid in a twenty-four ounce (1.5 litre) bottle, allowing to stand for fifteen to thirty minutes, then gradually adding water, four ounces (120 c. c.) at a time, shaking well between each addition, until the bottle is filled. Two tablespoonfuls of this mixture are to be added to a tumblerful of lemonade and taken at a dose. Addition of ammonium carbonate to the mixture is advantageous not only to increase the action of the drug, but also to lessen the tendency to catarrh. Where potassium iodide is not well borne, the occasional addition of a few drops of tincture of belladonna leaves or of a small amount of arsenic or of potassium bitartrate appears to be of value in controlling the symptoms.

**Treatment of Chorea.**—W. R. Jordan, in the *Midland Medical Journal* for February, 1915, insists upon absolute rest in bed as the first requisite in the treatment of chorea. In a case free from cardiac complications the patient should remain in bed from two to three weeks after all movements have ceased; even then, evident paresis or mental disturbance may dictate a still longer stay in bed. To be sure, there are occasional cases in which prolongation of rest in bed seems, at a given time, to lose its effect, a slight degree of involuntary movement still persisting. In such a case, all other indications being favorable, the patient should be allowed up. If this does not cause an increase in the movements, it may be considered to be doing good rather than harm.

In every case of chorea, Jordan advises sodium salicylate in the beginning of treatment. The drug should be given at frequent intervals, and in considerable doses. The author gives from five to twelve grains (0.3 to 0.8 gram) every three hours, "guarded" with twice the amount of sodium bicarbonate and given with a carminative. With these precautions gastric disturbance, deafness, and giddiness are avoided, provided always that constipation is strictly prevented. When one believes enough sali-

cylate has been given or that the time for it is past, and yet movements persist, arsenic may be given, preferably as Fowler's solution, in doses of ten minims (0.6 c. c.) thrice daily with food, for two weeks or more. Where the use of a sedative is necessary in chorea, the author's preference is for antipyrin, which children bear well.

**Transplantation of a Piece of Tibia to Replace the Humerus.**—Girard, in *Revue médicale de la Suisse romande* for July, 1911, reports a case in which a piece of tibia comprising nearly one half the thickness of this bone, covered with its periosteum on both surfaces, was used to replace the left humerus, almost all of which had been removed for a tumor involving all of the bone, including the head, down to the lower epiphysis. The latter alone was allowed to remain. A diagnosis of chondrosarcoma had been made in this case, owing to the rapidity with which the tumor had grown in the last few months; microscopically examined sections, however, showed the growth to be a pure chondroma. In operating, the upper extremity of the transplanted section of bone was rounded off, to facilitate movement at the shoulder joint, and covered with a portion of the synovial membrane which had been preserved. The insertion of the deltoid muscle was, moreover, fixed to the transplant by a double circular ligature and also sutured to the periosteum. The tendons of the supraspinatus, pectoralis major, and latissimus dorsi were similarly attached to the bone at their normal levels. The transplant was fastened to the lower epiphysis with silver wire. Healing took place by first intention. Four weeks after the operation the patient could already execute slight movements of the arm at the artificial scapulohumeral joint; four weeks after that, movements of anterior and posterior elevation and of abduction had become easy and the muscles were increasing in bulk.

**X Ray Treatment of Ringworm.**—E. J. Watson, in the *Medical Press and Circular* for March 31, 1915, states that in forty-four of his series of sixty-six cases of ringworm of the scalp only one area of the scalp was exposed to the x rays; in twelve cases two or three separate areas were treated, and in the remaining ten the whole scalp was epilated. In protecting the tissues surrounding localized areas to be exposed, the author advises the use of a thin filter of aluminum. With this precaution, little or no danger of permanent baldness attends the x ray treatment. From the time of the first x ray exposure, the infected areas and a good margin round them were painted daily with tincture of iodine; this was found very useful in preventing the spread of the disease until the action of the rays had time to remove the disease by epilation. In the first and third groups of cases a cure was uniformly effected by the treatment. Of the twelve cases in the second group, four showed reappearance of ringworm in the hair round the epilated areas and these four cases were still under treatment at the time of writing. Return of the hair over epilated areas was generally seen to begin in fifteen to twenty days after the epilation, and in six to eight weeks a considerable growth had taken place.

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EDITORS

CHARLES E. DE M. SAJOUS, M.D., LL.D., ScD.

CLAUDE L. WHEELER, A.B., M.D.

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PANCREATIC LESIONS DEPENDING UPON  
DISEASES OF THE LIVER.

Sclerous pancreatitis is usually interstitial and interacinous or intraacinous. The newly formed connective tissue follows the capillaries and the predominating lesion is a pericapillary infiltration, a character very manifest in venous cirrhosis. It is quite exceptional that the sclerosis affects a purely interlobular topography because, beside surrounding the excretory ducts, the connective tissue also penetrates within the parenchymatous structures. This peculiarity, which has been attributed to the pancreas in biliary cirrhosis and to the diabetic pancreas, is far from being absolute. Almost always the cirrhosis of the large ducts coexists with more diffuse changes, and the sclerosis of the islands of Langerhans in diabetes, the frequency of the lesions of the acini which are rarely mentioned in the latter syndrome, offer numerous arguments in favor of diffuse sclerous pancreatitis and pericapillary infiltration.

A pancreatitis, therefore, arising during the progress of hepatic changes, would logically seem to be a connective tissue reaction following the course of the capillaries of an organ whose circulation is sluggish and for this reason is predisposed to infection from the blood or intestine. According to the case the vascular or canalicular lesions predominate, and

this fact may perhaps enable one to distinguish between the perivenous sclerosis of the pancreas in alcoholic cirrhosis and the canalicular sclerosis of diabetes. In both varieties, however, evidence of circulatory disturbances is manifest in the form of interacinous and intraacinous cirrhosis.

These observations are confirmed by experimental work. By partial ligation of the portal vein or its branches coming from the pancreas, Chabrol was able to obtain the various types of connective tissue hyperplasia and even sclerolipomatous atrophy of the gland. He was also able to distinguish the nature and degree of the parenchymatous lesions, which is usually impossible in human specimens on account of cadaveric changes. Thus he followed together the evolution of the lesions of the acini and the interstitial reaction, from granulofatty degeneration in the massive changes in the gland, up to the granular condensation which is the rule in the more discrete circulatory disturbances. From his experimental work, Chabrol has also shown how the cell hyperplasia progresses evenly with the connective tissue hyperplasia, thus following the general laws of histogenesis.

The hypertrophy of the islands of Langerhans is bound to these laws, and the study of the pancreas in syphilis, tuberculosis, and diabetes demonstrates its frequency and greatly favors Laguesse's theory, the passage of the acinus to the island appearing to participate in the cell reactions, whose great pathogenic interest is well known.

But while the sclerosis and hyperplasia indicate a defensive reaction of the pancreas and liver to the pathogenic agents, inversely the degeneration of both parenchymata and their products of cell disintegration produce a new property in the organism directed to their destruction.

In confirmation of the histological facts, the study of the pancreatic antibodies makes evident the action of the degeneration of the pancreas on the liver. A kind of vicious circle is produced, the liver bringing about circulatory disturbances in the portal system and injuring the pancreas by its toxic products of resorption, while inversely, the pancreas reacts in its turn on the degenerated hepatic parenchyma.

## A CASE OF LEPROSY.

In the *Dublin Journal of Medical Science* for July, 1915, Dr. C. M. O'Brien gives the history of a case of leprosy which came under his care last March. Briefly this was as follows: In March, 1915, the patient was admitted to the City Hospital for Diseases of the Skin and Cancer, and the case diagnosed for the first time. His father was a soldier, and died at the age of fifty-eight years.

J. O'D., the subject of these notes, was thirty-eight years old. He was born in Belfast in 1877, joined the army in 1895, and retired in 1906. His foreign service included Malta, Bermuda, Halifax, Jamaica, and South Africa. He served through most of the South African campaign. He always enjoyed excellent health. He developed synovitis of the right knee joint, the result of a kick in the football field, and was invalided home for months in 1899. He had colic in Malta for three weeks in 1897 and contracted gonorrhea in Halifax in 1898. He definitely stated he had never had syphilis. He left the army in 1906, and worked as a farm laborer in the neighborhood of Birr until 1911, when he dislocated his left elbow, and remained four months in Birr Hospital. In autumn, 1913, a crop of boils appeared on the back of his neck, and his eyes became red and somewhat swollen. He was admitted to Birr Hospital, where he remained about five months, after which he was able to work, and did so until August, 1914, when he sought to join the colors, but was rejected because of a skin rash. From August, 1914, he worked as a farm laborer until February, 1915. He was sent to Dublin in March, whence he subsequently remained under care. The patient complained of feeling weak on slight exertion, with occasional shooting pains in back and shoulders; at times sensations of heat and cold all over the body. He thought the skin of his face, especially over his forehead, was becoming too tight and was going to crack. Eyes were often bloodshot. Sleeping and appetite and digestion were good. The face was broader than normal; the skin thickened, dark brown and glistening, especially over the forehead, of which the furrows were very deep. The folds over the eyebrows were prominent and studded with tubercles, and over these the hairs were scanty, especially at the outer side. The nose was thick, broad, and flattened; the chin broad and unusually prominent; the beard very scanty; lips thick. Infiltrations and tubercles were present on neck, shoulders, and nates—both grouped and disseminated. On the extremities the infiltrations and tubercles tended to be symmetrical.

The case, as Doctor O'Brien remarks, was interesting and instructive because it possessed many of the clinical characteristics of tubercular leprosy in the early stages; it showed as far as one case could that the Wassermann test for syphilis was not truly specific, furthermore, that the Wassermann test for leprosy was equally nonconclusive and that the tuberculin test for leprosy carried but little conviction. The portion taken from a leprosy nodule of the patient and stained by the Ziehl-Neelsen method, showed many bacilli, a few of which could be seen within the cells, while the majority were scattered about in the lymph spaces.

Writing before the recent report from the Philippines, Doctor O'Brien laments that not a single cure of leprosy is yet to be credited to medical science. The description of leprosy given by Aretaeus in the first century corresponded so completely with the symptoms as we know them now, that the writer gives it in full:

Shining tubercles of different size, dusky red or livid in color, on face, ears, and extremities, together with a thickened and rugous state of the skin, a diminution or total loss of its sensibility, and a falling off of all the hair, except that of the scalp. The disease is described as very slow in its progress, sometimes continuing for several years without materially altering the functions of the patient. During this continuance great deformity is generally produced. The alae of the nose become swollen, the nostrils dilate, the lips are tumid, the external ears, especially the lobes, are enlarged and thickened and beset with tubercles, the skin of the cheek and forehead grows thick and tumid and forms large and prominent rugae, especially over the eyes; the hair of the eyebrows, beard, pubes, and axillae falls off, the voice becomes hoarse and obscure, and the sensibility of the parts affected is obtuse or totally abolished, so that pinching or puncturing gives no uneasiness. This disfiguration of the countenance suggested the idea of the features of a satyr, or a wild beast; hence the disease was by some called satyriasis, or by others leontiasis. As the malady proceeds the tubercles crack and ultimately ulcerate. Ulcerations also appear in the throat and nose, which sometimes destroy the palate and septum, the nose falls, and the breath is intolerably offensive, the fingers and toes gangrene and separate joint after joint.

After the discussion which followed the reading of Doctor O'Brien's paper, which comprised an interesting history of leprosy throughout the ages, the author referred briefly to the methods of treatment recently used, among them intramuscular injections of mercury iodide. Chaulmoogra oil, considered to be almost a specific by many investigators, had the disadvantage of producing severe gastritis.

#### CANCER AND THE CITIZEN'S DAILY FOOD.

It is common knowledge that a large multitude lives on improper food in New York today. We think that men of business and their employees, who must eat at restaurants at least once a day, absorb much of the poisonous element of ill cooked and preserved food; though whether the almost universal habit of eating the flesh of animals has steeped many constitutions in the unknown but ever present cancer germ, is another question; it is one thing to eat adulterated meats and other foods, another to have a system that will absorb and multiply the germs that may be in them.

Take, for instance, the office man who goes to the cheap restaurant. He eats hastily a soup, a dish of veal, ham, mutton, or beef, disguised by sauces or other products of culinary art. Now what does this



mean? In nine cases out of ten the meat has been bought in large quantity, at wholesale, it has been stored, it has been cooked in a great mass, and kept hot by steam at a temperature that favors the growth of disease cells, the eggs of parasites, and the development of ptomaines. Do the cancer cells lurk in this old stock, which is kept in the cauldron concealed, while the finest goods are put in the window? That danger collects in these messes we do not doubt, for if the disease of cancer is correctly envisaged, may it not have a subtle connection with a lifetime habit of eating the food of hotels and restaurants?

The variegated food that the citizen eats is not confined to the cheap restaurants and hotels. It is true that these exist to satisfy appetite rather than taste, but even in the more pretentious, which appeal to both appetite and taste, the food-bred spirit of cancer may be found. We have often had occasion to note the frequency of the disease in the class of people who have been busy in the dining rooms and cafés of great hotels. These people have cancer, we believe, in an increasing ratio. Is it not more than chance to find this incidence of the disease in the men who are fed on soppets of frequent iteration after an alcoholic drink? Certainly at last there is evidence that these habits have begun to make a bridge for the slow moving cancer germ, which perhaps passes from some elementary stage of its existence in vermin to a full development in the meat which is eaten by the human being. On this point such researches as those of Fraenkel and the Danish professor, Fibiger, seem to us a triumph of clever reasoning applied to experiment. Rats certainly are liable to cancer, and rats certainly eat stale meat.

This subject, carefully watched today, is teaching us a great deal. The cheap reprint and the lectures of professors have done much to spread the knowledge. Unfortunately the language of these scientific lessons is too exalted for the average mind. Science should be simpler, more specific; as regards cancer, it should descend to analyze the delusive stratagems of kitchens, to the plain description of cafés where the same thing is dished up three or four times at every meal. It may turn out that serums and specifics will not do as much for the weary man of business as a homely attention to the constant menace of impure meats.

#### HIGHER DRUG PRICES.

In his address as president of the American Pharmaceutical Association at the recent meeting in San Francisco, Mr. Caswell A. Mayo, editor of the *American Druggist*, directed attention to the great increase in the prices of drugs caused by the war

and to the fact that this increase was particularly noticeable in drugs which are most generally dispensed on prescription. The increase had been borne largely by the pharmacists, whose fees for prescriptions had been based on the range of prices of component drugs prevailing before the outbreak of the war. That portion of the medical profession which dispenses its own drugs has also been called upon to share in this increased burden. The dispensing physician who paid \$1.25 a pound for acetphenetidin before the war is now called upon to pay \$6.50. Caffeine has doubled in price, while thymol costs four times what it did before the mobilization in 1914. The pharmacist can at least advance the price of his new prescriptions, though he may probably be compelled to dispense renewals at the same figure at which they were priced before the advance. The physician who furnishes his patients drugs has no such recourse, but must stand the entire loss himself. Owing to the fact that the stagnation in business throughout the first half of the year militated against the collection of accounts, this necessity for paying higher prices for drugs adds materially to the doctor's hardships.

#### THE PINEAL GLAND IN RELATION TO SOMATIC, SEXUAL, AND MENTAL DEVELOPMENT.

Carey Pratt McCord (*Journal A. M. A.*, August 7, 1915) has obtained evidence of the precocity of development usually attributed to pineal deficiency in animals, by supplying an increased amount of pineal substance by feeding or injecting pineal preparations. Such administration of pineal substances led to a more rapid growth of body than normal and determined an early sexual maturity. The excess in rate of growth was most pronounced in young animals fed with pineal tissue obtained from young animals. No tendency to gigantism followed. After maximum size was attained, pineal administration appeared to be ineffective. Both males and females respond to the influence of pineal substance in rate of growth, but the response is manifested more definitely in males.

#### THE PSYCHOPATHOLOGY OF DESERTION.

Experts attribute desertion in time of war to temporary effects, rather than to any special lack of ethical levels. In other words, the act of running away in time of battle may not differ radically from the poriomania of epileptics and obsessives. Specht, however, in a paper read before the Military Medical Society at Erlangen (*Munch. med. Wochenschrift*, February 23d; *Universal Medical Record*, July, 1915), stated that he found no epileptics among his deserters, although these men were clearly psychopathic degenerates, and known as such

even before the war. Three cases are cited, one of which was that of a substitute reservist. He deserted, was captured, and submitted to a mild punishment. His condition was that of psychogenic stupor. When set free he committed suicide by drowning. The second was an imbecile, noted in peace time for running away, who had also deserted before the war. He is now in an asylum. A third subject is a mental defective and alcoholic degenerate. He deserted when drunk, and was found, eight days later, in a swamp. It appears that men of this type, not being taken at the period of mobilization, are accepted later as volunteers largely because of their great patriotic fervor, which suggests the old quotation to the effect that patriotism is often the last refuge of certain undesirables.

## Obituary.

NELSON W. WILSON, M.D.,  
of Buffalo.

Dr. Nelson W. Wilson, of Buffalo, died suddenly on August 30th after a performance in an uptown theatre, prompt removal to a hospital and the use of the customary methods of revival proving without avail. Doctor Wilson passed much of his early life in Rutherford, N. J., and came to New York in the late eighties, where he had a long and distinguished career as a newspaper man. Later he removed to Buffalo, where he was secretary to the editor of the *Buffalo Evening News*. He studied medicine at the University of Buffalo and graduated in 1898. He was in charge of the Pan-American Hospital when ex-President McKinley was shot and, after rendering first aid, remained on the case as assistant surgeon. He was genitourinary surgeon to the Buffalo General Hospital, a Fellow of the American College of Surgeons, and held membership in the usual societies. Doctor Wilson is survived by a widow and two brothers. He was a man of considerable personal charm and was popular both in his newspaper and his subsequent professional days.

## News Items.

**American Association of Obstetricians and Gynecologists.**—This society will hold its annual meeting in Pittsburgh, Pa., September 14th to 16th, under the presidency of Dr. Charles L. Bonfield, of Cincinnati. Dr. E. Gustav Zinke, also of Cincinnati, is secretary.

**More Support from the Pharmacists.**—Following the action of the Bronx County Pharmaceutical Association in endorsing the department of health's anti-patent medicine work, the Westchester County Pharmaceutical Association recently passed resolutions to the same effect.

**The National Association for the Study of Pellagra** will hold its next triennial session at Columbia, S. C., on October 20th and 21st. Headquarters will be at the Jefferson Hotel. The scientific meetings will be held in the Amusement Hall of the State Hospital for the Insane.

**Association of Military Surgeons.**—The twenty-fourth annual meeting of this association will be held in Washington, D. C., September 13th to 15th, under the presidency of Colonel Jefferson R. Kean, Medical Corps, United States Army. Brigadier General Samuel C. Stanton, of Chicago, is secretary.

**American Aid for Belgian Physicians.**—Warren County Medical Association, New York, will contribute \$50 to the fund which is being collected by the Association of American Physicians for the Aid of the Belgian Profession, making the total amount of the fund up to August 28, 1915, \$7,811.84, with a balance on hand of \$1,000.

**Medical Society of Virginia.**—The forty-sixth annual meeting of this society will be held in Richmond, October 26th to 29th, under the presidency of Dr. Samuel Life, of Lynchburg. Headquarters will be at the Jefferson Hotel. Dr. Paulus A. Irving, of Farmville, is secretary of the society and will be glad to furnish full information regarding the forthcoming meeting.

**Lehigh Valley Medical Society.**—At the midsummer meeting of this society, held in Delaware Water Gap, the following officers were elected: President, Dr. David H. Keller, of Bangor; vice-presidents, Dr. M. B. Ahlborn, of Wilkes-Barre, Dr. A. P. Featherolf, of Allentown, Dr. John B. Corser, of Scranton, and Dr. Kate De Witt Miesse, of Easton; secretary, Dr. John W. Luther, of Palmerton; assistant secretary, Dr. J. Harrington Young, of Lansford; treasurer, Dr. Albert A. Seem, of Bangor.

**Courses in Public Health at Syracuse University.**—On account of the recent ruling of the Public Health Council of the State of New York, that all local health officers appointed after November 1, 1916, shall have had special training or practical experience in public health work, the medical department of Syracuse University offers two courses in public health. The first is a six weeks' course in residence consisting of practical laboratory and field work with lectures and a course of reading, and the second is a correspondence course consisting of 330 hours of various kinds of instruction.

**Athletic Contest Applicants.**—In connection with the work of school medical inspection, the Bureau of Child Hygiene of the Department of Health has, for the past five years, cooperated with the Department of Physical Training of the Board of Education by making physical examinations of all boys intending to participate in athletic contests. Children found to be suffering from any cardiac lesion or other physical abnormality, who might be injured by excessive exercise, are debarred from taking part in the contests. The following are the results of this work for the school year of 1914-1915: Number of schools, 216; number of examinations made, 45,427; defects found: heart, 391; lungs, 6; orthopedic, 9; hernia, 36; nervous diseases, 3; total, 445.

**A Campaign Against Twilight Sleep.**—It is reported that the organization of an association to oppose the extension of the twilight sleep method is being planned by Mrs. Alice J. Olsen, of Brooklyn. It is her intention to interest wealthy women in an anti-twilight sleep campaign and raise money to circulate literature and rent a lecture hall in order to give the widest possible publicity to what she considers the facts regarding the Freiburg method. Since the death of Mrs. Carmody, who was said to be the first woman to receive the treatment in this country, and was one of its chief exponents, lecturing frequently on the subject, Mrs. Olsen has been more pronounced in her views against twilight sleep in labor. This open opposition to the method is interesting in the light of the propaganda to popularize it which has been carried on in this country since its introduction over a year ago.

**Annual Meeting of the American Medical Editors' Association.**—The annual meeting of this association will be held at the McAlpin Hotel, New York city, on October 18th and 19th, under the presidency of H. Edwin Lewis, M.D., editor of *American Medicine*. A most interesting literary program has been prepared upon important subjects of particular interest to every medical editor in this country. Coming at a time when clinics and operative work are in full swing, an unusual opportunity will be afforded to members who desire to observe clinical work, and for those who are interested in the business side a more propitious time and place could not be selected.

The annual banquet will be held at the McAlpin Hotel on the evening of October 19th. These delightful occasions of the American Medical Editors' Association are events long to be remembered and the local committee promises that this banquet will exceed all previous efforts.

**A Fairchild Scholarship in Pharmacy.**—At the sixty-fourth annual meeting of the American Pharmaceutical Association, which was held in San Francisco during the week of June 9th, the president of the association, Mr. Caswell A. Mayo, of New York, announced that Mr. Samuel W. Fairchild had agreed to provide funds for a scholarship in pharmacy paying \$300 annually, to be awarded to an undergraduate student by a commission composed of the presidents of the American Pharmaceutical Association, the American Conference of Pharmaceutical Faculties, the National Association of Boards of Pharmacy, and the editor of the *Journal of the American Pharmaceutical Association*. This scholarship, like the Fairchild scholarship maintained for the past eleven years in Great Britain, is intended to encourage young men of promise to take up the systematic study of pharmacy.

**The Proposed Hospital at Seton Falls in the Bronx.**—The department of health has refrained from the construction of the single hospital building at Seton Falls (Bronx), for which money is now available, in the belief that it is undesirable and would be wasteful to conduct simultaneously two contagious disease hospitals for the Bronx, one on North Brother Island and the other at Seton Falls. The present plan is to take no action with regard to Seton Falls until sufficient money shall have been made available for the construction of a group of buildings which will enable the department to transfer all of its contagious disease hospital work for the Bronx from North Brother Island to the mainland, leaving the island available for use as a hospital for adult patients suffering from tuberculosis and venereal diseases. There is under consideration by the Board of Estimate and Apportionment at the present time, a request for corporate stock for two additional buildings at Seton Falls, favorable action upon this request in the very near future is looked for.

**Weekly Mortality Report.**—According to figures supplied by the New York department of health there were during the week ending August 28, 1915, twenty-four more deaths than during the corresponding week of last year. The exact number of persons that died during the past week was 1,361, with a rate of 12.23, compared with 1,286 deaths and a rate of 12.01 for the week ending August 29, 1914. The important feature in the report is the increased mortality from typhoid fever. Of the 21 deaths from this disease last week, 12 occurred in the borough of Brooklyn and 41 new cases were reported in that borough against 29 in the remaining four boroughs. The heaviest mortality occurred in the Eighth ward of Brooklyn. Of the contagious diseases whooping cough was the only one that showed an increase. The deaths reported from diarrheal diseases under five years of age were two more than during the corresponding week of last year. Considering the increase in population, this amounts to a material reduction in the rate.

The death rate for the first thirty-five weeks of 1915 is 13.64, compared with 14.10 for the corresponding period of 1914.

**Epidemic Cerebrospinal Meningitis in New York.**—Cerebrospinal meningitis was at a low ebb in New York city during 1914, and up to the present time, there has been no indication of a rise, though there is some reason to believe there may be an increased prevalence in the near future. This disease, like many other of the infectious diseases, exhibits a marked periodicity in its prevalence, the interval between high incidences being about ten years. Thus in 1872, 1881, 1893, and 1904-5, the death rate per 10,000 of the population stood at 8.7, 4.27, and 5.4 respectively. In the intervening years this rate fell to less than one per 10,000. In 1906 there were 1.02 and in 1912-13-14 there were 0.36, 0.38, and 0.37 deaths respectively per 10,000. These waves apparently depend upon the accumulation of a large number of susceptible persons, and possibly also, the conjunction of certain meteorological conditions, for each of the years in which cerebrospinal meningitis was notably prevalent were marked by hard winters with snow. As there have been very few cases of the disease in New York city since 1905, the accumulation of susceptible persons is undoubtedly considerable. Immigration from Southern Europe, particularly Greece and Italy, has probably had some influence in causing localized outbreaks, as these classes of the population have from time to time furnished a number of cases when the disease had little prevalence among those of other nationalities.

**Unincorporated Public or Private Hospitals.**—In accordance with Section 220 of the Sanitary Code, no person, persons, or corporation, other than those specifically authorized by law, shall conduct or maintain any public or private hospital or institution wherein human beings may be treated or cared for by a physician or midwife, without a permit therefor issued by the board of health or otherwise than in accordance with the terms of said permit and with the regulations of said board.

The regulations of the department of health governing the establishment and maintenance of such hospitals (a copy of which will be forwarded on request) require certain information to be furnished by the applicant, together with evidence of approval by the Department of Buildings and the Bureau of Fire Prevention.

Before recommending the issuance of the permit, the department of health must have information as to the character and standing of the applicant. Hereafter, applicants must submit three letters of endorsement for purposes of reference, as follows: As to good character—from a layman; as to good character and professional standing—from a physician; from some person or persons living in the immediate neighborhood of the proposed sanatorium.

**New York State Exhibits Receive Many Prizes at the Panama-Pacific Exposition.**—The official exhibits at the Panama-Pacific Exposition, under the direction of the New York State Commission, have received grand prizes in all departments in which the State made exhibits. In the Department of Social Economy, the official exhibits of New York State were awarded the grand prize for the best exhibit of social welfare work made at the Exposition. In addition to these, the New York State Hospital Commission was awarded the grand prize for work in mental hygiene. The New York State Department of Health was awarded a medal of honor for the best exhibits of departmental accomplishment. The New York State Department of Prisons was awarded the medal of honor for the most advanced work in social economic betterment in reform work. Gold medals were awarded to the New York State quarantine exhibit, and the New York State Labor exhibit. A gold medal was also awarded to the Children's Aid Society for its social betterment exhibit. To the New York State Commission for the Blind and the New York Association for Improving the Condition of the Poor were awarded silver medals. To the Public Education Association of New York, the Bureau of Municipal Research, the Intercollegiate Bureau of Occupation, the Catholic Home Bureau for Dependent Children, all of New York City, and the Crippled Children's Guild of Buffalo, bronze medals were awarded for their exhibits.

**Personal.**—Dr. T. W. Kemmerer, of Davenport, Iowa, has accepted the position of assistant professor of pathology and bacteriology in the University of Southern California.

Dr. Elisha H. Cohoon has been appointed administrative head of the psychopathic department of the Massachusetts State Hospital, at Boston. Dr. E. E. Southard, who has been director of the institution for a number of years, will be relieved of his administrative duties, but will retain the title of director and will have charge of the scientific research laboratories of the hospital.

Dr. Frank W. Lynch, of Chicago, has been appointed professor of obstetrics and gynecology in the University of California, succeeding Dr. Josiah Morris Slemmons, who resigned recently to accept a position on the staff of the medical department of Yale University.

Dr. John Jenkins Buchanan, professor of surgery in the medical department of the University of Pittsburgh for the past fourteen years, has resigned, and Dr. Robert Talbott Miller, associate professor of surgery, has been promoted to a full professorship to succeed him. Doctor Buchanan has been given the title of professor emeritus.

Dr. B. D. Turner has been appointed assistant professor of pharmacology in the medical department of the Indiana University, and Doctor Fernandez has been made associate in pathology in the same institution.

Dr. Max Morse has been appointed assistant professor of biological chemistry in the School of Medicine of the University of Nebraska.

Dr. J. W. McMurray, of Marion, Ohio, was elected vice-president of an association organized on August 5th of the Spanish War Veterans of the Fourth Ohio Volunteer Infantry.



## HEMADENOLOGY: \* A NEW SPECIALTY.

THE INTERNAL SECRETIONS—THEIR FUNCTIONS AND BEARING ON DISEASE AND THERAPEUTICS.

BY CHARLES E. DE M. SAJOUS, M. D., LL. D., Sc. D.,  
Philadelphia.

(Fifteenth Communication.)

In the preceding article the term "feeble-mindedness" was used to indicate the type of amentia usually encountered in schools, i. e., one in which the mental deficiency is relatively of a high grade. We might recall in this connection that three grades of amentia are usually recognized, in keeping with Binet's classification: *Idiocy*, in which the mind of the patient, irrespective of his age, has not developed beyond that of a child two years old; *imbécility*, in which the mind and habits coincide with those of a child aged between two and seven years, thus affording opportunity for several degrees or grades of that form of amentia; and *feeble-mindedness*, in which the mind does not reach, in its various attributes, beyond those of children from seven up to twelve years of age. The higher grades of imbecility are sometimes met in the primary schools; the feeble-minded, therefore, in their many gradations, constitute the majority of the thirty per cent. of defectives which the schools are said to contain. They form the contingent of those who at best cannot compete with normal children owing to deficient reasoning power, imagination, and initiative. The term *moron* is also used to distinguish the highest grade of these defectives.

The treatment of these cases affords the most satisfactory results, as previously stated, when several of the organic preparations are employed simultaneously, in order to insure chemical equipoise of the various hormones which are increased in the body fluids when these preparations are used remedially. Yet emphasis was laid on the fact that preponderance should be given as to dose to the agent which appears, through the presence of stigmata denoting of the corresponding organ, to be most needed.

While the results attained are often such as to satisfy the parents, children who have been allowed to develop as defectives seldom attain the average standard of normal children. *It is before the brain has suffered serious damage through years of neglect, therefore, that therapeutic measures should be initiated.* This means that *during infancy*, if possible, we should seek for the stigmata of deficient cerebral development and, if need be, inaugurate at once prophylactic measures.

In the detection of mental stagnation in infants the senses afford valuable diagnostic aid. It is important to bear in mind, however, that they develop unequally. Thus, while hearing is virtually normal the third or fourth day, it is only after four or five weeks that the infant shows a tendency to locate the direction of a sound in a vague way, while four or five weeks more will elapse before it will be attracted by a sound. To attribute to defective hearing a lack of response to music before the end of

the second month, therefore, would in all likelihood prove misleading. This applies also to sight. Conversely, while touch may be dull the first two weeks of life, the pain areas are sensitive at birth and the infant will cry if a pin pricks it, or if it is placed in an uncomfortable position. Now, a "very quiet baby" that is not incommoded by such sources of discomfort may prove to be a defective, especially if the parental history affords clear signs of hereditary defects.

A second feature which may lead to an erroneous diagnosis is to consider as ductless gland stigmata, conditions which are temporary though abnormal in so far as our conception of the perfect state is concerned. Thus, many infants, during the first weeks of life, are seemingly bow legged; the tibia and fibula, in fact, may depart seriously from the straight line; yet this is not a lasting deformity such as that due to thymus deficiency and its result, defective calcium metabolism; it is simply due to the prenatal folding of the lower limbs around the trunk and soon rights itself. If after a few weeks, the limbs do not show signs of improvement, then suspicion that thymic deficiency is present is warranted. Again, Sergeant's white line, a sign of adrenal deficiency, and brought on by gently rubbing the skin of the abdomen with the finger, is by no means characteristic in the infant whose surface, especially during the first weeks of life, is often congested owing to capillary congestion. The white line here may be due merely to reflex constriction of the arterioles that supply blood to the region rubbed, with temporary local ischemia as result. Conversely, an infant showing pads on each side of the neck where it broadens to meet the shoulder, is a suspected subject—so much so, in fact, that organotherapy, through the nursing mother, if possible, and if not through the *fresh* milk ingested, is indicated.

All this emphasizes the importance of close analysis, and, I may add, due discretion, in determining the status of a given child. Of cardinal import also is the parental history. Indeed, with the light thrown upon the functions of the ductless glands in recent years, *no physician is justified in allowing the offspring of feeble-minded parents to develop into a defective, when organic lesions are not responsible for the mental defect.* If I could but impress our profession with this truth, hemadenology would soon supplant eugenics in regenerating the race, and do it in one tenth the time required by the latter branch of science. We know that the children of defectives will become defectives; why permit them to grow as such?

Each sense organ, through whose intermediary developmental impressions reach the organ of mind, must be interpreted, as to functional power, according to the age of the patient, and the defect thus given its proper value when the aggregate of de-

\* Hemadenology, from the Greek *αἷμα*, *haima*, blood; *αἰσθησις*, *glaia* *Αἰσθησις*, discourse, meaning thereby (as do ophthalmology, laryngology, and other terms applied to specialties) the aggregate of our knowledge on the ductless or blood glands.

tests, after investigating all functions, makes it possible to establish the nature of the case. Then we must exclude all possible local disorders, i. e., disorders of the ears, eyes, nose, throat, genital organs, etc., and these, once eliminated, trace to their source what stigmata remain, ascertaining whether hereditary, congenital, or acquired disorders underlie the case, and whether hygienic factors, unhealthy surroundings, or indeed deficiency of food, may not account for them.

All these conditions having been carefully examined into, each sense organ is then studied in respect to the degree of function of which it is capable. The following are submitted only as the main features of the process:

**Hearing.** This sense, as stated, is usually developed at birth. Sound may attract the attention of the infant, though vaguely, about the fourth week, while at eight weeks, the response to continuous sounds, music, for instance, is usually distinct. If after this age, the ringing of a bell and other loud noises fail to attract the child's notice, the apparent deafness should be traced to its cause, an infection, foreign body, traumatism, etc. Foreign bodies are not infrequently introduced into the external meatus, the nostrils, etc., by children. C. H. Francis (1), for example, refers to a boy of fourteen years in whom total deafness and numbness and marked backwardness, with unruliness sufficient to require his commitment to a reformatory, were all traced to an accumulation in his ears of beans, dirt, etc., probably placed in the auditory meatus by the child himself when a baby. Steady improvement, including the disappearance of his apparently evil disposition, followed removal of the cause of deafness. Adenoid vegetations and enlarged tonsils, both so common in children, compromise the hearing more or less—sufficiently in some instances to entail total deafness. The stupid facies of such children is not always due to the open mouth and other morphological defects, but often to actual mental backwardness resulting from insufficiency of aural stimuli. Relieved, such children soon show signs of mental development by steadily raising their standard in the classroom.

When all diseases of the organ of hearing itself, or of neighboring organs, have been eliminated, the possibility of a systemic disorder must be entertained. The deafness may be due to the absence of sensory response, a condition witnessed, for example, in microcephaly and hydrocephaly, even though the skull show but slight departure from the normal conformation and size. A suggestive indifference to surroundings then explains the seeming deafness. In amaurotic idiocy the hearing is defective, and may be absent as a result of degenerative changes in the cerebrospinal system; but here there is usually a history of hyperacusis when the infant, as though poisoned with strychnine, seems to react violently to the least noise. The recurrent convulsions, the characteristic fundus clearly identify such cases. Where syphilis enters into the history of the case, defective hearing may also occur.

**Smell and taste.** Though somewhat neglected in the clinical study of defectives, these kindred senses are of confirmatory importance, since they are developed during the first or second week. The low type idiot is sometimes found totally indifferent to the kind of food placed in his mouth, asafetida,

quinine, gentian, etc., being masticated with impunity. Perverted taste is occasionally met with, the most disgusting things, excrements even, being eaten. The sense of smell, which may be tested by dropping perfume, then a few drops of ammonia on paper flowers, was found by Kellner (2) to be absent in thirteen per cent. of 544 idiots of various types. When an infant fails to eject a teaspoonful of milk containing quinine in sufficient quantity to give it a bitter taste, adding quinine to increase the bitterness if no response is obtained, and also fails to turn its head away when various substances having a penetrating odor, using ammonia as last resort, are placed under the nostrils, one of two conditions is present; either some obstructive disorder of the nasal cavities or some central lesion affecting directly or indirectly the olfactory bulb. The first may easily be detected by closing, with the finger, each nostril in turn and ascertaining if the air stream is hampered. If it is not and distinct absence of taste and smell are present, the possibility of some form of cerebral degenerative process may be suspected, even though no other sign of amnesia has yet appeared. Under these conditions, treatment, including organotherapy, direct or transmaternal, may be initiated (no harm ensuing to the child should too much importance have attributed to the symptom), for it is often the first sign available. Especially is this step warranted when we have to do with a very quiet, good, and pale baby who shows developmental backwardness in other directions.

**Vision.** This sense is normal soon after birth, and about the fifth week the infant will usually look, at least for a moment or two, at a light such as a candle, brought into a dark room. Three or four weeks later, the interest shown in the light will be more pronounced and the test more certain. A multitude of daily incidents will indicate the presence of vision, while a blind infant will look vaguely in the direction of a familiar voice, whether it is near or at a short distance, show no tendency to grasp an object that a normal child would want, such as a toy, its bottle, etc., from about the third month on. When blindness is present, and all local causes incident upon infection during childbirth, etc., are eliminated by a close inquiry, amaurotic idiocy may be suspected, especially if nystagmus; strabismus, and recurrent convulsions enter into the history of the case. The fundus will then decide the question. Microcephaly may also be accompanied by amaurosis, as observed in a personal case. In the paralytic idiocies, blindness is not uncommon, especially where a history of parental syphilis is obtained. Nearly eight per cent. of idiots are congenitally blind.

Great care is necessary in the examination of the visual apparatus. Thus, Ribot, Sollier, and others, have emphasized the importance of lack of attention in the pathogenesis of idiocy. Now, a low grade idiot may look without seeing owing to absence of attention; the interest shown by the child when looking at an object is, therefore, an important diagnostic feature. A normal infant will often show pleasure toward the end of the second week. Again, it is to be borne in mind that the eyes are normally coordinated after the second month, and that eye defects are so common in normal subjects

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that they can be granted confirmative value only in the presence of other stigmata. Yet, certain forms of visual incompetence are particularly frequent in idiots. Thus Pierce Clark and M. Cohen (3) found varying degrees of retrolbulbar neuritis of a degenerative character in three fourths of 129 idiots examined. While these changes did not give rise to more than defective vision, the fact that incipient atrophy with generalized pallor was noted, points anew to the importance of defective activity of the ductless glands and particularly the thymus in the morbid process, the latter being obviously due to inadequate nutrition of the central nervous system, including the nerves of the visual apparatus. A suggestive diagnostic feature pointing to probable visual defect in infants is a very sluggish pupillary accommodation reflex. The color test, sometimes used after the second year, when the child begins to distinguish colors with some degree of accuracy, is of but little value, owing to the frequency of color blindness in normal subjects.

*Touch and tactile pain.* These are important senses in the diagnosis of idiocy in all its forms and at all ages. Of the two related senses, touch is the least reliable, since lack of attention, so prominent a feature of mental deficiency, may prevent response and thus mislead the clinician. Yet it should be remembered that a normal infant almost from birth will react noticeably when its face or the palmar surface of its hands is touched. When these fail, the soles of the feet will provoke a reaction if any at all is obtainable. The absence of this reaction after the palmar and facial have been tried is suggestive of mental deficiency. In paralytic amentias especially, however, the sense of touch may be very sensitive, yet here motor and other phenomena soon point to the actual nature of the trouble.

As regards pain and temperature sensibility, a normal infant lustily objects to pain of any kind from birth. On the other hand, absence of response to painful impressions so commonly observed in idiots can hardly be attributed, as is done by some authors, to lack of attention. Obviously, pain will command attention in normal subjects only. Anesthesia and analgesia are, therefore, valuable diagnostic signs. So marked are they in some patients that they stand bites, burns, and other severe and very painful traumata, inflicted accidentally, and often by themselves, without showing evidences of the least suffering. Indeed, self mutilation is not uncommon among low grade idiots.

Apart from actual burns, the temperature sense is obtunded along with the tactile sense in deficient subjects, the nurse being surprised to find that accidental contact of the child's hand with a hot plate, for instance, fails even to attract its attention. This same child, if mentally deficient, and merely as an expression of the low rate of metabolism of which its nervous system mainly suffers, will appear unusually dull, sleepy, and torpid in cold weather, while warm weather and also a mild febrile process, which promotes metabolic activity and the activity of what cerebration it is capable, will cause the child to appear unusually bright and active.

## REFERENCES.

1. FRANCIS: *Journal of the Medical Society of New Jersey*, May, 1911.  
2. KELLNER: *Zeitschr. med. Wiss.*, Dec. 28, 1909.  
3. PIERCE CLARK AND COHEN: *Journal A. M. A.*, April 16, 1910.

(To be continued.)

## Auscultation of the Venous Pulse, by O. Josué.

—The procedure referred to is recommended to the practitioner because it can be practised universally at the bedside and supplies the same information as actual sphygmographic tracings of the jugular and radial pulse waves. Total bradycardia, involving both auricles and ventricles, can thus be distinguished from that due to a uriculoventricular dissociation without the use of the sphygmograph; complete arrhythmia due to auricular fibrillation, and extrasystoles, can also be detected. During the examination, the patient must be recumbent, with his head unsupported by pillows. The bell of the stethoscope, not exceeding two cm. in diameter, is placed at the base of the neck, between the sternal and clavicular attachments of the sternocleidomastoid muscle, and with the axis of the instrument directed obliquely backward, downward, and inward, in the direction of the mediastinum. Avoidance of firm pressure on the tissues is essential. Normally three sounds are heard in each cardiac cycle, the first two very close together and the third preceded and followed by longer intervals. The first sound represents contraction of the right auricle, the second—synchronous with the radial pulse—closure of the tricuspid valve, and the third, closure of the pulmonary valve. In total bradycardia, the interval between the successive groups of three sounds is prolonged. In auriculoventricular dissociation the auricular sounds differ in rate, and sometimes also in quality, from the tricuspid and pulmonary sounds. In auricular fibrillation with complete arrhythmia, the auricles fail to contract effectively, and the first jugular sound is missing. In extrasystole the sounds are often more in the nature of a click than those in other contractions, and are followed by the characteristic pause. In auricular extrasystole, three sounds are heard, in ventricular extrasystole only two.

## Recently Observed Types of Typhoid Fever,

by H. Bourges.—The observations presented were made in a series of five hundred cases of typhoid fever cared for in the naval hospital at Brest, France. In sixty-seven cases, prior to the outbreak of war in July, 1914, the disease presented, in most instances, features not out of the ordinary, and the mortality was 11.9 per cent. In the 433 cases observed during the war period, the mortality rose to 17.7 per cent., and various peculiarities in the symptomatology and course of the affection were witnessed. In some instances the disease was a mere febricula, occasionally with abdominal manifestations entirely wanting; in many others, there was a sudden onset with early hyperpyrexia and death from overwhelming toxin production. In the average case, there was frequently abdominal rigidity and sometimes meteorism; the rose spots were either few or very abundant; in elderly patients the liver nearly always descended below the costal margin; diffuse bronchitis and basal congestion were frequently noted; the fever continued for three or four weeks, and prostration, typhoid state, and other nervous manifestations were observed in about one



third of the cases. Especially noteworthy were numerous cases suggestive of a general septicæmia rather than an intestinal disorder. In some the infection attacked almost exclusively the meninges, lungs, kidneys, or liver.

#### PRESSE MÉDICALE.

June 20, 1915.

**Functional Adaptation in Traumatic Paralysis of Nerves.** by Henri Laignel, René Dumas, and René Porak.—After injuries to nerves the extent of recovery in motor function is frequently overestimated, the role of accessory muscles, which have gradually assumed the function of the paralyzed muscles, being overlooked. Careful examination may show that none of the paralyzed muscle has recovered its function, in spite of appearances to the contrary. Two groups of muscles may so adapt themselves as to cooperate satisfactorily in the production of movements previously performed by a single, third group of muscles, now paralyzed. Such adaptation takes place oftenest in the upper extremity. Mutual assistance of the ulnar and median nerves, when one or the other is paralyzed, was frequently observed in the authors' cases. Various instances of adaptation of this sort are analyzed. It is advised that patients be not permitted, by ingenuity and practice, to make up in this way for lacking motor functions until the actual possibilities of functional improvement in the muscles supplied by the injured nerve have been exhausted.

#### REVISTA DE MEDICINA Y CIRUGIA PRACTICAS

June 20, 1915.

**Hematomyelia,** by D. R. Del Valle y Aldabalde.—In reporting a case occurring in a young woman aged twenty years, the etiology, pathology and treatment are taken up. The treatment consisted principally of hypodermic injections of a solution of strychnine and sodium phosphate, together with faradic current to the forearms and hands, especially in the interosseous spaces. Considerable improvement followed this treatment and after several weeks the strychnine was given by mouth in the dose of four mgm. per diem together with potassium iodide. Excluding cases of traumatic origin, it seems to be established that there are several causes of hemorrhage in the interior of the spinal cord. In cases of menstrual deviations there may be a vicarious hemorrhage in the spinal cord. The prognosis depends only partly on the cause. It is more grave in the aged and is more liable to recurrence in such cases. One feature which the treatment of the condition has in common with acute myelitis is the applicability of the electric current. The diagnosis is ordinarily not difficult.

#### JOURNAL OF TROPICAL MEDICINE AND HYGIENE.

June 19, 1915.

**Differential Diagnosis of Verruga peruviana,** by R. P. Strong, E. E. Tyzzer, and A. W. Sellards.—The verruga lesion is to be distinguished from that of yaws in that the skin is smooth, tense, and translucent over it, that the superior surface of the lesion much resembles a cherry at the height of the disease, and that it is practically never crusted, whereas in yaws the primary lesion is always, and

the subsequent ones are commonly, crusted. In yaws there is generally a distinguishable point from which the initial lesion developed, whereas in verruga this is not so apparent. Yaws is contagious and verruga is not; and whereas in the lesion which is produced by injection of yaws material into the rabbit's testicle spirochaete are abundant, no microorganism is found in analogous verruga lesions or in the human lesion itself. From Oroya fever the authors differentiate verruga peruviana in that whereas in severe cases of the former, a rapid and pernicious anemia develops, often resulting fatally, verruga is only very rarely a fatal disease, and is not accompanied by marked anemia. Bartonella bacilliformis, the microorganism which, as a parasite of the red blood corpuscles and endothelial cells, the authors have shown to be the cause of Oroya fever, is not found in the blood in uncomplicated cases of verruga. Experimental inoculation of a human subject with material from two cases of verruga failed to produce Oroya fever, but a modified form of verruga eruption, the view of Carrion that the two conditions represented different forms of the same disease being thus disproved.

#### CANADIAN MEDICAL ASSOCIATION JOURNAL.

August, 1915.

**Organotherapy in Obstetrical and Gynecological Practice,** by B. P. Watson.—Pituitary extracts have a powerful effect in inducing and in strengthening uterine contractions, the type of which is similar to those that occur normally, although at first there may be a tendency to prolongation of the pains. Such prolonged contractions result in slowing of the fetal heart, but the child is seldom in danger. When given in the late part of the first, and in the second stage of full time labor, the polarity of the uterine contractions is not interfered with, but in early abortions and early in the first stage, a simultaneous spasm of the os may occur. Its chief field of usefulness is at the end of the first and in the second stage of labor when there is delay due to feebleness of the pains, alone or when combined with other complications. Its action is so uncertain in the induction of abortion that it is not to be recommended except in cases in which the os is dilated widely. In the induction of premature labor, its effects are uncertain, but if sufficient is given, they may be good. It gives good results in many cases of post partum hemorrhage, but no better than ergot. It is a useful adjunct in the treatment of placenta prævia.

#### BOSTON MEDICAL AND SURGICAL JOURNAL.

August 10, 1915.

**The Practical Treatment of Inebriety in a State Institution,** by Irwin H. Neff.—During the past five years, 1,174 patients have been under observation for at least six months after discharge from the hospital at Norfolk. Out of this number, 753, or sixty-four per cent., are working and are either totally abstinent or drinking so little as not to interfere with their work. Practically all had dropped below the class of the self supporting before coming to the hospital. Each case has to be considered individually, and the following conditions determine the final report as to the result. Inebriates are of

three types: the regular drinker, who is accustomed to the use of stimulants daily; the irregular drinker, who is accustomed to the use of stimulants at short intervals; and the periodical drinker, who is accustomed to drink at periodical intervals, periods of months or years elapsing between the periods of inebriety. The conduct and attitude of the patient after his discharge from the hospital is noted, especially as regards his ability to earn his living, and his success in readjusting himself to society, and his willingness to cooperate with the hospital authorities after his discharge. The successful treatment of the inebriate in a state institution may be said to depend; 1, on an appreciation of the true nature of the condition; 2, on a realization that the inebriate, dependent on the degree and intensity of the condition, demands specialized treatment; 3, the necessity of active and continued cooperation with those interests which are genuinely concerned in the problem; 4, diligent and consistent work and an adherence to the principle established by a definite method of control; and the education of the public to a proper realization of the status of the institution to the community.

**The Presence of *Bacillus dysenteriae*, *Bacillus proteus vulgaris*, *Bacterium welchii*, and Morgan's *Bacillus* No. 1, in the Stools of Cases of Infectious Diarrhea**, by Carl Ten Broeck and Frank Garm Norbury.—In order to isolate the dysentery bacillus from the stools in cases of infectious diarrhea, repeated attempts often have to be made, and the number obtained may be very few. Dysentery bacilli, or the mannite fermenting type, were isolated from sixty-eight per cent. of the seventy-nine cases studied. Organisms of *Bacterium welchii* type are associated occasionally with dysentery bacilli, but they are found more frequently in the cases of simple diarrhea and still more often in normal stools. We have no evidence that *Bacterium welchii*, *Bacillus proteus vulgaris*, Morgan's bacillus No. 1, the paratyphoid bacilli, or *Bacillus pyocyaneus* are causes of infectious diarrhea, though they probably influence the course of disease apparently started by the dysentery bacillus.

**Invasion of the Bodies of Infants by *Bacillus dysenteriae***, by Carl Ten Broeck.—The bacillus of dysentery of the mannite fermenting group has been demonstrated in the circulating blood of an infant suffering from infectious diarrhea. Eleven blood cultures made from other cases of diarrhea and cultures made from the organs of fourteen cases were all negative for dysentery bacilli, and the one positive finding was probably due to an accidental invasion.

#### JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

August 21, 1915.

**Chronic Deafness**, by D. Harold Walker.—One of the chief predisposing causes of deafness in early life is the modern craze for living in the open, extending even to the putting of babies and small children out of doors to sleep in all kinds of cold and wet weather, a course which leads to congestion of the turbinates, mouth breathing, the development of adenoids, and infection of the Eustachian tubes. All mechanical obstructions to free nasal breathing tend in the same direction and should be relieved

early in life. Constipation in deaf children and in adults is the rule, and the effect of this on congestion of the turbinates and nasopharynx is well recognized. The absorption of toxins also probably affects the cochlea and auditory nerve. Excessive cooling and the entrance of dust into the external ear are both detrimental, and the old practice of wearing cotton in the ears when out of doors is a good one. The extreme fresh air habit at night is as bad for adults as it is for children. The head should be protected from drafts and should be raised on a pillow. The use of tobacco is another very prevalent cause of congestion in the upper air passages. The proper attention to the prevention of all these unfavorable influences would do much to diminish the prevalence of chronic deafness and is of especial importance owing to the fact that when deafness is once established there is very little that can be done to improve hearing.

**Subinfection from Foci in the Pelvis and Abdomen**, by Horace G. Wetherill.—Evidence is rapidly accumulating in support of the view that foci of chronic infection are the sources from which there may be a continual or intermittent escape of small numbers of virulent organisms which find lodgment in the terminal capillaries of various organs of the body and there set up local inflammations. The teeth and tonsils have been mainly blamed in the past, but Wetherill makes out a strong case against chronic foci of infection in the pelvis and abdomen by citing instances such as tubal infections, appendicitis, cholecystitis, etc. He recalls the fact that it is often observed that a patient enjoys the best health of his life following the operative removal of some old process of this nature. On the other hand, it is quite probable that the chronic abdominal infective processes are themselves secondary to some other focus of infection, and it becomes our duty to attempt to discover and remedy this if our cures are to be complete. The genital tract infections may often be primary. The clinical histories of cases harboring a focus of chronic infections give abundant evidences of damage to the circulatory, renal, muscular, nervous, and digestive systems by constant small hematogenous infections of a secondary nature.

**Intestinal Obstruction**, by Alexius McGlannan.—As the result of a study of 276 cases, the conclusion was reached that the chief cause of the very high mortality from this accident, even in cases subjected to operation, was the secondary toxemia. No less than seventy-five per cent. of the fatal cases in the series were toxemia. The toxemia may rarely develop within a few hours after the obstruction, but it is usually absent for the first two or three days. Once developed, it is very hard to combat and no medical or surgical measures have proved really effective, although the use of saline infusions and the intravenous administration of epinephrine offer some small hope. The only hope of materially reducing the high mortality from intestinal obstruction would seem to lie in the surgical relief of the obstruction at the earliest possible moment, and the risks of an exploratory operation should be taken when there is doubt about the diagnosis. An interesting fact in the causation of intestinal obstruction was brought out in the study, namely, that ten

per cent. of the cases followed drainage operations for appendicitis.

**Mental and Physical Survey of Supposedly Normal Children.** by Langley Porter, A. Huf-faker, and A. Ritter.—In all, 195 children were examined. Fifty-two per cent. were in need of dental treatment, fifty-three per cent. had diseased or hypertrophied tonsils, fifteen children were tuberculous, and twelve were in what has been termed the pretuberculous state. Only four gave positive Wassermann reactions. Mental and psychological examinations were made on 119 of the children and about twenty-three per cent. were found to be mentally retarded owing to environment or health conditions, seven per cent. were borderline cases, three per cent. were morons, and there was one imbecile. A large proportion of the children showed some involvement of the mediastinal lymph glands, and the value of certain physical signs could be well tested upon these, as the diagnosis was confirmed by x ray examination in each case. D'Espine's sign was found of little value. Ewart's and von Korányi's signs were of considerable value, but an earlier and more delicate sign was discovered to be the extension downward below the third dorsal spine of whispered pectoriloquy.

#### MEDICAL RECORD.

*August 20, 1915.*

**Combined Extracranial Paralysis of Cerebral Nerves,** by Joseph C. Beck and G. B. Hassin.—This condition is exceedingly rare, probably because cerebral nerves do not form plexuses. A case reported in a girl aged eighteen years was caused by pressure on the ninth, tenth, eleventh, and twelfth nerves by infiltrated and enlarged cervical glands. The symptoms were pain in the neck, occiput and forehead; marked hemiatrophy of the tongue combined with paralysis of the ninth, tenth and eleventh cerebral nerves, and nystagmus. The eighth nerve involvement was bilateral with complete deafness in both ears from otosclerosis. This ear condition evidently was the cause of the nystagmus. Marked relief followed an operation for the removal of the tuberculous glands. A few months later a partial recurrence prompted another operation which showed the nerves surrounded by dense fibrous tissue. The nerves were dissected free and the symptoms again cleared up although the prognosis is unfavorable since secondary scar formation and contraction over the nerves cannot be prevented.

**Diphtheria Bacilli in Normal Throats,** by R. A. Keilty.—Experiments in ninety-seven cases over a period of two years showed no typical Klebs-Loeffler bacilli in any case. The percentage of throats positive to diphtheria is in adults very low, less than two per cent.; while in children it may reach twenty-five per cent. Keilty thinks that cultures play too large a part in the routine treatment of diphtheria.

**A Further Report on the Etiology of Pellagra,** by Duane Meredith.—Meredith asserts that he has isolated the specific organism of pellagra which he declares belongs to the higher bacteria in an unclassified group. It may be a streptothrix but it probably belongs to an unknown fungus family which has a double cycle as occurs in the moss family. In the human organism, the spores are deposited in the

deep layers of skin by some blood sucking insect where they begin to grow by sending out long fine mycelia which enter the lymph spaces along the basement membrane. These mycelia contain within them small spores which are liberated in the blood stream. It is a facultative aerobe and on certain cultures forms a false membrane on the surface. After artificial cultivation it grows larger and begins to look like the diphtheria bacillus. The primary blood culture will stain only with Wright's blood stain but after several generations, cultures may be stained with hot carbol fuchsin. It grows best on Loeffler blood serum or bouillon or ascitic agar. Forty-eight cases form the basis of this article and from inoculation of chickens and of a rhesus monkey the transmission of the disease seems to have been accomplished.

**A Frequently Unrecognized Symptom Complex,** by W. H. Best.—In 1900 Duquesne first described what is known as the fourth disease, which is sometimes called after its discoverer. An analysis of thirty-seven cases showed the following features: All but two cases were in children under three years of age, the onset was sudden, temperature varied from 102° F. to 105° F., and was maintained until the appearance of the eruption when it fell by crisis to normal. The eruption appears on the third or fourth day, first on face and neck extending in a quick wavelike manner over the body. The eruption is complete in a few hours and is frequently entirely gone at the end of forty-eight hours. The lymphatic glands of the neck were palpable in only six cases. The eruption is composed at first of bright red discrete macules which become papular. The eruption may be confluent, forming patches the size of the hand on the buttocks and thighs. There is no desquamation. The disease must be of course differentiated from measles, German measles and scarlet fever and the one pathognomonic symptom is the drop in temperature by crisis and the feeling of well being experienced upon the appearance of the eruption.

#### OPHTHALMOLOGY

*July, 1915.*

**Etiology and Psychology of Ocular Imbalance,** by A. Alison Bradburne.—The development of the visual faculty depends upon two factors, mental and ocular, but the writer deals only with the latter. The interdependence of the two is shown by a case in which he successfully educated an amblyopic eye to full normal vision, only to find a few years later that neglect had undone everything and that the eye had returned to its original condition. Had the amblyopia been of ocular origin, such an improvement of vision could not have been gained and lost in this manner. The visual faculty undergoes a process of evolutionary education and proceeds until it meets with obstacles which it masters or succumbs to. These obstacles may be classed roughly as constitutional, muscular, and ocular. By constitutional impediments he means that presence of inherited cerebral defects in the development of the control centres. Not only are the cerebral centres affected by loss of nerve force, but they can become the subject of reflex disturbance. Among these cases, he includes muscular imbalance of the eyes due to re-



flex irritation from some abdominal disturbance, or affection of the ear. Muscular cases arise from asymmetry in the muscles of the two eyes, which is compensated for in a great many cases by long practised counteraction on the part of an antagonist. The ocular class includes those due to purely refractory errors, which account, he thinks, for the great majority of cases.

**Relation of the Eyes to Rifle Shooting**, by Roderic O'Connor. The writer does not agree with the findings of Colonel Banister and Major Shaw, who ascertained that very good shooting could be done by men who had less than 20/20 vision, even as poor as 20/40. The result of the investigations of these gentlemen was that the visual requirement for enlistment was reduced to 20/40 for the right eye and 20/70 for the left, and the writer evidently wants the standard restored to 20/20 for each eye. The points he makes are: The necessity of focusing the three points—target, front and rear sight, and the ability to make rapidly the necessary change of focus from one to another of these three points. Alignment once being secured, the sights furnish the diffusion images, being seen by indirect vision, the bull's eye, more especially its lower edge, is seen clearly and by direct vision. Normal vision is necessary to allow of locating the mark accurately and to assist in estimating distance. Sufficient accommodative power is needed to allow of a clear focusing of the rear sight. Normal color perception is an aid in locating the object, perceiving details, and estimating distance. Binocular vision is necessary in order to estimate distances more accurately. The sights should be black. Glasses to correct refractive errors should be accurate and adjusted with reference to the position of the head and eye when sighting at a mark, and amber lenses are of value by diminishing glare, by cutting out to a great extent the irritating actinic rays of light (this sounds as though euphos rather than amber glasses were meant, as euphos glass cuts out actinic rays while amber does not), by lessening the irradiation of the white portion of the target over the bull's eye, thus allowing the latter to stand out clear, sharp and apparently larger, by not cutting down noticeably the illumination, and by assisting in bringing out slight contrasts. The proper position of the rear sight is discussed.

### Proceedings of Societies.

#### THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

*Stated Meeting, May 17, 1915.*

The President, Dr. THOMAS S. SOUTHWORTH, in the Chair.

**The Significance of the Presence of Acid Fast Bacilli in the Feces of Patients Suffering from Joint Disease.**—This paper, by Dr. HENRY KELLER and Dr. A. J. MORAVEK, was read by Doctor KELLER. That tuberculous infections of the bones and joints might be ushered in in the guise of various other diseases was attested by a number of acute observers. On the other hand, there were met with so many cases of joint disease other than

tuberculosis which closely resembled the latter in their onset, signs, and symptoms, that one had to hesitate before pronouncing a definite opinion in regard to the character of the affection. Coxa vara adolescentie, gonorrheal and other infectious arthritis, and arthritis and synovitis due to intestinal stasis were all liable to be mistaken for tuberculosis, and while the lapse of time might clear up the matter, this, as Judson had remarked, was always at the expense of the prognosis. On account of the vast importance of suitable early treatment, therefore, any addition to their diagnostic armamentarium should be of the greatest value; and such additional aid was furnished by the finding of acid fast bacilli in the feces. As the result of experimental and clinical investigation by Doctor Moravek, of the New York Diagnostic Laboratory, and himself, lasting over a year, the conclusion had been reached that the acid fast bacillus resisting decoloration by twenty-five per cent. nitric acid, followed by eighty per cent. alcohol, was a tubercle bacillus, and nothing else. It had also been found that this bacillus in the feces was viable and capable of growing on culture media, and that when such cultures were injected into guineapigs they produced tuberculosis. It was ascertained that under the test named the tubercle bacillus was the only bacillus which would remain red; all others being decolorized and subsequently taking on a counter stain. Having described the staining technic and detailed the experimental proof of the proposition stated, he gave the following deductions derived from the experimentation and animal inoculations: 1. The acid fast bacillus found in the feces was a tubercle bacillus. 2. It was a living germ, capable of producing the disease when injected into animals. 3. No matter how the bacillus was introduced into the system, it would make its appearance in the intestinal tract, and be discharged in the feces, without necessarily producing a pathological lesion in the intestinal mucous membrane.

As to the clinical and diagnostic significance of the presence of tubercle bacilli in the feces, in order to study this, it was necessary to select, *a*, cases with positive joint tuberculosis, as shown by the signs and symptoms pathognomonic of such disease, confirmed by the x ray and other laboratory tests, or those with a subsequent history bearing out early diagnosis; *b*, cured cases of positive joint tuberculosis; *c*, a number of cases in which the patients were suffering from affections other than tuberculosis as controls; also dubious cases. Investigations were made in forty-two cases with active tuberculosis of joints, six cases of cured joint tuberculosis, nine suspected cases of joint tuberculosis, and eighteen control cases, and the results showed that under normal conditions no acid fast bacilli are to be found in the feces—also that only in active cases of joint disease were they thus present, and not in cured cases. Therefore the finding of acid fast bacilli in the feces of patients with active disease of a joint, and no active tuberculosis in any other part of the body, was of great importance in reaching a diagnosis in an obscure case. In thirty-one cases in which the acid fast bacilli were found in the feces the site of the disease was as follows: Hip, fifteen cases; spine, six; knee, six; sacroiliac, two; shoulder, one; foot, one. The youngest patient with active

points in whose feces these bacilli were found, was two years old, and the oldest, forty years. The shortest period of time with presence of acid fast bacilli in active cases, was three weeks, and the longest, five years. The methods employed in obtaining specimens of feces and in preparing these for examination were as follows: The patient was given a mild laxative the night before collection, and ordered to defecate into a vessel which had been thoroughly cleaned and then washed with boiling water. The feces were to be put into a new fruit preserving jar, cleansed in the same manner, and this was to be repeated for two or three successive days; separate jars being used each day, each labeled with the patient's name and the date of collection. A small amount of the suspected feces was diluted with an equal quantity of sterile distilled water to which a few drops of carbolio acid solution (four per cent.) had been added, and the mixture allowed to stand for twelve hours. The water was then poured off carefully, and a small piece of the sediment picked up with a sterile platinum wire loop and placed upon a clean slide for staining. From each specimen of feces ten or twelve slides were prepared, and a number of cultures made. The cultures were examined from the fifteenth to the twenty-first day, and some of them were injected into guineapigs.

It was a known fact that very few patients suffering from joint tuberculosis had pulmonary tuberculosis. Dr. A. Judson Quimby had x rayed the chest in a number of his cases, to see whether he could detect any lesion, and with the exception of a few calcareous glands, such as might be found in a normal thorax, the findings were negative. It could be assumed, therefore, that it was not at all necessary to swallow sputum containing tubercle bacilli in order that such bacilli should appear in the feces. It seemed to him more likely that the presence of the bacilli in the feces of patients with active tuberculosis was due to the fact that the body, having good resistance power, was trying to rid itself of the invasion by discharging some of the bacilli into the bowel. This hypothesis was borne out by the fact, observed by himself, that the feces from the guineapigs when they were very ill were frequently negative for tubercle bacilli, while, when they began to improve, these bacilli would reappear. Some of the animals had stopped discharging tubercle bacilli a few days prior to their death. In human beings he had observed the same peculiarity. When the patients were very ill, their feces contained no tubercle bacilli, but when they had improved in general health, the bacilli reappeared. Whether this theory were correct or not remained to be seen. It seemed reasonable, and in his future investigations he would endeavor to test its validity.

The following conclusions were given: 1. The acid fast bacillus resisting decolorization with twenty-five per cent. nitric acid, followed by eighty per cent. alcohol, was a tubercle bacillus. 2. Patients with joint tuberculosis kept on discharging tubercle bacilli for years, as long as the disease continued active. 3. These bacilli were living, and capable of producing tuberculosis in other individuals, as proved by animal inoculation. 4. In obscure joint conditions the discovery of tubercle bacilli in the

feces might be of great diagnostic significance, and the search for them should never be omitted. 5. A patient suffering from joint disease should not be discharged as cured without a thorough search for acid fast bacilli in the feces, and if they were found he should be kept for further observation; for this showed that there was still some activity in the disease process. 6. In the feces the smegma bacillus was conspicuous by its absence. 7. Dr. M. Solis Cohen was correct in asserting that the feces of tuberculous patients must be regarded as a source of contagion and should always be disinfected, and that the same precautions in regard to disinfection of hands, clothing, bed covers, etc., soiled by fecal evacuations, which were taken in cases of typhoid fever, should be observed in the management of patients with tuberculosis.

Dr. E. E. SMITH said that Doctor Keller and Doctor Moravek were deserving of the appreciation of all for the clear and able manner in which they had presented their subject. The paper had distinctly advanced their knowledge, and would be of great practical service in more than one direction. The results of his investigations were confirmatory of the point that if tubercle bacilli once got into the blood they would, under ordinary circumstances, appear in the feces. It was also true that if tubercle bacilli made their appearance in the feces they might enter the blood. The proposition set forth in the paper could be divided into two parts: 1. The occurrence of these bacilli in the feces, and, 2, the conclusions from the facts presented. One of the most important assertions made was that all the bacilli which resisted twenty-five per cent. nitric acid were virulent tubercle bacilli. This statement might be applicable to human beings, but it seemed open to question whether it held true in the case of animals, especially cattle. They should therefore be cautious in making it applicable to all animal life. It had been stated in the paper that there appeared to be some relation between the occurrence of tubercle bacilli in the feces and the acuteness of the condition present. When a large supply of tubercle bacilli was suddenly introduced into the system of an animal, it was not surprising that it should endeavor to get rid of them by every possible channel. So, while in acute disease conditions the bacilli might be numerous in the feces, they would expect that, as the condition became subacute or chronic, the number would gradually diminish; so that it might require a more careful examination to reveal their presence.

Dr. ANTHONY BASSLER had had no experience with the observation of tubercle bacilli in the feces in cases of joint disease, but in pulmonary tuberculosis and tuberculous conditions of the alimentary tract it was surprising to note how frequently the bacilli were to be found in the feces. In early pulmonary tuberculosis and in cases where there was retraction of the chest, with marked fibrosis, it seemed probable that their presence here was from ingestion, the bacilli having been swallowed with the sputum. In the early cases there was apt to be an almost complete cessation of gastric digestion. It was a fact also that in a large proportion of cases of pulmonary tuberculosis there were found ulcerative, or at least hyperplastic, con-

ditions in the alimentary canal. He was convinced that Doctor Keller's observations would be of great assistance in their clinical work.

Doctor KELLER, in closing, said that as to the system of an animal getting rid of a large quantity of tubercle bacilli suddenly introduced into it, he had always been careful to inject only a normal dose: usually eight minims—the maximum dose being ten minims. In cases of joint disease the bacilli were found in the feces as long as the activity of the disease continued, even if this was two or three years. This was therefore a matter of importance from a sanitary as well as a diagnostic point of view. Such feces were to be regarded as a constant source of infection, and he knew of one instance in which the pet dog of a child with tuberculosis contracted the disease. As to the presence of tubercle bacilli in the feces of patients suffering from pulmonary tuberculosis, the only question was whether they got there by being swallowed or by obtaining entrance into the circulation. In his animal experimentation he had found that it made no difference by what method the bacilli were introduced into the system. No matter what method was employed, they would appear in the feces.

**Twenty Uncommon Esophagus, Stomach, and Intestinal Cases; Salient Points in Case Histories.**—These cases, which were reported by Dr. ANTHONY BASSLER, will be published in the JOURNAL.

## THE NEW YORK ACADEMY OF MEDICINE.

SECTION IN GENITOURINARY SURGERY.

*Regular Meeting, Held May 19, 1915.*

Dr. LEO BUEGER, President, in the Chair.

**Ectopia vesicæ.**—Dr. DAVID W. MACKENZIE presented a young man, twenty-one years of age, suffering with extroversion of the bladder, and asked for suggestions as to the best method of treating the case. The young man said that he had never been sick, and excepting for measles had never had a doctor to attend him until a week ago. He was perfectly well and strong. The posterior bladder wall protruded. Mucous membrane bled readily when touched. Toward the lower border the two nipples representing the ureteral openings were seen. There was a well developed, everted prostate; rudimentary penis; one testicle in scrotum; the pubic bones were separated three and a half inches.

Doctor McWILLIAMS had had two such cases under his care. There was no use in attempting to make a bladder, for there was no vesicular sphincter. The only feasible operation was to put the ureters into the intestine, and the mortality of that operation was anywhere from seventy-five to ninety per cent. This young man seemed healthy and had managed to get along pretty well, and it might be better to leave him alone. He was opposed to operation in these cases, as the chances were very much against the patient.

Doctor BEER felt very much as Doctor McWilliams did about the matter, but last summer in a German clinic, he saw an operation (Makkas), which consisted in doing an appendicostomy and complete exclusion of cecum, the intestinal contin-

ity being reestablished by an enterocolostomy. Later, after the cecum had been rendered as clean as possible, both ureters were implanted into the cecal bladder. The patient had lived for a year and a half after the operation, and was perfectly comfortable. Every three hours she catheterized herself through the appendicostomy opening. The method seemed well worth applying in cases of this sort. As Doctor McWilliams had said, he would ordinarily hesitate to go ahead and tackle this condition, but since he had seen the result of this other operation he had been on the lookout for such a case in order to try the method.

Doctor STEVENS had operated in one such case, and the patient did very well. During the course of the operation one ureter was unavoidably broken into and the corresponding kidney was infected afterward, but the man got well. It was now four years since the operation and the man was in very good health. He had been working, and could go about his daily routine, and hold his urine from four to seven hours. Doctor Stevens left a cuff of bladder wall about each ureteral orifice, and inserted each ureter separately into the rectum. This accomplished the same result as Maydl's operation, as far as the kidneys were concerned, and was easier.

Doctor LOWSLEY had seen the results of three operations for extrophy of the bladder, one performed by Dr. George Woolsey six years ago. In that instance, the operation was to remove the entire trigonum and implant it into the rectum. He had seen the boy during the past winter, and he emptied his rectum every three hours; he went to school and acted like any healthy young boy. The second case had been operated in several times in Zuckerkandl's clinic in Vienna but had now a very good result. The third case was operated in twice by Doctor Bloodgood, once by Doctor Young, and also by Doctor Finney, of Baltimore. All they could do was to make a sort of cup, which was very little improvement over the patient's original condition.

Dr. C. G. BANDLER said that one of the cases which Doctor Lowsley had just cited had been successfully operated in by Zuckerkandl, of Vienna. The patient had been operated upon eight times, by the cutaneous method. He apparently has two pouches, one emptying into the other. By a clever mechanical device (given to him by Zuckerkandl) he bent the penis at an angle of forty-five degrees, and with this cap over the organ, so angulated the urethra he was able to prevent any incontinence. As soon as he released the apparatus, he emptied one pouch, and then pressed the contents of the bladder into the anterior pouch and again voided. Apparently he had perfect urinary control in this manner. Two years ago he was married, and while there had been no evidence of any pregnancy, he was able to perform sexual functions without difficulty. He was twenty-six years of age, and regularly worked at his trade of tailoring. This case had a truly remarkable result, and instanced the possibility of operative repair in extrophy of the bladder.

**Nephrectomy for Congenital Hypernephrosis in an Infant Six Weeks of Age.**—Dr. M. S. KAKEL'S case presented several interesting features and therefore seemed to him worthy of presentation: First, its apparent rarity; second, the immense size



of the tumor; third, the successful outcome after so formidable an operation. The case was one where the symptoms were typical of a condition in which an exact diagnosis was not impossible in so far as the history, physical signs, and radiogram revealed. The infant was six weeks old when referred to his service with the history that it was ventricose from birth. It was born with an unusually large abdomen, which was noticed by both the mother and the physician who attended her. The swelling never decreased, but gradually grew larger and larger, until at the end of six weeks it had attained such considerable size as to alarm both physician and mother, who then brought it to the hospital for operative interference.

On admission, examination showed the abdomen greatly distended, and by inspection it was evident that the distention involved the whole of the belly. No region was more prominent than another. The swelling bulged from under the costal borders on both sides and extended toward the symphysis. The surface was smooth and uniform, except toward the right flank, where an elongated nodular mass was felt. Fluctuation could be distinctly elicited. Percussion showed uniform dullness at the extreme left, where tympanic resonance was obtained, showing that the intestines were pushed over to the left side between the mass and the abdominal wall. Urine was voided naturally. The amount could not be ascertained. The child did not look ill; its bowels moved normally; it took the breast well, and except for the enormously large abdomen, seemed in perfect health. The diagnosis was comparatively easy, and lay between a malignant and nonmalignant growth of the kidney.

Children from birth up to the age of five or six years were prone to an exceedingly malignant type of growth of the kidney. These malignant growths, however, did not give definite symptoms of fluctuation, and were attended with marked constitutional symptoms. As these characteristic symptoms were absent, there being a positive liquid thrill obtained by tapping the abdomen with the fingers, and besides a history of rapid growth from birth of a fluid consistency, they felt they were justified in making a diagnosis of a congenital hydronephrosis. Although such fluid tumors, if they were of large size, might be mistaken for an ovarian cyst with a long pedicle, or a pancreatic cyst, or an enlarged gallbladder, or a hydatid cyst situated outside of the liver, these were practically eliminated, as such were very rare in infants of this age. Finally, the x ray plate showed distinctly the tumor with the intestines pushed in front and to one side between it and the abdominal wall, a diagnostic point of retroperitoneal growth. Even if their diagnosis was only presumptive, from a practical standpoint surgical interference was indicated.

The nature and the uncertainty of the result of an operation was explained to the mother, who readily gave consent. On careful consideration, on account of the size, it was deemed advisable to extirpate the tumor transperitoneally through the anterior abdominal route rather than through the lumbar incision, because it seemed more practical and safer, especially as the costal space in an infant six weeks of age was rather small for manipulation and re-

moval of a kidney of this size. On April 30, 1915, the second day after admission, the infant was etherized by the drop method, and an incision was made, beginning at the costal border and extending down almost to Poupart's ligament, through the widely expanded right rectus muscle. The peritoneum was incised, and beneath it the large bluish sac of the pelvis of the kidney showed through the posterior parietal peritoneum. The intestines were held to the left by gauze pads, and the anterior layer of the mesocolon of the ascending colon was incised, and the large sac with the elongated and enlarged kidney was delivered outside of the extensive opening in the abdominal wall. With a trocar and cannula, about 900 c. c. of straw colored uriferous fluid was withdrawn.

There was no anomalous blood supply. The renal vessels did not overlap and compress the ureter, but were spread out in fanlike fashion over the large sac and were separately ligated. The ureter was found bound down to the surface of the greatly distended pelvis by very fine adhesions which did not, however, compromise its lumen. After the fluid had been evacuated, the sac collapsed and, with the enlarged kidney, was completely freed and severed from the vessels and ureter. Judging from the amount of fluid that was withdrawn from the tumor, they estimated that the kidney and sac, with contents, must have weighed at least two pounds. There was no loss of blood. The ureter was found to be perfectly normal throughout its whole length, with no dilatation nor stricture anywhere. The posterior parietal incision was closed, the intestines were replaced in their normal position, and the abdomen was closed with larger sutures in the usual manner. The infant made an uninterrupted recovery, without one untoward symptom. After twenty-four hours, it took the breast with avidity, and had normal bowel movements the next day. The baby left the hospital on the fourteenth day after the operation, perfectly well.

Macroscopic examination of the sac showed that it was part of a greatly enlarged kidney, made up entirely of a distended pelvis of globular form and not pear shaped, with the insertion of the ureter at some distance from the vessels without dilatation or stricture of its lumen. As the ureter lay flat on the surface of the sac and entered the pelvis of the kidney obliquely, its anomalous position might have been an etiological factor in the hypernephrosis. Virchow held that congenital hydronephrosis might be due to obstruction of the ureter brought about by valvular folds at the ureteral orifice, thought to follow a congenital, exceptionally oblique insertion of the ureter into the pelvis. Modern pathologists held the opinion that the collection of fluid within the renal pelvis was the cause of the alteration in the relationship of the kidney and its duct. They assumed that a temporary impediment having caused a hypernephrosis, the kidney became displaced, and at the same time the lower half of the distended pelvis compressed the first part of the ureter; or, if the pelvis was distended more on one side of the point of origin of the duct than the other, the ureter was brought into contact and a valvular obstruction was created which became permanent. As the accumulation increased, the kidney became pushed outward

and backward, while the upper portion of the ureter came to be situated anteriorly. This was very evident in the present case. The exact pathogenesis of the hydronephrosis was uncertain, but as there was no obstructive disease in any part of the lower urinary tract, as was evidenced by a normal ureter which showed no stricture, twisting, dilatation, nor angulation below its insertion into the pelvis of the kidney, it was reasonable to assume that the hydronephrosis was caused by the anomalous angular insertion and a valvular closure of the orifice of the ureter of intrauterine origin, a condition described by Virchow and other modern pathologists.

**Congenital Adenoma of Kidney in Child.**—Dr. CLARENCE A. McWILLIAMS presented Mary Van P., four and a half months old when admitted to Doctor McWilliams's service at the Presbyterian Hospital on December 9, 1913. The only symptom mentioned by the mother was a swelling of the abdomen which she had first noted ten days before admission when the child had a slight cough, though she thought the baby's abdomen was always larger than those of the other children. The mass had given no pain, had never been tender, and did not seem to have interfered with the baby's health. The delivery of the child was instrumental. It had been breast fed since birth, had always enjoyed good health, and had a good appetite; had had no indigestion or vomiting. No weight record had been kept. The father and mother were particularly well, as were also four other children. One child had died of meningitis when a year old.

The patient was apparently a healthy child, and careful physical examination was negative, except in respect to the abdomen. This was greatly enlarged to the right by a spherical, smooth, nonfluctuating, firm, painless mass, about twenty cm. in diameter, immovable laterally and vertically. There was no abdominal rigidity nor tenderness. The mass could not be felt in the lumbar region; there was no tympany; the intestines were crowded to the left side; apparently only the thickness of the abdominal wall, to which it was not attached, was superficial to it. Neither kidney, *per se*, could be palpated. By rectal examination, a tongue shaped mass was felt about twelve cm. long, with apex inferiorly and base about four cm. in width, the tissue of which was firm and apparently not homogeneous, not tender, and moving with the elastic mass just above it with which it was at least contiguous. The lowest portion of the soft mass was just above the pelvic brim.

A diagnosis of sarcoma of the right kidney was made, and a nephrectomy was performed through a twenty-two cm. incision, running from the umbilicus out into the loin to the edge of the quadratus lumborum. The mass was found to consist of the whole of the right kidney, about ten cm. in diameter, roughly round, extending from the liver to the iliac fossa and costovertebral angle to the umbilicus. It was of homogeneous consistence throughout, and showed beneath its capsule many enlarged veins. At its lower extremity was a small amount of apparently normal kidney tissue from which issued the ureter. There were no signs of degeneration; it was not cystic. There was no hemorrhage and there were no adhesions to the surrounding organs. According to the pathological report, the specimen con-

sisted of a kidney which was sharply outlined, which measured about thirteen by fourteen cm. The surface of the kidney was smooth over to the area adjacent to the hilum; here there was a certain amount of loose tissue which could be readily separated from the remainder of the specimen. On cut section, the entire kidney was found to be made up of a white, homogeneous, soft, soapy mass. The pelvis of the kidney ran over the ureters and in beneath the capsule tissue; on either side the periphery of the tumor which presented in the pelvis, there were two solid areas which were part of the kidney; this was sharply separated from the tumor proper. This tumor had been injected, both the pelvis and the renal vessels. On cut section, the injection mass was seen entering the ureter, which had been very markedly distended, curving upon itself in the pelvis of the kidney proper. Accompanying the specimen was a small mass of tissue, said to be a lymph node from the side of the vena cava near the renal vessels.

Microscopic examination of sections from the kidney taken from the tumor mass, in about the middle of the specimen, toward the hilum, showed a very definite connective tissue stroma in which there were countless rather symmetrically shaped epithelial tubules. The tubules were of small size, the lumen in the majority of instances patent; in many of the tubules there were coagulated masses of debris. The epithelial cells of the tubule walls were not very large, with relatively large sized nuclei, which stained deeply. The cells of the tubules were, in the majority of instances, more than one layer in thickness, although the tubule walls were rather uniform in appearance. The stroma was of loose connective tissue in the majority of points examined. About many of the tubules in the stroma there were aggregations of cells that on one hand shaded off by unrecognizable gradations into what were obviously connective tissue cells; on the other hand, the cells shaded off into unrecognizable gradations into the epithelial cells of the tubules. Therefore, it was difficult to determine whether these cells were of epithelial or connective tissue origin.

The lymphoid node that accompanied the specimen showed extensive hyperplastic lymphadenitis, with dilatations of the lymph sinus. The nodes themselves showed no presence of metastases in the tumor of the kidney. The diagnosis was adenoma of kidney. The lymph nodes showed simple hyperplastic lymphadenitis.

The patient was returned to the operating room in good condition, but later had a high temperature with a pulse of 104 to 106; the temperature remained high for two days and then abruptly fell to normal. The further course was uneventful and satisfactory. The wound healed by primary intention, except at site of drainage tube, but this area soon granulated satisfactorily. There was now no sign of recurrence.

**Resection of Diverticulum of the Bladder and Ureteroneostomy in a Child.**—Dr. EDWIN BEER presented this patient, a little boy, ten years of age, who had been admitted to Doctor Beer's service in March, 1915. Some five or six days before admission, he had had slight terminal hematuria and pain on urination, and stated that he did not feel he had

ended the act after urination was over. He also complained of slight pain in the hypogastrium. Physical examination revealed a slight right lumbar tenderness, penile hypospadias, and a distended bladder. On catheterization, 100 c. c. of residual urine was withdrawn. The urine was turbid and contained pus and epithelial cells and a heavy trace of albumin. Repeated x ray examinations with argyrol showed a dilated right ureter and what was thought to be a diverticulum. Cystoscopic examination showed the right ureter mouth to be patulous. The left ureter could not be seen, but in the left bladder wall near the site of the left ureter was the opening of a diverticulum. Near the mesial posterior edge of the neck of the diverticulum, deep blue urine was seen pouring out in normal manner from the ureter.

On March 27th Doctor Beer performed an extraperitoneal extirpation of the diverticulum, and reimplanted the left ureter. The peritoneum was pushed back with some difficulty. The diverticulum was found behind the trigonum and in front of the rectum, pressing on both ureters (hydrourters) and intimately attached to the left ureter, which was sacrificed in its lower part when the diverticulum was resected. The exposure was excellent, as practically the whole bladder was delivered out of the abdomen. The ureter was implanted in the posterior wall and was attached by a couple of sutures. The bladder was drained suprapubically. The patient made an uneventful recovery, emptied his bladder completely, and felt well. Seven weeks after the operation, cystoscopy showed a well functioning neostomy with no evidence of the site of the diverticulum.

**Congenital Tumor of Kidney.**—Dr. EDWIN BEER also presented a young woman, twenty-two years of age, who was admitted to the hospital on April 12, 1915. She gave a history of having had pain in the right lower quadrant for the past three years. The attacks came on every few months, and were cramplike in character, radiating to the back. Occasional vomiting; bowels regular; no melena. The patient had lost twenty-two pounds in two months. About three years ago she noticed a mass in the abdomen, apparently the same size as at present. She had had no fever, chills, nor sweats. The day before admission she had painful urination and distinct hematuria.

Physical examination was negative, except the abdomen, which was full, rounded, and protuberant in the right half. No peristalsis was noted. A round, hard, movable (within short radius, only downward and inward), ballotable, nonfluctuating, smooth mass was felt in the right hypochondrium and right lumbar region. It was not tender, was dull on percussion, and did not move with respiration. It was surrounded superiorly, medially, and inferiorly by tympany. No rigidity; no fluid; the liver, spleen, and left kidney were not felt. Ureteral catheterization showed good function of both kidneys. The phenolsulphonphthalein test appeared in twenty-four minutes; first hour, 360 c. c., thirty-five per cent.; second hour, 120 c. c., twenty per cent.

On April 24th, Doctor Beer performed a transperitoneal nephrectomy of the right kidney, through a seven inch right rectus incision, and a tumor about

the size of an adult head was delivered through the wound. A complete record of the case was published in the *Medical Record*. The case of hydronephrosis was interesting as an illustration of what children could stand in these conditions. He would ask whether Doctor Beer thought these cases should be operated in whether they showed symptoms or not. He himself had a boy under observation with a stone in his diverticulum. This patient was sixteen years old and he had refused to operate on the diverticulum until there was some definite indication for operation. The stone had been removed by crushing, as reported at the previous meeting of the section.

Doctor BEER replied that the prognosis of mixed tumors was poor. Very few children grew up who had had mixed tumors removed. So far as the diverticulum case was concerned, both ureters were markedly distended at the operation, which was typical. The same condition existed in a case he presented some years ago, which was the largest he had seen. This was the youngest patient. The only difficulty arose in stripping the peritoneum, which was adherent and very thin. He pulled practically the whole bladder out of the abdomen. It was very easy to deliver it extraperitoneally. Owing to the danger of secondary hydrourter, hydronephrosis, and subsequent infection, all diverticula of any size should be operated upon.

(To be continued.)

## Letters to the Editors.

### A NOTE ON THE TESTING OF DISINFECTANTS.

New York, August 29, 1915.

#### To the Editors:

Owing to the fact that the International Committee on the Standardization of Disinfectants, appointed at the last meeting of the International Congress on Applied Chemistry, cannot meet this year, owing to the war, and that this may entail a further delay of three years, we desire to call attention to one or two points which have arisen since the publication of our paper on Approved Technic of the Rideal-Walker Test<sup>1</sup>, and to submit the following suggestions as addenda to the paper referred to.

First, in view of the difficulty experienced by some workers not familiar with the technic of the chemical laboratory, we suggest that a burette, such as that described by Hermann W. Mahr, of the Board of Estimate and Apportionment, New York,<sup>2</sup> be adopted in place of the dropping pipette. On the other hand, we know many workers who have a decided preference for the dropping pipette originally used by ourselves, and who do not see the necessity for changing this detail of the technic.

The second suggestion deals with the well known variations in resistance offered by the standard broth culture of *Bacillus typhosus*. To obtain the desired result in the phenol column—life in two and one-half minutes and in five minutes, and no life thereafter—dilutions ranging anywhere between one in eighty and one in 140 may be required. We feel that this range is too great, and suggest, therefore, that the culture be rejected if it calls for a phenol dilution higher than one in 110, or lower than one in ninety. Where the culture becomes so attenuated as to call for dilutions higher than one in 110, it can be strengthened by passage through any suitable animal. By restricting this range in dilution, the only rational objection to the Rideal-Walker test is at once removed.

A new difficulty has been introduced through the war; it is impossible now to obtain supplies of Witte's standard peptone. We understand this matter has been taken up

<sup>1</sup> *Sanitation, Community Biology, Health*, 1911, 6.  
New York, Medical University, March 7, 1914.



by an American committee, representing four prominent laboratories, with Doctor Combs as impore, and that this committee is about to report in favor of a breed which is said to be equal to Witte's in every respect. In the meantime, it would be interesting to have the views of other workers. We therefore invite discussion on this point.

SAMUEL KIDWELL,  
J. T. AINSLIE WALKER.

## Book Reviews.

[We publish full lists of books received, but we have no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*FACTS FOR MEN AND WOMEN.* By WILLIAM L. HOWARD, M. D., Author of *Facts for the Married, Plain Facts on Sex Hygiene*, etc. New York: Edward J. Clode, 1915. Pp. x-204. (Price, \$1.)

Recent years have witnessed a rising tide of literature bearing directly upon the subject of sex, and practically every phase of the entire field has probably been more or less thoroughly covered. Much of this sex literature is written especially for lay consumption and of this a considerable proportion is of such a nature as to be more detrimental than beneficial. The present volume is a notable exception in this respect, for no one could be harmed by its teachings, although it might be questioned whether certain types of persons with sexual aberrations will be helped by its study. The book is slightly Freudian so far as it makes sex and sexuality the turning points about which all of human life revolves. Howard even holds that character is dependent primarily upon the proper development of sexuality during infancy and early childhood. But in spite of his leanings to Freudian doctrines, the author really has given much food for profitable thought on the part of personally harassed young men and women, and has placed much exceedingly valuable information in the hands of the young mother and father who have the development of a human character in their hands. The great importance of the functions of the endocrine glands is given full recognition, particularly as their secretions influence the sexual development of human beings. It is unfortunate that even for his lay audience Howard should have left his discussions of the several internal secretions in such a fragmentary and hazy state as he has done. There are occasional statements for which we should like to have some definite authority, but taken as a whole the book is accurate and these few instances are probably of little importance so long as the author's messages have their desired effect. Although there is but little in the book which the average physician does not know, it would not be a waste of his time to look to it now and then for an idea when he is called upon to aid a parent in the guidance of a child's education.

*The Intervertebral Foramina in Man.* The Morphology of the Intervertebral Foramina in Man Including a Description of Their Contents and Adjacent Parts with Special Reference to the Nervous Structures. (Supplement to "The Intervertebral Foramen.") By HAROLD SWANBERG, Member American Association for the Advancement of Science. With an Introductory Note of Professor HARRIS E. SANTEE, From the Anatomical Laboratory, Chicago College of Medicine and Surgery. Illustrated by 11 original full page plates. Chicago: Chicago Scientific Publishing Company, 1915. Pp. 95. (Price, \$1.75.)

In this little volume will be found an account of the human intervertebral foramina. Special attention is devoted to their morphology, and a description is given of their contents and surrounding structures. A large part of this very small work has already appeared in one of the leading medical journals. The book is hardly likely to appeal to the physician or surgeon, but it should be read by those who assert that spinal abnormalities are responsible for most of the ills that flesh is heir to, and also by that much larger class which affects to believe that spinal manipulation is the only therapeutic agent of value.

*Alone in the Sleeping Sickness Country.* By FELIX OSWALD, D.S.C., F.R.S., F.R.G.S. With a Map and 100 Plates from the Author's Photographs. London: Kegan, Paul, Trench, Trubner & Co., Ltd., 1915. Pp. xii-219. (Price, \$3.)

The object of Doctor Oswald's journey to the Victoria Nyanza was to study some miocene deposits found near Karungu on the east coast of the lake. In the winter of 1911-1912 he made an expedition to the district to undertake a thorough examination of the locality. The scientific results of this expedition have been published elsewhere. In this volume Doctor Oswald describes the characteristics of the Kavirondo negroes, as seen when I lived alone among them at close quarters, only three weeks' journey from London, yet in a state of isolation and aloofness from civilization on which I had so recently turned my back, just as if some time machine had suddenly whirled me backward in the world's history for a period of two or three thousand years. The reader will find this a most entertaining volume, and any one with a love for travel or scientific investigation (under difficulties) will find it impossible to lay it down until the last page is reached. Doctor Oswald describes his coming in contact with the tsetse fly, hyenas, lions, leopards, gad flies, and other unweelcome visitors. He mentions how the natives disdain fresh milk, and prefer it sour; but he goes on to add that "it is soured by the amazing and disgusting method of adding cows' urine to it." There is an amusing description of a native musician, who, "true to the cult of certain virtuosi well known in our musical world, had a thick shock of hair consisting of long thin ringlets promaded with red grease and reaching down to his shoulders." It does seem as if some of the mannerisms and affectations of our civilized geniuses are mere atavistic reversion.

The natives of the district are entirely naked, yet distinctly moral; and the book affords a good description of a race as yet uncontaminated or ungraded by civilization. The volume is most liberally illustrated, and there are numberless examples of *September Morn*, all un-Comstocked and happy.

## Interclinical Notes.

While reading *The Forest Hermit*, by J. M. M. B. Durham in the *Wide World Magazine* for August, a true story which contains an illustration showing how the moose is "called," we were reminded of our prejudice against that method of luring the animal to its doom. Despite its use by generations of sportsmen, we have always esteemed the practice essentially unsportsmanlike. If the call imitated that of another bull, we should not object; but it imitates the female and the victim comes all unprepared for a fight.

\* \* \*

One of the most notable and entertaining articles in the *New Review* for July 15th is Simeon Strunsky's *Prophecy* and H. G. Wells, in which the critic takes up *The New Machiavelli* and shows how far Wells missed his guess when endeavoring to foretell the happenings of 1915. It is not merely the war that Wells failed to foresee, but the spirit in which the poor enlisted and went cheerfully to the front to lay down their lives for their country. In the book the poor are envisaged as grimy, gloomy, chaotic, hopeless, and Mr. Strunsky voices his hope that some day he shall read a book by some forward looking person in which the poor are otherwise considered.

## Meetings of Local Medical Societies.

MONDAY, September 6th.—Utica Medical Library Association; Niagara Falls Academy of Medicine; Hornell Medical and Surgical Association.

TUESDAY, September 7th.—Clinical Society of the West Side German Dispensary and School for Clinical Medicine; Amsterdam City Medical Society; Lockport Academy of Medicine; Syracuse Academy of Medicine; Ogdensburg Medical Association (annual); Oswego Academy of Medicine; Medical Society of the County of Yates; Medical Society of the County of Tioga.

*Wednesday, September 29th.*—Albany Association of Nurses; Albany Hospital Medical Society of the Borough of the Bronx; Dutchess County, N. Y., Medical Society; Dunkirk and Fredonia Medical Society.

*Thursday, September 30th.*—Cheneyville and Johnstown Medical Association; Physicians' Club of Middletown; Blackwell Medical Society of Rochester; Buffalo Ophthalmological Club; Jamestown Medical Society; Society of Physicians of Village of Canandaigua.

*Friday, September 10th.*—Flatbush Medical Society, Brooklyn.

## General News.

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending August 25, 1915:*

**Brown, B. W., Surgeon.** Granted two days' leave of absence from August 18, 1915, under paragraph 193, Service Regulations. **Burkhalter, John T., Surgeon.** Granted seven days' leave of absence from September 1, 1915. **Collins, G. L.,** Passed Assistant Surgeon. Granted one day's leave of absence, August 16, 1915. **Fox, Carroll, Surgeon.** Directed to proceed to Devils Lake and other places in North Dakota for the purpose of conducting a study of public health organization and administration; granted fifteen days' leave of absence from August 23, 1915. **Fricks, L. D., Surgeon.** Upon completion of season's work in the prevention of the interstate spread of Rocky Mountain spotted fever, ordered to rejoin station at Washington, D. C. **Harrington, F. E.,** Assistant Epidemiologist. Detailed to attend the State Farmers' Convention at West Raleigh, N. C., August 26, 1915, and deliver an address on rural sanitation in North Carolina. **Krulich, E.,** Passed Assistant Surgeon. Granted one month's leave of absence from August 23, 1915. **Magruder, G. M., Surgeon.** Granted eleven days' leave of absence from August 26, 1915. **Mullan, E. H.,** Passed Assistant Surgeon. Granted one month's leave of absence from October 5, 1915. **Sayers, R. R., Assistant Surgeon.** Granted fourteen days' leave of absence from August 20, 1915. **Stoner, J. B., Surgeon.** Granted thirty days' leave of absence from September 1, 1915. **Trask, J. W., Assistant Surgeon-General.** Granted two days' leave of absence from August 18, 1915. **Vogel, Charles W., Surgeon.** Granted ten days' leave of absence from August 27, 1915. **Wickes, H. W., Surgeon.** Granted one month's leave of absence from August 24, 1915.

#### Boards Convened.

Board of commissioned medical officers convened to meet immediately for the purpose of preparing physical examination blank for the use of the Department of Commerce in establishing a rating for able bodied seamen. Detail for the board: Assistant Surgeon General A. H. Glennan, Assistant Surgeon General L. E. Cofer, Assistant Surgeon General W. C. Rucker, and Surgeon A. D. Foster.

Boards of medical officers convened September 7, 1915, for the physical examination of certain officers of the U. S. Coast Guard for promotion, as follows:

Custom House, Norfolk, Va., detail for the board: Surgeon G. B. Young, chairman; Acting Assistant Surgeon R. W. Browne, recorder.

Quarantine Station, Honolulu, Hawaii, detail for the board: Surgeon F. E. Trotter, chairman; Passed Assistant Surgeon C. M. Fauntleroy, recorder.

### United States Army Intelligence:

*Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the week ending August 28, 1915:*

**Bourke, James, Captain, Medical Corps.** Relieved from further temporary duty in the Second Division, and directed to proceed from Galveston, Tex., to his proper station, Fort Wayne, Mich., for duty, relieving First Lieutenant Frederick H. Newberry, Medical Reserve Corps, from duty at that post. **Brownlee, C. Y.,** Major, Medical Corps. Returned to Fort Totten, N. Y.,

August 23, 1915, from fourteen days' leave of absence. **Gapen, Nelson, Captain, Medical Corps.** Left Fort Revere, Mass., August 17, 1915, for duty at Fort Hancock, N. J. **Hagood, R. H., Jr.,** First Lieutenant, Medical Corps. Left Galveston, Tex., August 14, 1915, and arrived at Texas City, Tex., same date for duty with Cantonment Hospital, Second Division. **Hart, J. W.,** First Lieutenant, Medical Reserve Corps. Ordered to active duty August 8, 1915, at Washington Barracks, D. C. **Ireland, M. W.,** Lieutenant Colonel, Medical Corps. Left San Francisco, Cal., August 17, 1915, en route to station, with leave of absence for two months. **Jones, G. B.,** First Lieutenant, Medical Reserve Corps. Reports departure August 23, 1915, from his home, for active duty at Fort Leavenworth, Kans. **McAllister, J. A., Jr.,** Acting Dental Surgeon. Left Jefferson Barracks, Mo., August 10, 1915, for duty at West Point, N. Y. **McGaughey, Hugh F.,** First Lieutenant, Medical Reserve Corps. Resignation of commission accepted by the President to take effect August 19, 1915. **Newberry, Frederick H.,** First Lieutenant, Medical Reserve Corps, on relief duty at Fort Wayne, Mich., will proceed to his home and upon arrival report by telegraph to the Adjutant General of the army; is relieved from active duty in the Medical Reserve Corps on expiration of leave of absence granted in orders from the War Department. **Patterson, R. F.,** First Lieutenant, Dental Corps. Arrived at Fort Yellowstone, Wyo., August 14, 1915, from Fort Meade, S. D., for temporary duty. **Smith, William A.,** First Lieutenant, Medical Reserve Corps. Ordered to active duty effective August 21, 1915, to report to commanding officer, Fort Moultrie, S. C., for duty until September 3, 1915.

## Births, Marriages, and Deaths.

### Married.

**Keirle—McCoy.**—In Baltimore, Md., on Wednesday, August 25th, Dr. Nathan G. Keirle and Miss Pattie McCoy. **Vickery—Howe.**—In Boston, Mass., on Saturday, August 14th, Dr. Herman F. Vickery and Mrs. Anna Louise Howe.

### Died.

**Bartlett.**—In Maxwell, N. M., on Friday, August 13th, Dr. Howard G. Bartlett, aged forty-eight years. **Beeler.**—In Guymon, Okla., on Thursday, August 19th, Dr. Thomas C. Beeler, aged thirty years. **Browning.**—In Maysville, Ky., on Thursday, August 19th, Dr. Amos G. Browning, aged eighty-six years. **Church.**—In Park River, N. D., on Sunday, August 15th, Dr. Richard J. Church, aged forty-four years. **Cormier.**—In Montreal, on Tuesday, August 17th, Dr. Isale Cormier. **Dolphin.**—In Far Rockaway, Long Island, on Saturday, August 21st, Dr. Benjamin E. Dolphin, aged thirty-seven years. **Drury.**—In Haverhill, Mass., on Monday, August 23rd, Dr. Deborah S. Drury, aged ninety-two years. **Fahey.**—In Northampton, Mass., on Tuesday, August 24th, Dr. James C. Fahey, aged forty-eight years. **Fuller.**—In East Jaffrey, N. H., on Wednesday, August 18th, Dr. David J. Fuller, aged seventy-six years. **Henry.**—In Springfield, O., on Thursday, August 19th, Dr. Robert H. Henry, aged seventy-two years. **Hiner.**—In Lima, O., on Friday, August 20th, Dr. Solomon B. Hiner, aged seventy-seven years. **Hollinger.**—In New York, on Thursday, August 19th, Dr. William Hollinger, aged fifty years. **Kelly.**—In Chillicothe, Ill., on Saturday, August 14th, Dr. Patrick H. Kelly, aged fifty-two years. **Lowell.**—In Chicago, Ill., on Monday, August 16th, Dr. Adelbert De L. Lowell, aged fifty-two years. **McNeil.**—In Sedalia, Mo., on Sunday, August 15th, Dr. George E. McNeil, aged fifty-three years. **Maisch.**—In New York, on Friday, August 20th, Dr. Charles O. Maisch, aged forty-seven years. **Muhlenberg.**—In Reading, Pa., on Wednesday, August 25th, Dr. William F. Muhlenberg, aged sixty-two years. **Waidlich.**—In Allentown, Pa., on Friday, August 20th, Dr. Mary J. Waidlich, aged twenty-five years. **Wallis.**—In Fitchburg, Mass., on Wednesday, August 18th, Dr. Nathaniel Wallis, aged fifty-eight years. **Washburn.**—In Springfield, Ohio, on Tuesday, August 17th, Dr. Henry Evans Washburn, of Clinton, Ind., aged thirty-one years.

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WHOLE No. 1919.

### Original Communications.

#### THE EFFECTS OF TOBACCO AND ALCOHOL UPON THE CARDIOVASCULAR SYSTEM.\*

BY ROBERT N. WILLSON, M. D.,  
Philadelphia.

##### TOBACCO.

By way of illustrating the various phases of tobacco poisoning I venture to cite very briefly the outline history of two interesting patients.

CASE I. F. G., aged thirty odd years, of ordinarily good habits. He used no alcohol, but smoked a pipe, and, on an average, a package of cigarettes in the twenty-four hours. Except his heart, his organs were apparently healthy. I noted of him in my record for 1905 the following: For the last few days had felt an obstruction to swallowing, not the real soreness of angina. Had a slight cough, and was short of breath. Marked palpitation. These symptoms are all excited and exaggerated at once by smoking. On examination the cardiac action was rapid and thumping. Over the aortic area and in the neck was heard a loud and fro murmur. The apex beat was far down and to the left. No murmurs at the apex. No arrhythmia.

Under simple hygienic treatment, a little iron medication, and the withdrawal of the tobacco, in two months (May to July) the subjective symptoms entirely disappeared, as did also the aortic diastolic murmur. The systolic murmur persisted over the base of the heart.

In April, 1908, three years later, he returned with the story of having resumed his tobacco only about three weeks previously. He was smoking six to eight pipes daily, no cigarettes. My record stated of him: He was pale and peaked, had no pain, but felt smothered. Excessive palpitation. No edema. On examination I found nearly the same cardiac phenomena as on the previous occasion, except for the absence of the diastolic murmur. A loud systolic murmur was heard all over the precordia. On May 1, 1915, he consulted me again, stating that he had slowly recovered from the last attack until he was perfectly well. Had been working the year round, swimming in the summer season several miles at a stretch without embarrassment. All subjective symptoms had disappeared and he considered himself well. About three weeks ago, he began to smoke a pipe and cigarettes again. During the last two weeks had had troublesome palpitation, dizziness, weakness, and heaviness in the legs, was very nervous, his hands were blue and cold. Appetite good, slept well. Used no tea, coffee, nor alcohol. Smoked about a package of cigarettes daily.

When examined, he appeared far thinner than I had ever seen him. His face was flushed, his lips bluish, his arms and hands cold and cyanotic. The radial and brachial vessels were palpably distended under high tension. The whole precordia responded to the action of the cardiac systole. The rate was 120. The apex beat was well to the outside of the midclavicular line in the fifth interspace.

Over the apex there was no murmur. Over the base of the heart there was a faint systolic blow, also a much more distinct diastolic murmur, heard best to the right and left of the sternum in the third interspace. Both the first and second sounds over the apex were irritable, loud, and angry. Both were overaccented. Over the base the second pulmonic sound was very prominent. The aortic second sound was nearly absent in the right carotid. Evidently the aorta and the aortic ring were dilated, and a functional if not actually an organic aortic valve insufficiency was present. There was marked dullness under the manubrium. The systolic blood pressure was 160, the diastolic 80, yielding a pulse pressure of 80, and a cardiac overload of fifty per cent. There was no history of infectious disease.

CASE II. Member of my own family, male, aged seventy-six years, in November last, 1914, experienced a severe seizure which appeared to me, as well as to a number of prominent consultants, a combination of acute toxic symptoms with an organic central nerve lesion. The patient had been under my medical supervision for fifteen years, and we based our belief upon the history of that period, the clinical picture, and the laboratory findings. Of the toxic influence there was little room for doubt as even the patient's urine was strong with tobacco. The organic lesion we regarded as probably a thromboarteritis with occlusion and stoppage, probably also secondary in its origin to the influence of the drug. In many respects the attack resembled a uremic hemiplegia. The patient was in a deep stupor, but was never completely unconscious. Against a uremia, however, were the remarkably soft brachial, radial, and temporal arteries, the known absence of sclerotic changes in the retinal vessels, the absolutely normal functioning of the kidneys, the urine free, as always, from albumin and casts, the slow cardiac action, and the excessively low blood pressure, systolic 85, diastolic 50. Both patellar reflexes were completely lost. On neither side was the Babinski reflex present. This picture is almost typical of tobacco toxemia. The heart, which had been critically examined two days before and found normal, was now distinctly enlarged and dilated. The apex beat was well advanced toward the left axillary line. The cardiac sounds were both dulled, but there was no undue relative accentuation of either sound. Slight arrhythmia was present at intervals. The cardiac rate over both the base and apex was 70 immediately after the primary seizure. It then dropped to fifty, where it remained for over a fortnight.

The patient's history yielded the following significant facts: He was seldom without a cigar in his mouth. During the last fifteen years, and especially during the last seven years, his left leg, and to a lesser extent his left arm had troubled him with numbness, and less freedom of motion than formerly. He complained of fullness in the occiput and sometimes of occipital pain. On relinquishing tobacco these symptoms would slowly but entirely disappear. About a month after resuming his tobacco they would again slowly but surely come into evidence. At no time could signs of arterial, cardiac, or renal damage be detected, though we searched in the hope of finding something that would have weight with him. The urine was examined systematically and at short intervals, and always yielded normal characteristics. Seven and four years ago respectively cataracts were removed by Dr. W. C. Posey from the left and right eyes, and normal vision was secured in both. For the past two years he had had more

\*Read in part before the College of Physicians of Philadelphia, May 5, 1915; and before the Harrissburg Academy of Medicine, May 28, 1915.



of this disorder was a marked lack of interest. This was the only abnormal feature in the patient's mental life. Tobacco was foregone. For two weeks before the recent seizure he complained of dizziness and uncertainty in walking. On the street he had such difficulty in controlling his left leg that he would constantly lurch into anyone walking on his left side. His mentality was perfect, except for a tendency

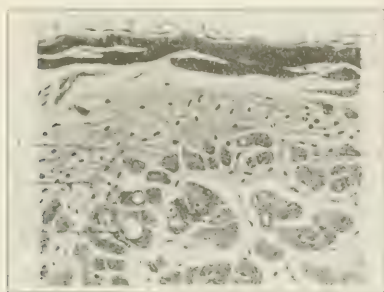


FIG. 1.—(Reproduced from von Otto.) 1. Normal subendocardium. 2. Normal subendocardium and degeneration.

to relax and become silent when not actively occupied. Two days before the seizure he was sitting at ease in an armchair. Suddenly his cigar dropped from his left hand. He was unable to rise for a few minutes, and could not use either the left arm or leg. He was then helped to his feet, and insisted on going down town alone to work, as it transpired, all day. On the following day Doctor Posey sent him to me with the statement that there was a haze of the vitreous humor, probably toxic, and probably due, as we both thought, to tobacco. When he came into my office the patient walked with difficulty, owing to the embarrassment of his left side. Notwithstanding these symptoms he presided, against advice, at a Thanksgiving dinner the following night, and was full of interest in the occasion. He spent the next day in bed under vigorous protest. I was called to see him at 4 a. m. the next day, and found him comatose, and the entire left side paretic, though both arm and leg began to be used before he had been lifted into bed, and he requested and guided the urinal with his right hand. During the next few hours the coma deepened. After twenty-four hours, however, very gradually the entire picture lightened, and in two weeks he was in practical control of all his limbs and functions. A left homonymous hemianopsia then became apparent, and persisted permanently, though with normal acuity of vision in the contracted area on the right side. There was also a marked loss of the perception of the color green near the centre of the field of vision, which, as Förster (1) and DeSchweinitz (2) have emphasized, represents a frequent influence of tobacco upon the optic nerve. The customary tobacco scotomata for red and green are oval in shape and situated between the point of fixation and the blind spot. The patellar reflexes and the blood pressures were the last to return to normal behavior after a period of about six weeks.

At the time of the attack and for several days previous, the patient had literally stunk of tobacco, not from the clothing, but exhaled from the skin and breath of a poisoned man. We realized what was threatening, but could not persuade him to give heed. Up to the morning of the acute onset the cardiovascular system flew no signals of distress. Overnight a competent heart became a dilated, insufficient organ. The apex beat then slowly crept back to its normal position, the slight arrhythmia disappeared, the first and second sounds regained their clear cut character, and, as far as could be determined the heart was normally at work, and furnishing no outspoken evidence of permanent damage. Both blood pressures were soon also steadily normal (130 and 80 mm. mercury). The hemianopsia was evidently due to a thromboarteritis, with a sudden closing down of the middle cerebral distribution during the night of the attack or during the ten days be-

fore unconsciousness was fully restored. It was not of the nature of the usual tobacco amblyopia. But in the absence of any other known cause, and in the recognized toxic influence of tobacco upon the patient during years past, the drug must fairly be admitted to have been the underlying factor responsible for the arteritis, for the consequent occlusion, and the final starvation of one of the main visual centres. The parietic features involving the whole left side, off and on for at least seven years, must have been due to a lesion of a different location and nature, though even more certainly attributable to the tobacco. They formed a by no means new syndrome. They were evidently altogether toxic, and with the removal of the drug from the body they reluctantly gave up their prey. Twice during the first forty-eight hours the patient vomited about an ounce of dark red blood.

That tobacco will cause various toxic pictures based upon the crippling of important nervous centres is well illustrated in another patient seen by me two years ago in consultation. As the result of the excessive use of tobacco he had a fairly complete symptom complex of *tabes dorsalis* in the absence of a history of syphilis. He presented Argyll Robertson pupils, absent patellar reflexes, and very suggestive gastric crises, for which he had been operated on in the idea that he was suffering from gastric ulcer. Abstinence from tobacco for several weeks caused a return of the pupillary light accommodation, also of the patellar reflexes, as well as his first relief from abdominal pain. Eperon (3), Uhthoff (4), Nonne (5), and Oettinger and Strümpell (6), have all reported similar cases due to tobacco or alcohol or to both. I have more than once suspected, and it may easily be, that tobacco and syphilis cause the sclerosis of the posterior columns in true *tabes*, and not syphilis alone. I have yet to discover a patient with *tabes* who has not partaken freely of the drug. De Schweinitz (7) has described the case of a man of fifty-eight years, who both smoked and drank, and had typical color scotomata, side by side with the symptom complex of *tabes*. There was no improvement in his ocular condition in two months, and presumably none in the tabetic picture. Here was, in all likelihood, an instance of true *tabes* associated with and perhaps partially or wholly due to tobacco poisoning. There was no obtainable history of syphilis.

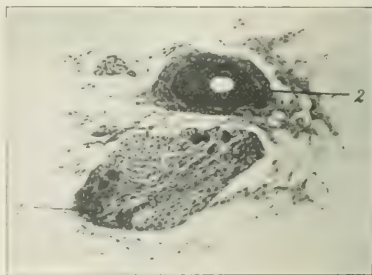


FIG. 2.—(Reproduced from von Otto.) 1. Ganglion cell from tobacco-poisoned rabbit. 2. Blood vessel with thickened wall.

The case histories of my first two patients outline the story of the influence of tobacco upon the heart, short of an autopsy. Case 1 is that of a youth, now a man, with a possible organic aortic valve lesion, but more likely a fairly normal heart acutely

and cumulatively poisoned, though not to the extent of a complete rupture of compensation. Case II illustrates the serious acute incompetence of a heart known to have been normal in its action immediately prior to the onset of a deeply toxic state. The tardy pulse rate, the very low systolic and diastolic blood pressures, the arrhythmia, and the dilatation, in the presence of almost youthful peripheral and retinal arteries and normal urine, all speak in more graphic terms than any possible for me of the wickedness with which tobacco can cripple the most important mechanisms in our possession. Nor can there exist any real doubt of latent degenerative changes in a myocardium which responded in such a fashion to an acute toxemia from a drug to which the patient had long been inured. A second attack would find the heart in a still further advancement of the destructive process, and in an even less satisfactory defensive state.

Acute tobacco poisoning of the cardiovascular system is seen in its earliest and simplest phases in the vomiting, the delirious pulse, the ice cold extremities of the boy who has "enjoyed" his first cigar. Case I pictures the combination of the features of an acute superimposed upon a chronic toxemia, just short of an explosion. Repeated attacks of cardiac incompetence such as his signify toxic processes that undoubtedly result in a degenerative change. Case II closes the story with a recital of a fulminant attack, following repeated ample warning such as many men receive, that tobacco occasionally destroys the best we have, when they challenge its ability and power, and, manlike, venture to run the risk. The cerebral arteries in this case evidently suffered from the tobacco. The heart barely withstood the acute toxemia. Yet I have not up to now overemphasized the influence of tobacco upon the cardiovascular system, because I know personally of no one whom it has actually killed, and I have no autopsy findings to present from a clear cut tobacco case in my care, though Case II described a patient who for twenty-four hours enjoyed, humanly speaking, a very scant margin of cardiac vitality. Many fatal cases of tobacco poisoning are recorded in the literature, of which I shall later cite several. I know a number of individuals who have been left in a worse state than death. A very important phase of the subject of tobacco poisoning is the insidious influence of the drug upon the arteries, now distributing its attentions throughout the entire arterial tree, again only involving some vitally important twig.

It is my confident belief that between tobacco, now in general use and abuse, and the various forms of food toxemia, can be divided the responsibility for the vast amount of arteriosclerosis that is not attributable to syphilis and old age. We have evidence and to spare furnished by the laboratory as well as by the clinical records of such cases as we have just outlined, to show that once rid of tobacco we should have fewer instances of the gastrointestinal apathy and decomposition which are so often tobacco's outgrowths and coadjutors. Not a little might be said from the strictly laboratory and experimental side regarding the permanent influence of tobacco upon the heart. Harlow Brooks (8) assumes from the study of a series of "tobacco users" and autopsies upon the same that tobacco does not

structurally alter or injure the heart. He quotes Hare (9) to the same effect. It does not seem, however, that his findings are at all convincing; nor does he seem to have had access to much of the recent laboratory work with respect to the injury of the cardiac structures by and due to nicotine.

One of the most reliable and conclusive studies is the investigation of C. von Otto (10), in which he injected a nicotine solution, one to 10,000, into guineapigs in small doses. After ten months the hearts of three of these animals were studied, about 800 serial sections being made from each. Not only the ventricular muscle, but the nerve ganglia in the auricles and the coronary sinus were scrutinized. Except for an increase in the size and weight of every nicotineized heart (compared with the hearts of control animals), there were no macroscopic changes. Microscopically, however, widespread parenchymatous and interstitial changes were apparent, the former centring in the muscle fibres, the latter in the interstitial connective tissue. Fibres or whole fibre bundles had lost their form, and took the stains poorly. Fragmentation was seen in all directions. In certain cells the nucleus was very indistinct or had disappeared altogether. The protoplasm was full of amorphous granules. The striæ of the muscle fibres gradually disappeared as the granular degeneration increased. Vacuolization of the nucleus was a frequent phenomenon. There was a marked proliferation of the fixed connective tissue cells between the fibres, with the formation of cicatrices, especially close under the endocardium, practically never beneath the epicardium. All three coats of the cardiac bloodvessels showed involvement, though largely of the coronary branches and capillaries. Only to a slight extent did the main coronary vessels show evidence of disease. The intima of the smaller vessels showed the most marked changes, then the media, and least of all the adventitia. In the media the muscular and elastic fibres were atrophied. In this coat the changes ranged from mere cloudy swelling to necrosis. The elastic fibres split up into fine fibrils. The intima showed a striking thickening and a degeneration of the elastic layer. In certain coronary twigs the intima appeared three fourths the thickness of the media, owing to hyperplasia of the connective tissue cells. Here and there occurred a shiny hyaline mass. Occasionally the intimal changes nearly occluded the lumen. The nerve ganglia presented extensive, definite degenerative processes. The Nissl bodies were greatly diminished in number in the larger nerve cells and replaced by vacuoles. Nerve cells of unusual mid sizes (between the normal large and small) were in decided evidence. The bloodvessels surrounding the ganglia showed degenerative changes similar to those described above. The vessels running in and through the ganglia showed swelling of the endothelial cells, but never was there an encroachment upon the lumen to the extent of stoppage.

I have reproduced several of von Otto's drawings, demonstrating the diseased processes in the bloodvessels and ganglia.

Other studies that contain much of similar interest are those of Zebrowski (11), Nicolai (12), Pawinski (13), and of Cannon, Aub, and Binger (14). In the latter it is demonstrated that nicotine

actively stimulates the adrenal secretion, and may thus exert an indirect influence upon the vessels through the adrenals, in addition to its own direct poisoning of the cardiovascular structures.

I wish at this time simply to submit my own fairly eloquent clinical findings, and those of others. To-

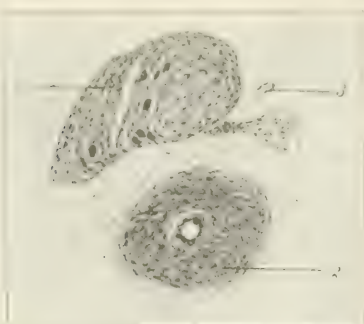


FIG. 3.—(Reproduced from von Otto.) 3, Thickened endothelial vessel with tendency toward obliteration.

bacco has struck very deeply into the vitals of the home in which I was born, and I should like to furnish the members of my profession with evidence sufficient to justify their refusing to prescribe certain injury, and possible catastrophe, that will come, if at all, as stealthily as it certainly will with permanent crippling and harm. If it had not been for regrettable advice on the part of physicians, Case II could have been spared a catastrophe. In the light of such clinical pictures and the autopsy findings of Favarger, yet to be detailed, one can hardly sympathize with Brooks in his assertion that "if experimentation, pharmacology, and clinical observation have taught one single fact about the action of tobacco, it is that its effects, while occasionally very dangerous, are evanescent." Rather must we conclude that while the drug stimulates a temporary effect, it is working silent, permanent injury beneath the surface. Only yesterday a physician said to the writer, "I have had to give up my cigars. I knew they were hurting me. But even though I stopped smoking days ago I am still short of breath and have pain almost constantly in my heart." This physician's dyspnea is cardiac dyspnea, and implies insufficiency of the cardiac muscle, how temporary or how permanent the event will tell. Tobacco is an anesthetic, a narcotic; it quiets and soothes irritable nerves just as do alcohol and opium, and in an identical way. It exacts much more certain cardiovascular toll, which some of us cannot afford to pay. There seems to be ample evidence for the belief that it stimulates and irritates and later paralyzes the vagus, and also the sympathetic (including the autonomic) system. This is apart from its directly poisonous action upon the heart muscle and the media and intima of the vessels.

I am accumulating a considerable amount of clinical evidence indicating that the children of the tobacco user and his tobacco absorbing wife also pay a cardiovascular toll in the form of a tendency to fibrous and leathery bloodvessels that have often

enough been attributed to heredity, but seldom or never to its exact phase. This is, however, a subject for discussion by itself; so more thereof at another time and on another occasion.

Frankl-Hochwart (15) has experimented with healthy smokers and nonsmokers with respect to the influence of tobacco laden air (smoked by others or smoked artificially). Out of sixty-two separate experiments on persons whose pulse, respiratory rate, blood pressure were taken at frequent intervals, he found that only two subjects failed to show marked changes in blood pressure. Two moderate smokers showed no marked reaction while in the smoke laden air, but ten minutes after leaving the room had a violent and excessive fall in pressure, with slowing of the pulse in both. Of twenty-eight adults who sat for twenty minutes in a tobacco smoke filled room, five showed little reaction. Of the remaining twenty-three, eleven experienced a marked fall of blood pressure. The pulse rate was unchanged in five of these, increased in four, and slowed in two. In five of ten persons the blood pressure fell more markedly when they themselves were actively smoking than when they were passive in the tobacco smoke. In another article Frankl-Hochwart (16) also refers to the well recognized association of tobacco with intermittent claudication, to the production of the arteriosclerosis underlying the condition, and to the relief from symptoms which not infrequently follows the withdrawal of the drug.

John (17) has carried out a careful series of observations, and finds that two moderately strong cigars will cause typical changes in the blood pressure. During the smoking there is an increase in the diastolic pressure, a primary rise in the systolic pressure, followed by a decided fall. These variations from normal last about two hours after the smoking has been discontinued. Favarger (18), to whom I have already referred, cites a most convincing series of cases observed by himself, including fatal cases of both acute and chronic tobacco poison-

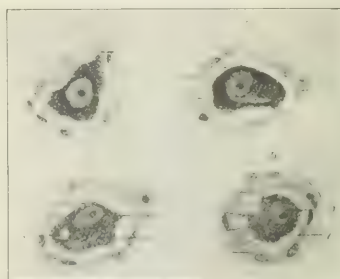


FIG. 4.—(Reproduced from von Otto.) A, Normal ganglion cell. 1, Nissl's bodies. 2, Cell membrane. B, Degenerating ganglion cell. 1, Nissl's bodies. 2, Vacuoles. C, Degenerating ganglion cell. 1, Atrophy of Nissl's bodies. 2, Vacuoles. D, Degenerating ganglion cell. 1, Atrophying Nissl's bodies. 2, Dissolving nucleus.

ing. He noted repeatedly marked and typical cardiac disturbances, including arrhythmia, bradycardia or tachycardia, precordial oppression, dyspnea, myocardial insufficiency (dilatation), cardiac asthma, Cheyne-Stokes respiration, cyanosis, and in six cases fatal cardiac paralysis. He obtained an autopsy in



one striking acute-chronic case and found (Paltani operating) cardiac dilatation and a high degree of fatty degeneration throughout the heart." There was also found at the autopsy an extensive hemorrhage into the bowel, evidently toxic, and probably of the same nature as that which occurred from the stomach in my Case 11. He emphasizes the fact that many cases in his experience have shown tobacco myocardial insufficiency in the entire absence of demonstrable sclerosis. I have already called attention to this feature of my second case.

L. Mitchell Bruce (19), in the Lettsomian lecture, states as his experience that "in young men with hearts still structurally sound, the uncomplicated effects of tobacco, as presented clinically, are palpitation in every instance; a sense of irregular action, poststernal oppression and pain in one half the cases; and in one out of every eight either angina or uncomfortable sensations in the left arm; faintness or actual faints in one third of the cases; giddiness and a feeling of impending death in a smaller proportion—the pulse tension with insignificant exceptions is low."

I shall further merely mention the important investigators of W. E. Lee (20), Clerc and Pezzi (21), Bruce, Miller, and Hooker (22), and C. Fleig (23). All of the foregoing have demonstrated vasoconstriction as the result of tobacco exposure. The action upon the heart and bloodvessels is both central and peripheral. Fleig has subjected the young of guineapigs to tobacco smoke. Not one of the number developed into a normal or healthy animal. If the pregnant mother was exposed to the smoke the young were either born dead or else were dwarfed and far beneath the normal birthweight. Anyone can do a similar experiment with the seedlings of beans or peas, growing one lot in a jar over clean water, and a second lot from the same picking over a jar into (not on) the water of which have been blown four or five mouthfuls of tobacco smoke. The tobacco poisoned growths are stunted and pitiful. Tobacco strikes at the heart of things, whether plant or animal. One of the most typical instances of violent and agonizing angina pectoris I ever witnessed was in a young man of thirty years, saturated with tobacco. For over fifteen years he has been free from pain, and is still living and well, without tobacco. Most of the instances of so called pseudo-angina in males are due to this drug. I am convinced that many if not all of the instances of pseudoangina are examples of toxic involvement either of the ganglia of the heart or of the nerves of the cardiac plexus, and that when there is an opportunity of exhaustive microscopic post mortem study it will prove fruitful along these lines. Not one can properly be called a neurosis. The pain is too constant for it to be explained on the basis of coronary constriction, especially since the effect of tobacco is eventually vasodilatation after its first temporary influence. In any event, tobacco's action on the circulatory system is swift and certain. Even in the absence of high diastolic tension in the habitué it tends toward intravascular disease of the heart, of the brain, or of the entire economy, the latter forming the rule. From the evidence secured in my own cases, as well as the more definite demonstration in the long sought human autopsy of Favarger, and the laboratory work

of von Otto, it seems fair to conclude that degenerative processes are at work in every tobacco poisoned heart.

#### ALCOHOL.

Of the clinical picture of acute alcoholism nothing need here be said. We know it too well, from the glimpse seen in the baby who is receiving a drop at a time through the breast of its mother, or when actually placed in the bottle; to the child who receives at the table "just a taste of beer"; on to the freshman who learns to drink boldly at his first college supper; and to the "good fellow" who lies limp under the banquet table. There are, we believe, fewer and fewer of him. I refer to not one of these in the brief description which follows. My discussion is solely of the therapeutic use of alcohol, almost the twin of tobacco in its anesthetic and narcotic effect. We need not waste time in discussing its lack of food value, in any true sense of the term. This lack has been demonstrated beyond all peradventure, and has been accepted as a working principle in all of the foremost laboratories. (A. E. Taylor, Winfield S. Hall, and others.) Bachmann, of Upsala, has also presented (in 1907 before the Alcohol Congress at Stockholm) the results of his experiments with the drug on the isolated heart of the rabbit. He called attention to the fact that Locke and others had demonstrated the actual food value of grape and fruit sugars and their power to gradually augment the contractions of the isolated heart. In striking contrast he showed the action of alcohol when even the most dilute solutions (0.0025 to 0.5 per cent.) were perfused through the heart vessels after the vigor of the organ had been appreciably diminished. If the alcohol was used in strength sufficient to produce any noticeable effect, it always caused a diminution in the strength of the contractions, with arrhythmia, also a slowing of the cardiac action. When replaced by a (0.5 per cent.) solution of sugar in most cases there was a positive restitution of cardiac power and capacity for work. Barry (24) has even more recently confirmed these and similar findings. I shall consider only the clinical and laboratory indications and contraindications for the medicinal use of the drug which has so recently and so suddenly been transferred from the class of cardiac stimulants and tonics to that of the cardiac depressants and poisons. At a recent meeting of the Philadelphia County Medical Society, called for the consideration of the medicament use of alcohol, a number of experienced clinicians and consultants in internal medicine took part in the discussion, and only one, the oldest in years and experience, made the slightest reference to its influence upon the cardiovascular system, and he only in passing. Not one seemed to lay any stress upon the mass of clinical and laboratory evidence ready at hand in the matter of the physiological action of alcohol in small doses and large upon the heart, upon the cardiac system of nerves, and upon the vasomotor nervous system.

We do not know that alcohol produces arteriosclerosis, used moderately or immoderately. We do know that in small and large doses in continued use it soon depresses and then paralyzes the vasomotor nerves. We also know that tobacco does indeed cause arteriosclerosis; and that the use of alcohol

practically implies the craving for tobacco. To put the same truth a little less paganismly, very seldom is an individual discovered who uses alcohol in any form or in any dose who does not also use tobacco, whatever may be his own explanation of the coincidence. Other excesses in food and venery are

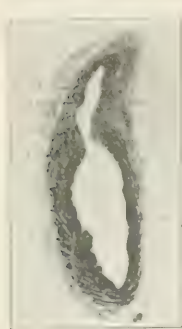


Fig. 1. Degenerated intima. 4. Degeneration of the deepest elastic media. 6. Altered media. 7-8. Thickened intima of the branch vessel.

closely associated with alcoholism and the tobacco habit, that tend equally toward sclerotic vessels and myocardial disease. It is impossible, therefore, either to indict alcohol on the score of directly producing arteriosclerosis, or completely to relieve it of either a direct contributory or indirect responsibility for much of the rapidly increasing cardiovascular disease. In New York State, eight years ago (1909), there were 23,000 deaths from cardiovascular disease, and only 17,000 deaths from tuberculosis. During 1914, 2,205 physicians died in the United States and Canada, an approximate death rate of 14.41 per 1,000. The chief causes of death were the cardiovascular diseases. In Philadelphia during 1914 there was a general increase of 400

deaths (seven per cent.) from organic heart disease over the total of 1913. Of apoplexy and paresis there was an increase of fifty-four deaths (nine per cent.). These are significant figures when we realize that the most active causes of cardiovascular disease are the trio, so often found in company, tobacco, alcohol, and syphilis, in the rich and poor, in the highly respectable, and in the outcast.

It is only fair, however, to exonerate the drug alcohol from a contribution to the sclerotic total when used by the physician in therapeutic dose, if there is such a thing. It harms the vessels by injuring their vasomotor control, though its really pernicious influence under such circumstances is upon the various structures of the heart. I have spoken of alcohol as tobacco's near twin. It is such in its primary action, in small, and in certain respects also in large doses. Clinically, both alcohol in small doses and tobacco smoked or inhaled at first stimulate the heart directly and increase its rate, force, and volume output. Both drugs at first and for a brief interval raise both the systolic and diastolic blood pressures, the systolic as the result of direct stimulation of the heart muscle, the diastolic through stimulation of the vasomotor nerves. To that extent the laboratory results accord with the clinical findings in the similarity of the two drugs in their action upon the heart and vessels. Dixon (25) has shown, and any one can confirm his animal experiments in the healthy or the sick human subject, that in small doses alcohol at first slightly stimulates the cardiac systole. Whether this result is attained through a depressant action upon the vagus, or a stimulant influence upon the sympathetic nerves, or upon the cardiac muscle, is uncertain. Both the

systolic and the diastolic pressures are momentarily slightly elevated, the splanchnic vessels being constricted, and the peripheral capillaries dilated. Probably as a consequence of all these factors the heart gains the briefest and most temporary lift, as it were. Therein lies the sole justification for the therapeutic use of alcohol, at any time or in any circumstance. Hot water and ammonia, or hot water alone, will do all these things better than alcohol, and without any secondary effects that more than undo the benefit that has been conferred. Within a few brief minutes (usually not more than five or ten) alcohol becomes tobacco's half twin only, for the time being. It no longer raises the diastolic pressure. No longer does it constrict the splanchnic vessels. It still resembles tobacco, however, in that instead of stimulating the cardiac muscle or nerves it now depresses both. This becomes more evident, even if small doses are continued, from the sometimes overrapid, sometimes very slow, feeble cardiac action, the lessened output, the manifest signs of cardiac dilatation, the not infrequent auricular fibrillation, the arrhythmias due to other factors than interrupted conduction, and the systemic signs of imperfect compensation. The systolic and diastolic pressures fall together far below their starting point as the result of cardiac and vasomotor crippling, and this toxic effect continues with increasing tendency to depression of the cardiac forces until the drug is withdrawn. If large doses have been administered (as is usually the case in emergency as well as in continued treatment) the depressant influence is active from the beginning. Tobacco in its chronic and in its overwhelming and fulminant poisonings also paralyzes the heart and vasomotor system, and again reestablishes its full cardiovascular twinning with alcohol.

There is an abundance of reliable evidence to show that the administration of alcohol lowers the vital resistance to bacterial infections in at least two ways. It diminishes the power of the human economy to marshal its phagocytes when and where it pleases. These are all important defenses in certain

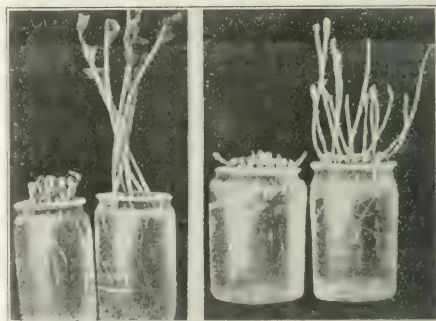


FIG. 2. Pea and bean seedlings exposed to tobacco smoke (on the left). Normal growth on the right. (Photograph by C. W. Baines.)

forms of bacteremia, and probably by their activity or through their inaction they often decide the issue for recovery or death. Alcohol also lowers the ability of the body to manufacture the antitoxins requisite to combat the infections which work mainly

as toxemias. The only conceivable occasion on which the drug could assist in a grave toxemia would be in such an infection as typhoid fever, occurring in a strong, robust individual of high antitoxic resisting power, in whom there is too wholesale a destruction of bacteria in the tissues, with danger that the patient may poison himself to death through the very process that usually works the cure. But in the vast majority of typhoid patients, indeed in all of the asthenic type, such a danger is out of the question. Every germ killed is one more danger set aside. The patient is a rare exception in whom the natural defensive forces may be wasted with impunity. Hence there are few physicians approximating above or below forty years of age who feel that a place remains for alcohol in the pharmacopeia of the well read and conscientious physician, except as an emergency stimulant, and then only in minimal doses, which does not mean a half ounce or an ounce at intervals of a few hours.

Again, it is certain that the action of alcohol is the same upon the cardiovascular system of the old as upon that of the young, except that in the former it finds tissues less normal and recuperative, and much less prepared to withstand its toxic and depressing effects. Few old people have a systolic pressure that approximates the normal. Alcohol in any dose pushes it still lower. Only an occasional senile body has young arteries and veins. Alcohol lowers the tone of the cardiac muscle and its extension in the arterial muscular coat even more certainly in the aged than in the young. The senile individual needs every force that will sustain and enhance a failing circulation. To give him alcohol is to deplete his reserve store. Why, then, let us ask, do some still venture to say, "in infections and in bacteriemias and in toxemias like typhoid fever"—I am not sure that I am quoting verbatim from the meeting already referred to—"alcohol does do good? I know what I say because I have been there." One is almost at a loss to reply to such an assertion with the consideration and patience that are obligatory in a scientific discussion. Some have been in the Arctic regions and have honestly thought they have seen that which they did not see! Moreover, one thing can be charitably said for all of us who cheerfully, and as we thought successfully, used alcohol in our work ten years ago, and today are just as cheerily and just as confidently laying it aside as a no longer doubtful poison and as a destroyer of living tissue. We were wrong then; we are more nearly right today! Let us err on the safe side until we learn whether there be a midposition struck when the pendulum comes to rest. It must also be admitted that one person can secure results with a medicament which another cannot—else medical history is full of clinical investigators whom one would like to trust, but dare not. This refuge of an isolated success is not open to the alcohol advocate, however, since we were all at his side a few years ago. Only he has failed to read the signs of the times and to move on a little. I think the real secret of the alcohol advocacy and the undoubtedly honest conviction of the alcohol advocate is to be discovered in three subtleties in his make-up. First, he is always and invariably a so called "moderate drinker"; second, he clings fast to the threadbare theory that

the individual has a right to be a moderate drinker, whether it injures him, his posterity, his neighbor (by example), and the community (by the lowering of his own efficiency), or not; third, and most potent of all, the older he becomes the more firmly he gets set in a groove, and the more difficult it is to persuade him that there is pleasant pasture outside his narrow confines. "He has been there," and is content! So have we, and have learned better things. We agreed with him on a given point ten years ago. We differ on that identical point today. Moreover, we base our variance on bedside findings and on laboratory demonstration, on both human beings and on the lower animals. He really was not there at all! Nor were we! We both thought we were! He remains reluctant, for the reasons submitted, to follow us out of the old groove. But to maintain his position he must admit an ignorance of or an unwillingness to examine and weigh evidence that will convince him of error, provided he employs the same fair methods of estimating that characterize his judgments in other matters.

The physiological effect of alcohol is better comprehended by the lay public today than by the average medical man, if one may judge by the tide that is sweeping over the country. The first awakening and the first outspoken testimony came into evidence only a week ago, when 700 of the physicians of Pennsylvania openly took their stand for the right of a community to determine by vote whether its citizens should or should not barter away their health in exchange for avoidable cardiovascular disease. The next advance will be the ranging of the national medical body on the side of the disuse of a drug which its members have heretofore freely employed in good faith, but which they are now forced to recognize as in any dose a cardiovascular nerve and muscle poison, a tissue destroyer, and an economic harm.

Now for the evidence, in brief form! I have in fairness already cited Dixon's animal experiments to illustrate the general agreement that the first fleeting influence of small doses of alcohol on nonalcoholics is stimulant. I have also stated the fact, based on clinical and laboratory study, that this action is promptly followed by a vigorous and permanent cardiac and vasomotor depression, i. e., weakening. In all toxemias, and probably in all infections that act directly as bacteriemias, the heart and vessels constitute the main reliance of the body with respect to maintaining the fight against exhaustion. This principle holds peculiarly true in the pneumonias, in typhoid fever, in tuberculosis, in diphtheria, in scarlet fever, and, to a lesser extent, in the true rheumatic states. It is in this class of heart beset infections, in certain of which the blood carries bacteria and toxins to every cardiac and vascular muscle and nerve cell, I repeat, it is particularly true in this group of bacterial diseases that alcohol advocates are maintaining their right to use a cardiovascular depressant and poison. Ewald (26), though not himself a teetotaler, has discontinued the use of alcohol in the infectious diseases as being useless, either in reducing temperature, as a hypnotic or as a bactericide. He finds that it reduces the resisting power of the blood. He is convinced also that camphor, strychnine, and caffeine answer every



purpose for which alcohol is used internally, and accomplish better results.

As to the clinical successes of those who have recently spoken for the retention of alcohol as a medicament, Miller (27) gravely reminds us that Laennec had a specific for pneumonia in tartar emetic, that Petrescu treated 2,215 pneumonia patients with large doses of digitalis and experienced a mortality of 1.7 per cent.; and that Aufrecht reported a series of 379 cases of pneumonia cases treated hypodermatically with quinine with a mortality of only 2.6 per cent. Miller (28) also quotes Dennig, Hindelang, and Grünbaum with respect to their experiments in administering alcohol (in doses corresponding to six c. c. of absolute alcohol in man) to dogs suffering from various infections. In all there was a fleeting rise in the blood pressure; then in five minutes a marked fall which persisted for forty-five minutes. When larger doses were given the primary rise in blood pressure did not appear. Sixty-two febrile human subjects, mostly suffering from acute infections, were then given graded doses of absolute alcohol well diluted. The first ten, including three pneumonia patients, received six to ten c. c.; and in all but three both the systolic and diastolic pressures (the indicators of cardiac muscle and of vasomotor tone respectively) were reduced for one and one half to two hours. Larger doses were given to the remaining groups and still more prompt and positive evidences of cardiovascular depression and of diminished cardiac output were obtained. Galli (29) urges that in all cases of cardiovascular disease alcohol can and should be withdrawn completely and at once. He quotes Hernung to the same effect. Galli's researches at the Baccelli clinic have convinced him that even in healthy persons alcohol tends to weaken and dilate the heart, and to lower the blood pressure. He has confirmed these studies by Röntgen examinations by the orthodiagraphic method, which showed that the heart often increased as much as two cm. in width within a few hours, even with the patient at complete rest. The blood pressure rose during the first ten minutes, and then fell permanently an average of thirty mm. mercury.

Brooks (30) concludes from his experiments on dogs, administering ten c. c. and ascending doses of alcohol by the mouth, by intravenous injection, and by gastric fistula, that the drug causes a marked preliminary rise in blood pressure with "increased amplitude and a constant or slightly slowed rhythm of heart beat." This rise in pressure disappears in five or ten minutes, and is followed by a gradual progressive lowering of blood pressure, with decrease in amplitude and rapidity of the heart rate. The latter he regards as the "true pharmacological action of alcohol on the blood pressure of the intact, unanesthetized animal." Kochmann (31) and Rosenfeld (32) agree substantially with Dixon (already cited) and the foregoing that alcohol at first stimulates very briefly, if at all. Laitinen (33) represents an army of laboratory workers, practically all of whom agree that in any dose alcohol lowers the bactericidal power of the blood, as well as the ability of the animal to combat a toxemia by the manufacture and use of antitoxin.

Even outside the body it now becomes a question whether or not alcohol has more than a negligible

antiseptic power in any concentration or in any dilution. Certainly in the form of absolute alcohol it has none. In Sir W. Watson Cheyne's (34) plate cell experiments carried on during the present European war, he has inoculated cells with pus organisms, then treated them thoroughly with alcohol, and grown from them luxuriant cultures, as shown in his illustration. Of the possibility of establishing in certain individuals the alcohol habit, I will simply say that I see occasionally an educated, refined woman who has for years fought the taste, established long ago during her treatment for typhoid fever by one of the Fellows of this college. She had never tasted whisky before. Since her convalescence, and not until a year ago had a twelvemonth passed without repeated intoxications, now with whisky, now with alcoholic proprietary medicines, or any form of alcohol she could secure. I think she has finally won her fight, but it has cost her many an hour of physical and mental distress and years of invalidism, with a dilated heart, a crippled vasomotor system, and the prospect of permanent cardiovascular disability.

Finally, with reference to the influence of alcohol through heredity, of course through the cardiovascular blood supply and the germ cell. Stockard (35) of the Cornell University Medical School has shown that the germ cells of male laboratory animals can be so injured by the inhalation of fumes of alcohol that, when they are mated with healthy alcohol free females, the offspring are physically imperfect and defective in development. In a subsequent study (36) he demonstrated that a tendency to these defects is transmitted through several generations. Certain generations may be passed over without structural defect being apparent, and then without warning aplasias will again occur, such as the complete absence or malformation of the eyes, or of the optic chiasm, or a complete defective development of several members of a litter. These animals undoubtedly show the results of a poisoning of every tissue in the germ cell, including its circulatory system and vascular blood supply. In certain of the defective progeny there has actually been found a hypoplastic cardiovascular apparatus. I have repeatedly seen the same underdevelopment and defective development in the children of human alcoholics, and have learned to expect to find in them cardiovascular lesions and insufficiencies.

Schweighofer (37), in reporting his Salzburg investigation, recorded a suggestive and interesting lesson in alcohol heredity in the human being. A healthy woman married a healthy man and bore him three healthy children. After his death she married a confirmed alcoholic and bore him three children, one of whom persisted in infantilism, and a second and third became social degenerates and drunkards. Two of these children became tuberculous, the first instances of the disease in the family. The woman married a third time and bore to a healthy husband physically sound children. Beside such a demonstration Karl Pearson's whole mass of argument seems puerile. Adami (38) concludes his address to the Canadian Medical Society as follows: "When it is being taught that parents may subject themselves to intoxications and infections, and that their offspring in their bodies and in their health pay no penalty—then I hold that it is the duty of the physician to tell the truth as he knows it, and

to express in clear unveiled language the basis of his belief." And a little earlier in the same address, "We have long observed that intoxicants affecting the body of the parent are liable also to affect the germ cells."

Bertholet (39) has reported his examination of the testicles of seventy-five men, of whom thirty-nine had used alcohol exclusively, and the majority of whom died about middle life. In thirty-seven out of the thirty-nine alcoholics there was widespread atrophy of the testicular parenchyma, and a marked replacement fibrosis, altogether differing from the changes of senility.

I have touched in turn upon the several forms of clinical and laboratory evidence for and against the use of alcohol in medicine; first, its availability as a temporary cardiac support; second, the certainty of its prompt depressant and poisonous action; third, the possibility of initiating a harmful drug habit in the patient; and finally, the disputed, but well demonstrated cardiovascular and germ cell hereditary influence. All of these are factors which base their force as arguments upon cardiovascular considerations.

I have omitted for obvious reasons all reference to experiments or studies made upon anesthetized animals. Nearly all of the advocates of the continued stimulant action of alcohol base their convictions upon experimental work carried out upon animals already drunk with some actively anesthetic form of alcohol. Experiments of this type are neither trustworthy nor intelligent. As a matter of fact, ethyl alcohol behaves in many ways like chloroform, one of the anesthetics used. Surely I have cited a sufficient amount of well authenticated experiment and of clinical study by masters in their respective fields to attract the attention of even those who "have been there," and who yield, if at all, still struggling, only as the avalanche rolls over them.

Let me simply add my own experience, namely, that since becoming convinced of the injury I was doing my patients with alcohol, and the lack of need for its use in any condition that comes under the care of the physician, I have not prescribed or administered a drop of the drug, except as an inevitable vehicle and solvent. Meanwhile, I have seen pneumonia and typhoid and pure cardiovascular conditions recover with greater promptness than when treated with alcohol. Moreover, I have felt confident under the new regime that I have hurried no one into eternity, as I may easily have under the old.

#### REFERENCES.

1. FÖRSTER: *Jahresh. der zehnte. Gesellschaft für Innermed. u. Path.*, 1868, p. 183.
2. DESCHWEINITZ: *Die Toxik. Amibioses*, p. 1.
3. EPERON: *Revue méd. de la Suisse romande*, 8, Aug. 20.
4. UTHOFF: *Grat-Nachsch. Handbuch der vossamit. Amibioses*, p. 20.
5. NÖNNE: *Jahrb. der hantw. u. Staatsbrank. Anstalten*, 18, 1899, p. 91.
6. OETTINGER and STRUMPELL: *Revue de Paris*, 1882, 7.
7. DESCHWEINITZ: *Medicin. News*, xlix, Nov. 11, 1886, p. 551.
8. HARLOW BROOKS: *New York Medical Journal*, April 24, 1915.
9. HARE: *Prize Essay*, 1886.
10. VON OTTO: *Patholog. Archiv*, cxx, 3, Sept. 1911, p. 183.
11. ZERROW: *Sitzb. Prager. Akad.*, 1908, 12.
12. NOLAN: *Zeitschr. f. exper. Path. u. Therap.*, viii, 1908, 13.
13. PAWINSKI: *Zeitschr. f. klin. Med.*, lxxx, 1910, p. 381.
14. LANNON: *Arch. u. Binger: Jour. Pharmacol. and Exper. Therap.*, March, 1912, p. 381.
15. FRANK-HOCHWART: *Deutsche Zeitschr. f. Nervenhelk.*, 47, 48, 1913.
16. IDEM: *Deutsche med. Wochenschr.*, Dec. 4, 1911.
17. JOHN: *Zeitschr. f. exper. Path. u. Therap.*, xiv, 2, Sept. 16, 1911, p. 312.
18. FAY-KRIGER: *Hon. Klin. Wochenschr.*, xxviii, April 21, 1914, p. 497.
19. L. MITCHELL BRUCE: *Brit. Med. Jour.*, March 23, 1901.
20. W. E. LEE: *Quarterly Jour. Exper. Med.*, i, 1908, p. 333.
21. CLERG and PEZZI: *Comptes rendus*

22. RECH: *Mitt. f. d. Path. u. Therap.*, 1908, 1909, 1910, 1911, 1912, 1913, 1914, 1915, 1916, 1917, 1918, 1919, 1920, 1921, 1922, 1923, 1924, 1925, 1926, 1927, 1928, 1929, 1930, 1931, 1932, 1933, 1934, 1935, 1936, 1937, 1938, 1939, 1940, 1941, 1942, 1943, 1944, 1945, 1946, 1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 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fundamental flaw in our methods, which must be well appreciated to be corrected.

The delay is due to lack of manifestations. Before we can effectually protect our people against the development of tuberculous processes, we must work on the basis that they give no signs in the majority of cases. We know that ninety per cent. of all adults are infected with tubercle bacilli from the very earliest age; that the presence of tubercle bacilli within our bodies sensitizes us to the production of immunity; that in some cases hypersensitivity results in anaphylaxis and the mechanism of defense proves harmful; that the chief reservoirs of infection are the bronchial and mesenteric glands; that the beginning of pulmonary tuberculosis, in the majority of cases, is by extension from the bronchial glands.

When the bronchial glands of a child become tuberculous the constitutional effects of the toxins are loss of energy, weight, and appetite; the local effects are pressure upon the surrounding tissues, causing a slight, almost imperceptible, hacking cough, hardly more than a slight clearing of the throat, a hard, brassy, metallic cough, or paroxysms like whooping cough. Asthma is a very common symptom, and there may be facial cyanosis and edema. For years this suspicious syndrome may cause careful examinations of the lungs with invariably negative findings and the assurance that there can be no fear of tuberculosis because nothing can be found in the lungs. Why should there be any physical signs? From the bronchial glands the tuberculous processes run out along the bronchi toward the periphery and on up into the apex. These extensions are interstitial; they do not roughen the inside of the air passages, nor do they suppress the entrance of air. There is nothing to alter the breath sounds nor to cause dullness, and so there are no physical signs, while all the time these threads of infiltrations are weaving their way through the lungs until enough thickening is caused to create signs. Jordan says that fifty per cent. of cases of pulmonary tuberculosis are of this type and cannot be detected by physical examinations until enough harm has been done for us to find it. In another large class of cases the toxins do not affect the general health, and there is nothing to suggest an examination. Only too often a man goes until he drops just because he has kept well; there has been no reason whatever to see a doctor, and when he does the whole of one lung may be gone. With our present methods of working, delayed diagnoses are inevitable.

The public health work of the whole world is based upon the prevention of infection. If we can prevent the entrance of tubercle bacilli into our bodies we shall never have tuberculosis, but is it possible to do this? Is it any use to try? It is universally admitted that by the time our children reach maturity, they are infected with tubercle bacilli. What does this mean? Have they all been exposed to "open cases"? If so, is it in any way possible to prevent this exposure and the infections? We have twenty million school children in the United States; is it likely that they have all been exposed? And if they have can we help it? Hillenberg, working in an extraordinarily healthy hill district, examined all the school children and found that from twenty-five to seventy per cent. were in-

fectured. Where did these infections come from? Not from "open" cases, because there had not been a case of tuberculosis in that district for over ten years.

Why do the lower animals have tuberculosis? In 120,000 consecutive autopsies of hogs reported by the Bureau of Animal Industry, 93.3 per cent. were infected with tubercle bacilli. Fifty per cent. of cattle are infected; poultry tubercle bacilli are causing such losses among hogs that definite efforts to suppress the tuberculosis of poultry are being made; cows, horses, dogs, cats, sheep, goats, rabbits, guinea-pigs, pigeons, birds, turtles, frogs, snakes, fish, etc., all have tuberculosis, even as we have. How is the tuberculosis of the cold blooded animals perpetuated? They do not have open cases; where do their infections come from? Looking over the domain of tuberculosis throughout the animal world we see how inadequate our ideas are as to etiology. Animals do not live in crowded tenements; they are not overworked nor underfed; the struggle for existence does not concern them; they go to bed with amazing regularity; they do not drink nor indulge in excesses of any kind; living under ideal conditions, they acquire tuberculous processes in the midst of perfect health, just as we do. With the animals, good living, good health, good morals, nothing suffices to prevent the development of tuberculous processes. Why? No one knows, any more than we know why they or we are infected; no one knows what the sources of these infections are; and no one knows what the tubercle bacillus is, or what is its place in the world of pathogenic organisms. Was it originally a harmless saprophyte that by a series of evolutionary adaptations to its hosts has traveled up from the common acid fast bacilli of the fields through the cold blooded, then the warm blooded, then mammalian animals, and finally to man? Is the comprehension of the evolution of the tubercle bacillus requisite to its overcoming? Must we first know its place in the history of the world, its phylogenetic as well as its ontogenetic development? Since each individual repeats in its development the history of its race, can we infer the story of the tubercle bacillus from what we know of its life history? Can we get any idea of the path it has followed from fish to man?

We know that the development of the tubercle bacillus from its simplest sporoid form, consists in the acquisition of fatty compounds. Starting as a slightly elongated sphere, containing one or more granules rather thicker than its diameter, this sporoid form has no ability to retain stains in decolorizing solutions; it stains very easily with any simple, basic dye, but loses its stain with equal ease. As the granule begins to synthesize fats, it begins to hold its stain so that it is not decolorized by Gram, or rather by Much's modification of Gram. This is known as Much's granule, and it has acquired a mixture of lipoids and neutral fats enabling it to hold its color by Gram. At a later stage the cell body becomes Gram positive; then the granules stain with Ziehl and part of the cell body begins to be acid fast; these are the fragmented bacilli or "splitter bodies" of Spengler; finally the cell body becomes impregnated with acid fast substances and stains uniformly, showing no granules nor any trace of



structure, but looking like a slender, solid rod, which is the adult, homogeneous tubercle bacillus discovered by Koch.

We know that through all these series of developments, the acid fast substances never become an integral part of the granules; they are simply a product, not a part of vital activities, and these products can be stripped off, layer by layer, just as they were put on, without destroying the virulency or reproductive power of the bacillus. When a culture of tubercle bacilli is injected into the peritoneal cavity of a mouse, the lysins first dissolve off the waxy mantle clothing the cell body; the cell substance or matrix is not a wax but a fatty compound, less acid fast so that it stains only a dull pink, but the granules are unaffected and still stain a brilliant red. As the fatty acids are lost, the matrix loses all its acid fast properties and no longer stains with Ziehl, but the unaffected granules still retain their waxy mantle and stain brilliantly as a chain separated by colorless spaces; these are Spengler's granules. This is as far as Ziehl's stain can carry us; after the lysins dissolve away the covering of the granules, they can no longer hold their stain with Ziehl, but do hold it with modifications of Gram because neutral fats and lipoids suffice; after these are lost, nothing remains but the very kernel of the bacillus, the resting, sporoid form of Spengler, von Betegh, Kronberger, etc., which cannot hold its stain, and has no acid fast substances.

All through these changes, as one layer after another is stripped off, the sporoid kernel retains its virulency and can cause tuberculosis or develop up to the acid fast adult bacillus of Koch under favorable conditions. The most salient characteristic feature of the life history of the tubercle bacillus is its power to synthesize fats and to become a member of the acid fast family so universally distributed throughout Nature. Is the tubercle bacillus of Koch the only acid fast bacillus capable of causing tuberculosis? No, indeed! Wherever tuberculosis is found, no matter in what animal, there acid fast bacilli are found. Are they all related? Do they all come from the same family? Much says so, and there is much evidence to prove it. An extract, or tuberculin made from any acid fast bacillus, will cause a specific tuberculin reaction in any animal suffering from tuberculosis. Is our tuberculosis but a part of this general phenomenon and is our acid fast bacillus but one of many? Are the characteristics of the tubercle bacilli of one species of animals different from those of others only because the hosts are different? Are these distinctions entirely due to adaptations?

Ferran was the first to show that there are saprophytic strains of the usually parasitic tubercle bacilli. In 1888, V. C. Vaughan brought over from Koch's laboratory a saprophytic culture which has been grown ever since. Virulency is lost, but the life history is the same from spore formation up. Ferran has developed virulency by injecting cultures of a saprophytic, nonvirulent strain into rabbits until abscesses formed and then inoculating guineapigs with the pus, causing typical miliary tuberculosis and recovering the adult acid fast bacilli of Koch from the lesions. Thiele and Embleton took the common acid fast bacilli growing on timothy, the common grass

bacillus, and caused typical tuberculosis in rabbits; Lubarsch inoculated his arm and a typical autopsy tubercle was produced by the same bacillus. Maher reports abscess formation in an injured scrotum with pus containing a pure culture of smegma bacilli, that is, acid fast bacilli distinguished from tubercle bacilli by their inferior ability to resist acids; after a short time tuberculosis of both lungs developed; were these smegma bacilli related to the tuberculosis of the lungs? Could they have acquired more acid fast properties and thus stood the acid test? Möller reports a case of typical tuberculosis of the lungs caused by tubercle bacilli that could not stand the Ellerman antiformin method; they lost their waxy mantle when subjected to antiformin and did not stain by Ziehl; was this because of incomplete development?

Acid fast bacilli are always associated with tuberculosis; tuberculous lesions are always caused by acid fast bacilli; these acid fast bacilli are present in all food and drink of all animals; they are constantly found in the fluids and tissues of animals regardless of tuberculous changes; they are excreted by animals in the urine, feces, milk, sputum, regardless of the presence of tuberculosis. Is the universal infection of our children by acid fast bacilli just a part of these universal truths, and the development of tuberculous processes due to the assumption of pathogenic properties. We do not know, but if the residence of tubercle bacilli within our bodies should prove to be analogous with the residence of the equally universal *Bacillus coli*, we could not prevent tuberculosis by preventing infection because this would be impossible. This being true, we should know that the best way to prevent tuberculosis is to find the beginnings of tuberculosis processes at the earliest possible moment; we can never prevent these beginnings and they will always be a menace, and since all are threatened, all are in danger. All our children are possible candidates for tuberculosis, and the only way to protect them is by periodical examinations regardless of apparent good health, because the lack of manifestations does not warn us and there is no telling the day or the hour that the danger begins.

Summing up our tuberculosis knowledge, we find that it has hardly begun. That the evolution of the tubercle bacillus needs to be studied; that the work done only shows that this or that species of acid fast bacilli is not pathogenic for this or that animal; the path we need to follow is the effects of adaptation to the host that have conferred upon the different tubercle bacilli their distinguishing characteristics: not whether cultural characteristics are the same, because they are necessarily different; the training is different. Given the different paths, let us take those leading up to man to show divergence of effects, and those leading back, to show the common origin.

We need a scientific study of acid fast bacilli. What are they doing in butter, milk, cheese, blood, feces, and urine? Where do smegma bacilli stand in the scheme of evolutionary development? Remembering that life begins under watery conditions, and that marsh gas is the basis of all fatty compounds, let us go out into the marshes and find the origin of this family which has learned to synthe-

and has thus distinguished itself from all others.

Since the Rockefeller Institute is supported by the income derived from fatty compounds, it would be poetically fitting if some of this income were spent upon the study of how one class of bacilli acquired the ability to synthesize them and consequently became the acid fast foes of the animal world. Out in the marshes where marsh gas is generated, the building up of its compounds into fats and its synthesis into organic life might be studied so as to blaze the way leading to comprehension and the enlightenment of the world.

HUTCHINSON CASE SANATORIUM.

## CHONDRODYSPLASIA

Report of a Case.

By RICHARD DORRIS MODLLET, M. D.,  
New York.

Associate Visiting Professor, German Hospital and Dispensary.  
Associate Visiting Professor, Metropolitan Hospital.

This uncommon condition is the cause of the usual types of dwarfism, first described by the early writers of medical literature. Such children as lived to adult age very often became the court jesters because of their peculiar size and shape. Chondrodysplasia has been, from a pathological standpoint, ably described by numerous investigators, the most noted article being that by Kaufmann who, after a careful study of this condition, called it Chondrodysplasia foetalis. Recently, W. G. MacCallum, in the *Johns Hopkins Bulletin* for May, 1915, describes ably the pathological changes which occurred in four cases under his observation in the laboratory of Columbia University, and the reader is referred to the exhaustive work on this subject. The cause of chondrodysplasia is not known, but MacCallum believes "that the explanation of this condition probably lies in the fact that although the line of ossification is somewhat irregular, the ossification is not entirely in abeyance.

... The fault lies undoubtedly with the cartilage which fails to present its cells in orderly fashion, and rapidly enough to produce a bone of normal length, or to keep pace with the periosteal growth."

The subject of this paper came under my observation on April 17, 1915, at the German Hospital Dispensary (History No. 3275-15), and was the third of three living children; born at the ninth month, birth normal. Her age

at time of examination was six years; had been breast fed up to the eighteenth month; had had measles and whooping cough; otherwise had enjoyed good health. The child had been brought to the dispensary because its

father felt that we could give it some medicine to make it grow. The illustrations show the proportions of the child very well. On measurement the child is twelve and three quarter inches below normal height. Her mentality meets all the Binet-Simon tests, and she is in the right class at school. The measurements of the body are as follows:



FIG. 2.—Anterior-posterior view showing shortness of arms and legs.



FIG. 3.—Profile showing same condition, and curvature of back which is characteristic of these cases.

Head, nineteen and three quarter inches; chest, eighteen and a half inches; abdomen, eighteen and a quarter inches; height, thirty-nine and three quarter inches; shoulder to wrist, nine inches; top of head to umbilicus, fifteen inches; anterior superior spine to ankle, thirteen inches. X ray examination by Doctor Stewart shows the shortening of the long bones of the arm, metacarpals, and phalanges, which is so typical of this condition. The illustrations show the appearance of the head and chest and the stubby appearance of the fingers.

830 PARK AVENUE.

## THE INTRAOCULAR MUSCLES IN TABES DORSALIS.\*

By LUTHER C. PETER, A. M., M. D., F. A. C. S.,  
Philadelphia,

Associate in Ophthalmology, Polyclinic and College for Graduates in Medicine; Ophthalmologist, Rush Hospital for Consumption and Allied Diseases.

The intraocular muscles suffer quite frequently in locomotor ataxia. Some of the phenomena observed, while not always sufficient in themselves to be called pathognomonic, at least furnish strong suggestive evidence of the disease. The same symptoms may occur in general paralysis of the insane and in profound disease of the central nervous sys-

\*Read before the Philadelphia Polyclinic Ophthalmologic Society.

tem, especially when this is due to syphilis. When, however, these phenomena are associated with early evidences of disease, they become of great value in differential diagnosis.

Abnormal pupillary phenomena are for the most part early symptoms in tabes, and in not a few instances the diagnosis is suggested by the presence of pupillary changes before the other classical symptoms appear. Probably the earliest evidence of disease of the intraocular muscles is irregularity in the pupillary border and inequality of the pupils, known as anisocoria. An irregular pupillary border may be caused by synechia or by paresis of some pupillary contractor fibres. If due to synechia, the presence of an old iritis is suggested, and even this is of some value diagnostically. When the pupillary border is irregular and synechia can be excluded, it should be regarded as a symptom of organic origin. This phenomenon is present in a large portion of cases of general paralysis of the insane and in at least twenty-five per cent. of tabetics. The irregularity may be in evidence when the iris is at rest, or it may be apparent only when the iris is contracted or dilated. In some instances, the shape of the pupil may change from time to time, and when this condition obtains, it is probably due to nuclear disturbance. Abnormal action of the sympathetic nerves, however, cannot be entirely eliminated, as it may also be regarded as an active factor in the production of anisocoria—the second form of early pupillary change in tabes.

Inequality in the size of the pupils may or may not be associated with a pupil of irregular outline. It is nearly always indicative of organic disease of the central nervous system and is particularly apt to be present in locomotor ataxia and paresis. Slight variation in the size of the pupil will be found in apparently normal individuals. The difference, however, when present is very slight. Like the irregular pupil, it is an early evidence of disease, and often is a symptom upon which a tentative diagnosis at least can be made. It often marks the beginning of the Argyll Robertson pupil when that phenomenon begins unilaterally. Posterior synechia may also be responsible for this pupillary change, and if so, the diagnosis can readily be made by close inspection.

In anisocoria the abnormal pupil may be dilated or contracted—dilated when the cervical sympathetic or ciliospinal centres are stimulated, when the sphincter of the iris is paretic, as in third nerve palsy, and when the centripetal fibres of the light reflex arc are broken. One should not fail carefully to eliminate the accidental use of the mydriatic in one eye, a ruptured sphincter from a blow on the eyeball, or a dilated pupil of increased tension in glaucoma. The abnormal pupil will be contracted in the presence of the paralysis of the sympathetic. The possibility of iritic inflammation, and the action of an accidental miotic should be carefully eliminated.

It is difficult to explain the cause of the pupillary phenomena, not only of locomotor ataxia, but also of paresis and of syphilis of the central nervous system. The clinical facts, however, of the presence of these phenomena and their value have been thoroughly established. Irregularity in the pupil-

larly border and anisocoria are quite as valuable in early diagnosis as are the later phenomenon of miosis and the Argyll Robertson pupil.

The so called spinal miosis is a common symptom of tabes dorsalis, and is also present in syphilis of the central nervous system, in superior tabes, and in other conditions. It is probably due, as most writers agree, to disturbance of the ciliospinal centres in the cord from the seventh to the eighth cervical to the first and second dorsal, or to disease of the superior cervical sympathetic ganglion. From the ciliospinal centres, the reflex arc is completed through the cervical sympathetics to the long ciliary nerves, to the globe. A few cases of cervical tabes have been reported in which spinal miosis did not develop, but pathological studies have shown rather uniformly that miosis occurs when the lower cervical and upper dorsal cord is involved in tabes. Even though contracted almost to a pinpoint, the spinal miotic pupil may respond to light and to convergence. When combined with the Argyll Robertson pupil, the light reflex is lost.

Some cases of spinal miosis are accompanied by a *myotonic pupillary reaction*. Under ordinary circumstances, when light is thrown upon a pupil symptomatic of spinal miosis and quickly removed, the pupil will dilate to its normal miotic size after the contraction due to light has taken place. In the miotonic pupillary reaction of Saenger, after the light stimulus has been removed, the pupil will not return to its normal size for a considerable period. This phenomenon has been observed in tabes, and also in paresis. It probably is due to some change in the iris tissues.

Instead of miosis, a condition of mydriasis has rarely been observed as an early symptom of tabes. When this symptom is present, the other causes of a dilated pupil should be carefully excluded, as this symptom in tabes is exceedingly rare.

*Argyll Robertson pupil.* A pupil which does not respond to light stimulus, but does respond to convergence and accommodation, is known as the Argyll Robertson pupil. This pupillary phenomenon is fairly constant in locomotor ataxia, occurring in probably eighty per cent. of the cases. Gowers has found it present in seventy-nine per cent., and Berger in ninety-seven. It also occurs in general paralysis of the insane, and in syphilis of the central nervous system. The exact cause of the Argyll Robertson pupil is not well understood. The reflex arc for light must necessarily be broken, but the exact location of the break in continuity has not been agreed upon. It is for the most part agreed that the reflex arc suffers beyond the external geniculate body. Some place the lesion in the afferent tract in the fibres which connect the external geniculate body with the sphincter nucleus of the third nerve. Others believe the sphincter nucleus is diseased, while possibly the majority place the lesion in the efferent paths shortly after the fibres leave the sphincter nucleus. The ciliospinal centres are also thought by some to be factors in the integrity of the light and convergent reflexes. The fact, however, that spinal miosis frequently exists without other pupillary disturbance tends to exclude the ciliospinal centres. It is probably as near to the true statement of facts as we know them, to



set that of an Argyll Robertson pupil is present the reflex arc is broken at some point between the external geniculate body with the sphincter nucleus of the third nerve, or a little beyond this nucleus along the path of the efferent fibres.

The phenomenon, as a rule, is a bilateral condition, although frequently unilateral at first. Instead of complete loss of light reflex, the response may be sluggish but perceptible when made under the proper circumstances. This sluggish response is quite as suggestive of the Argyll Robertson pupil as complete loss of the light reflex. It ordinarily is found in an early stage of disease. In testing the patient for the light and convergence reaction, the examination should be conducted in a dark room, or at least in a room dimly lighted. The patient should be instructed to fix at a distant point, and care should be observed that the patient's skin about the eye is not touched. Closing and opening of the lids by the patient or by the physician arouses sensory and cerebral stimuli which will interfere with the correct measuring of the response to light and convergence.

As a rule, response to convergence and accommodation remains normal until late in the course of the disease. Complete internal ophthalmoplegia is a late phenomenon, but it may occur at a comparatively early period. When it does occur, light, convergence, and accommodation reflexes are lost and accommodation is no longer possible because of paralysis of the ciliary muscle.

Just how much of the pupillary contraction is due to convergence and how much to accommodation is difficult to determine because it is hard to separate these two acts. Even when one eye is enucleated, the act of accommodation may be associated with an involuntary attempt at convergence. It is best therefore to speak of the double effect of convergence and accommodation upon the pupil.

Reversed Argyll Robertson pupil, or preservation of the light reflex and loss of convergence accommodation reflex, is a comparatively rare phenomenon, but it has been observed in tabes. It is difficult to explain, but in all probability it is of nuclear origin, the reflex arc for light having escaped. Great care should be observed in establishing its presence by making the examination under the most favorable conditions in a darkened room.

Isolated loss of accommodation from paralysis of the ciliary muscle is rare in tabes. When present it is usually associated with loss of the iris sphincter action, and complete internal ophthalmoplegia is usually the result.

The paradoxical pupillary action for light or convergence dilatation for the near point, is also a rare phenomenon. Most of the cases observed have been in tabetic patients. No satisfactory explanation has been given for this symptom. Weeks, however, speaks of the probability of confounding this symptom with hippus.

Ordinarily the Argyll Robertson pupil is spoken of as the common symptom of tabes. It probably does occur more frequently than the other intraocular phenomena under discussion. It is not, however, in itself pathognomonic of tabes as it may occur in other conditions—frequently in paresis and occasionally in lues of the central nervous system.

It is, however, a symptom of great value. I should also like to emphasize the importance of the pupillary irregularity and inequality as an early, or possibly pre-Argyll Robertson stage, as well as the value of spinal miosis.

It is well to bear in mind that these reflexes are associated reflexes, or reflexes aroused by associated movements, and that in the irregular form in which they sometimes appear the sensory and cerebral or psychic reflexes may play a part. This is especially true in endeavoring to separate the convergence from the accommodation reflexes. It is difficult to inhibit psychic phenomena entirely.

The skin reflexes, on the other hand, can be eliminated by care in the course of the examination—avoiding contact with the skin about the eyelids and face.

1527 SPRUCE STREET.

### ENDAMEBA BUCCALIS AND ALVEOLODENTAL PYORRHEA.\*

By GEORGE C. BRUNELLE, M. D.,

New York,

Adjunct Assistant Pathologist, Lincoln Hospital;

AND GEORGE GINSBERG, M. D.,

Hoboken, N. J.

(City and Pathological Laboratories, Lincoln Hospital.)

As was the case with syphilis, before the discovery of *Spirochaeta pallida*, a veritable host of organisms have been held responsible for the condition known as pyorrhoea alveolaris or Riggs's disease. Bass and Johns (1) have suggested the name alveolodental pyorrhoea as embracing the complete morbid process, whereas pyorrhoea alveolaris, according to them, describes the advanced stages of the disease only.

The most recently described organism, held accountable for the condition, is *Endameba buccalis* reported by Barrett (2) and Bass and Johns (3). Up to the present time the organism has not been cultured, and in consequence the satisfaction of Koch's postulates has not been possible. This in turn has created skepticism in the minds of many as to the etiological specificity of the parasite. It is asserted by Bass and Johns (4) that *Endameba buccalis* is primary in its attack, that the countless other organisms which are present, are secondary invaders, and that this *endameba* is not present in normal mouths. Others take the opposite view, regarding the *endameba* as a possible secondary infective agent and sometimes present in normal mouths (5). In debatable questions of this nature the addition of further data is always of value. The characteristics of this *endameba* have been so fully described in other publications that repetition is unnecessary. The general appearance of *Endameba buccalis* is shown in the accompanying figure.

In 356 cases the following technic has been used. Both lingual and labial sides of the teeth were inspected, and the gums of an apparently infected tooth were massaged or a broad sterile toothpick was gently pressed against the side of the tooth. The material so obtained was placed on a glass slide, air dried, fixed in methyl alcohol, and stained in Giemsa after the method of Williams (5). In mouths where

\*Read at the meeting of the Bronx Medical Association, June 3.

no apparent lesion existed, the toothpick was inserted beneath the gum.

Williams and her collaborators (5), investigating the mouths of school children, found a fairly large

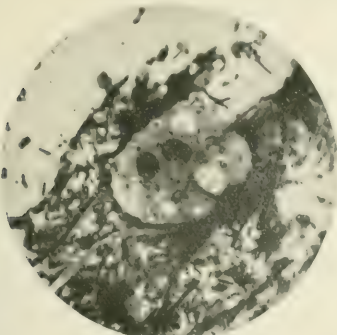


FIG. 1.—*Endameba buccalis*.

percentage to show the presence of an endameba closely resembling if not identical, with that described by Bass and Johns. Our experience does not agree with hers. We have examined the mouths of fifty children between the ages of three and six years, with but one (two per cent.) positive finding. This child had a mouth generally unclean, with carious teeth and spongy and bleeding gums. The variance in results may be explained by the fact that our cases were exceptionally well cared for and inspected regularly by a dentist. The positive case was examined shortly after admission.

With the adult mouth our investigations follow very closely the reported results of Bass and Johns. Thus, of 123 mouths showing no apparent lesions, three (2.5 per cent.) gave positive results, while 107 cases of frank pyorrhea, 102 (ninety-five per cent.) gave positive findings. In thirty-seven mouths showing a pyorrheal tendency *Endameba buccalis* was found in twenty-nine (seventy-nine per cent.) upon first smear, while in a series of thirty-nine cases referred to us by dentists, who went directly into a pus pocket with a dental scraper for material to be examined, we had 100 per cent. positive results.

In summary, our investigations show that *Endameba buccalis* is almost constantly present in pyorrheal conditions, and is rarely present in healthy mouths.

#### BIBLIOGRAPHY.

1. BASS and JOHNS: *Alveolodental Pyorrhea*, page 18. 2. M. F. BARKETT: *Medical Cosmos*, XL, 918, 1914. 3. BASS and JOHNS: *New Orleans Med. and Surg. Jour.*, 1914. 4. HIDEKI JIMURA: *J. M. A. J.*, LVII, 734, 1913, 186, 1915. 5. WILLIAMS, VON SHELLEY, and ROSENBERG: *Proc. N. Y. Path. Soc.*, XV, 334, XV, 1915.

1001 MADISON AVENUE,  
630 BLOOMFIELD STREET.

**Treatment of Burns.**—H. R. Slack, in the *Medical World* for September, 1915, recommends immediate application of tincture of ferric chloride in the treatment of burns. The burned surface is painted several times with the ferric chloride tincture by means of a cotton applicator or camel's hair pencil. In second degree burns, care is to be taken not to break the blisters; in third degree burns, not to remove the charred surface.

## BLEPHAROCYCLASIS\*

By NANCY JENISON, M. D.,  
New York.

**CASE.** J. H., boy, aged thirteen years, Russian Jew, complained of swelling about the eyes ten days and a half or three years. Family history: No similar affection in any other member of family. No tuberculosis. No suggestion of syphilis in what family history was obtainable. Personal history: Came to America at age of ten years. Measles at seven years; otherwise always well. Present illness: "Swelling" of eyelids came on gradually, beginning when he was about ten years old. There was never any pain, and the swelling was not intermittent. Patient stated that in October, 1913, there had been no increase in the swelling for a long time, except about a month previously, when the right upper lid had been more swollen for one day. There has been no increased lachrymation from exposure to heat or cold.

**Examination:** Head flat on top and back. Facial outline heavy. Child was afraid of all examination, even to take the thermometer in his mouth. His reaction time was slow, and it developed later that he was in one of the special classes for defective children of the New York schools. Lips very red. Teeth widely spread. Moderate granular pharyngitis. Thyroid not enlarged. Skin normally soft and moist.

Upper eyelids overhanging the eye slits, which were narrow. The skin of the upper lids was thin, shiny, pink, and there was definite atrophy. The dilated veins were very evident. The lachrymal glands were not palpable. There did not seem to be an excess of fat in the upper lids. The lower lids were not involved. The pupils were markedly dilated, but reacted to light and accommodation. Fundus examination negative. Chest examination negative, except for an irregularity of cardiac rhythm, noted June 10, 1913. The patient was seen twice in December, 1912, at which time his pulse ran about 60; but since his return to the clinic six months later, it has run 80 to 88. Abdominal examination negative.

Urine. Repeated examination for albumin has been negative, except once when there was a faint trace.

Blood examinations, June 10, 1913. White cells, 7,200. Polymorphonuclear neutrophils, 44.5 per cent.; polymorphonuclear basophiles, 1 per cent.; lymphocytes, 44 per cent.; large mononuclears, 6 per cent.; transitionals, 4.5 per cent. No malarial parasites; many sharply defined platelets; moderate anisocytosis.

October 25, 1913. Hemoglobin, 102 per cent. (Sahli-Gower); red cells, 5,000,000; white cells, 5,300; polymorphonuclear neutrophils, 50 per cent.; polymorphonuclear eosinophiles, two per cent.; polymorphonuclear basophiles, three per cent.; lymphocytes, 37 per cent.; large mononuclears, five per cent.; transitionals, three per cent.

Wasserman, October 25, 1913, reported one plus by the New York board of health. The blood was obtained after such long persuasion that it was not deemed advisable to have a second test made, and mixed treatment was begun when he returned to the clinic in December, although the boy bore no stigmata of congenital lues.

Mixed treatment (mercury bichloride 0.002 and potassium iodide 0.51 three times daily) was begun December 13th. During the evening of December 15th the patient began to have pain in the eyelids, followed by swelling. He was seen on the morning of December 16th. The upper lids were shiny, pink, edematous, more swollen than at any time before when he had been seen. Pulse 88. On December 23d, the swelling of the upper lids



Nancy Jenison's patient, J. H.

\*Reprinted from the *Disorders of the Skin*, New York, 1914, pp. 100-102. Women and Children.

completely disappeared. There was no evidence of scarlet fever on the skin, face, neck, throat. The treatment consisted of two weeks when the patient disappeared. Through the activity of the social service department of the hospital, he returned in April, and mixed treatment was again begun April 16th, on rising. About noon he began to have severe burning sensations inside the nose, and there was a profuse watery discharge. This continued during most of the night, and "prevented him from sleeping." In the evening there was reddening at the outer portion of the lids, and these areas "hurt."

April 17th, a. m., both upper lids markedly edematous; the skin stretched tense, and very shiny. Both lids were pink, the right one very bright; and the veins stood out sharply. Beyond the outer canthus on each side was a discolored area tender to touch. The one on the right showed a central welt of an angioneurotic type. The lids hung well out over the lashes, and the eye slits were narrow even when the patient attempted to look up. Two days later he stopped his medicine, as the lids were still swollen.

April 21st, acute edema of the lids had disappeared, and it was decided to give him the iodide alone, to determine positively whether it had been responsible for his previous reaction. Dose twenty minims of a fifty per cent. solution, three times daily.

April 24th, the color of the right upper lid was still brighter than that on the left, and the lids hung well out over the lashes; but there was no edema after the use of the iodide, although he was taking larger doses than in the mixed treatment. The dose was increased to four times a day, and this, he reported later, had caused the lids to swell more; so he stopped it.

The photograph was taken June 13, 1914, when J. H. had had no medicine for two months. On June 22d, the patient was seen by Dr. W. B. Weidner, whose article on blepharochalasis (*Journal A. M. A.*, September 27, 1913) had led me to a correct diagnosis of the case. Doctor Weidner obtained from the boy the history that he had been struck between the eyes by a ball about one month before the swelling began.

My case differs from those which Doctor Weidner reported, in having a plus Wassermann; but the fact that the boy shows no signs or symptoms of lues, and that he is apparently hypersensitive to potassium iodide argues against the presence of syphilis.

The case is reported in full, because the condition probably occurs more frequently than it is diagnosed, and it may be hoped that a series of carefully observed cases will bring out some suggestions as to etiology and preventive treatment.

3800 BROADWAY.

## SCARLET FEVER.\*

### *Symptomatology and Diagnosis.*

BY JOHN RANDOLPH GRAHAM, A. B., M. D.,  
New York,

Assistant, Department of Dermatology, Polytechnic Hospital.

In considering scarlet fever, it should be remembered that the clinical picture laid down in the various textbooks will not be present in a large proportion of the cases. The disease manifests itself in such a multiplicity of ways that taking one dozen cases successively, it is not unlikely that we shall see just so many variations from the classical descriptions.

It seems that there is no dependable pattern on which to base a diagnosis. There is a marked difference in the intensity of the same symptoms in

different cases; and very often some particular sign or symptom for which one looks to clinch his diagnosis is absent from the picture. For instance, the rash may run all the scales from a slight blush to a deep dyed scarlet dermatitis; the temperature may range from barely above normal to 105, 106, or 107° F.; and the throat may show a scarcely perceptible congestion, or it may present the severe membranous angina which makes scarlet fever such a formidable disease.

Furthermore, in all the other acute exanthemata there is at least one sign which appears with sufficient regularity to allow us to turn to it with confidence in differentiating the trouble. In smallpox there are the deep seated, noncollapsible, umbilicated vesicles, the lesions being most thickly placed on the extremities—face, forearms, and legs. In chicken pox there are the superficial and easily collapsible vesicles, the lesion predominating on the trunk, especially on the back; in measles Koplik spots and in Rôtheln the enlargement of the postcervical glands.

In scarlet fever, on the contrary, we cannot count on any symptom often enough to call it typical, and it is only by considering the symptoms as a whole that we can reach a definite conclusion. Again, the association of symptoms is at times very puzzling. One case will show a profuse and extensive rash, accompanied by no great rise of temperature and insignificant throat involvement; and with the perversity for which the disease is noted, another case will present the combination of a severe and, at times a septic angina, with high temperature and rapid pulse, and a scanty or imperfectly developed rash. It is certainly remarkable that a disease, the most prominent symptom of which is a surface condition, easily seen and studied, should so often create a very difficult diagnostic problem. But it is not only true that in a considerable number of cases the diagnosis is missed, but also very frequently other noncontagious skin conditions are classed as scarlet fever. The physician who carelessly passes over the patient showing a slight rash, fever, and sore throat, as "no case," in many instances lays up trouble for himself and disaster for others. For such cases may and do spread the disease abroad, and without proper treatment, themselves acquire scarlatinal nephritis.

How then does scarlet fever develop? What are the symptoms, and what is their bearing on the diagnosis? The most striking feature of the onset is its suddenness. There is no gradual development. A child playing around will become pale and feel ill. Many patients vomit and frequently unexplained vomiting is the first thing noted. This is held to be a rather constant and valuable symptom, some statistics showing that it occurs in sixty per cent. of cases. It certainly happens more commonly in very young children than in older ones and adults; it is also probable that it occurs more regularly some years than in others. Out of fifteen undisputed cases seen in an institution in Manhattan during the fall of 1914, in only four vomiting occurred so far as could be discovered, and yet all the children were under four years of age. I am satisfied that the symptom is not nearly so common as is generally supposed. Convulsions, accompanying or replacing vomiting in



young children, are not rare, and in adults the onset is apt to be characterized by a chill.

The temperature rises rapidly from the onset and continues to ascend until the rash is fully developed, the rise covering from twenty-four to sixty hours. It begins to defervesce soon after reaching the highest point, and unless complications arise, falls by lysis as the rash disappears. A temperature running high after the disappearance of the rash, in the absence of complications, would rather indicate that the sickness was not scarlet fever. It must be noted, however, that there are many cases of scarlet fever in which the elevation of temperature is very slight, though there is always some variation from normal.

Headache is generally very severe at the onset and thirst and restlessness are common. Other nervous symptoms are present as in all acute infections.

The throat is said to be sore in ninety per cent. of cases, but it is safe to say that there is always some congestion, objectively, if not subjectively. It is generally the first thing complained of by adults. The constant presence of this symptom is of decided value in diagnosis, and it is significant, besides, in that the severity of the attack is in proportion to the involvement of the throat. At the onset the pharynx, tonsils, and uvula appear red, and with the development of the rash true inflammation of the parts follows with edema of the surrounding tissues. In many cases, especially the more severe ones, a punctate erythema spreads upon the soft and hard palates, corresponding to the rash on the skin, and a whitish or yellowish gray exudate may form on the tonsils, which clinically is very difficult to differentiate from true diphtheria. It is in this type that the serious ear complications are apt to arise. The condition causes such discomfort that children will refrain from clearing their throats, and, what is peculiar to this disease, will grasp the throat in the hand when forced to swallow, giving every indication of the intense pain caused by deglutition. On the other hand, older children and adults with a fairly well defined pharyngitis may insist that the throat does not feel sore.

There is commonly a discharge from the nose; in severe cases it is purulent and excoriates the anterior nares and upper lip.

The pulse is full, strong, always rapid in scarlet fever, and the rate is uniformly high in proportion to the temperature. This is an important point in diagnosis, save in young children, where its value is doubtful for obvious reasons. The pulse frequently remains rapid after the temperature returns to normal and the rash has disappeared.

The lymphatic glands are especially sensitive to the toxin of the disease, and the inguinal and axillary glands, together with those of the neck, particularly at the angle of the jaw, are swollen and more or less tender to touch. The glands in the groin are interesting and helpful from a diagnostic standpoint, for they are always considerably enlarged. The swelling here is noticeable before the rash has extended so far, showing that the involvement is systemic and not due to the disturbance of the skin in the immediate neighborhood.

The tongue, as a rule, is covered from the outset with a milky white coating, through which the swollen red papillae show. The tip and edges are clear

and of a bright red color. The coating is so lightly attached to the surface of the tongue that it could easily be wiped off. The superficial epithelial layer desquamates early, so that in from three to five days the tongue is clear, dry, dark red in color, and studded with much enlarged papillae. This is the strawberry or raspberry tongue, and when present it is pathognomonic. There appears to be some difference of opinion as to just what the strawberry tongue is, some holding that the early condition (the tongue coated and showing red papillae) should be so called. There ought to be no question about it as the real strawberry tongue is not badly named. It must be said here that in many cases of scarlet fever the tongue presents none of these changes, differing not at all from that seen in other febrile attacks. Even when typical the tongue returns to normal in a few days.

The rash of scarlet fever begins in from twelve to forty-eight hours, while the temperature is rising and only in rare instances during its defervescence. Any rash appearing three or four days after the initial symptoms should be regarded with extreme suspicion and have the strongest corroboration before being set down as characterizing a true case of scarlet fever. The exanthem is first noticed over, or just below the clavicles, from which vicinity it rapidly spreads over the neck, chest, abdomen, extremities, and, to a much less degree, the face. The fullest development will be reached in from twenty-four to forty-eight hours from its first appearance, and it remains out from a few hours to several days. Contrary to the rule in many rashes which resemble that of scarlet fever, when this rash is once well out, it may be relied upon to remain long enough to observe and study. The exanthem first manifests itself as a collection of small, pinhead sized red spots, becoming darker as they develop, and as it spreads, the skin between the spots becomes congested, the original foci, however, for a time remaining darker red than the rest of the rash. This gives the punctate appearance so characteristic of the disease. In most instances, after remaining out a while, these spots disappear or fuse with the rest of the rash, giving more of a uniform red color, although in some cases the punctate appearance remains throughout. The rash disappears on pressure and reappears rapidly when pressure is withdrawn. The dermatitis is more pronounced around the flexures of the joints, at the outside of the chest below the armpits, beneath the breasts in females, and on the inner aspect of the thighs. On the face an uninvolved area around the mouth and along the alae of the nose is left clear and pale, the so called circumoral pallor. This is a very good diagnostic point. While it is true that in many cases the face is entirely free from rash and appears markedly pale in contrast to the rest of the body, in others, and probably in greater number, the cheeks, ears, and forehead display a brilliant red color, which certainly looks and acts like a true dermatitis and not merely a flush due to fever. The general appearance of the exanthem will vary wonderfully in different cases. One may have the punctate with the faintest suggestion of a light red rash over the skin, or there may be a deep red congestion all over the body; rarely it is hemorrhagic. It may look smooth

or tongue, it may be general or limited to certain areas. Very often there is a goose-flesh condition of the skin, and it has seemed to me that this feature is particularly noticeable in the negro race. The development of small vesicles is quite common and does not necessarily indicate a severe attack. These vesicles are of the milium type, and arranged most thickly at the anterior axillary fold, on the abdomen and mons veneris. When the rash is mottled, it is so only on the extremities, and here bears some resemblance to the rash of measles. The latter, however, shows a line of demarcation between the macule and the clear skin, whereas in scarlet fever the color shades off gradually. The exanthem may be accompanied by an intensely disagreeable pruritus. The eruption itself bears no direct relation to the severity of the attack, many of the severest infections being accompanied by a very scanty rash. When the eruption is fading, the skin, not uncommonly assumes a yellow tint.

The question of *scarlatina sine eruptione* may be dismissed very briefly. These cases are spoken of by all authorities, but they must certainly be very rare. Personally I have never seen a case in which there was any good reason to believe an eruption had not appeared, and it is more than likely that many of these reported cases do have a short lived rash which is overlooked. In making a positive diagnosis, we must either have a rash or a good history of one.

Desquamation commences in practically every case after the rash has faded out, usually several days afterward. In some instances it is not seen for three weeks or more from the onset; it will continue for from four to eight weeks. Peeling, which takes place on top of an active rash—that is the skin separating off, while the rash is still out in the locality observed—is not found in scarlet fever. The process generally involves, in succession, the same areas in which the eruption developed. It is not uncommon to find pinhead spots of desquamation in the clavicular region as the first indication of the separation of superficial layers of skin. The process goes on fairly rapidly on the neck, trunk, and extremities, the skin loosening up in good sized flakes, while on the palms of the hands and the soles of the feet the individual flakes of skin are as a whole smaller, and progress is much slower than in other parts of the body. The skin on the palms and the soles looks dry and cracked and feels harsh before desquamating. Generally speaking, the peeling is slight or profuse, according as the rash was light or well marked; and apparently, in this locality at least, the casting off of very large pieces of skin and moulds of the hands and fingers and toes, mentioned in the textbooks, is now rather rare. Desquamation of the soles of the feet is a very significant feature; but let me say, that to be absolutely conclusive, there should be accompanying this symptom, evidence or a good history of peeling elsewhere. The stripping back of the skin from beneath the margin of the finger nail, out over the end of the digit, is another point to be especially emphasized as very important in diagnosis; and with it infection of the finger ends is of frequent occurrence. When the skin has peeled, the new skin looks fresh, often pink, and feels as soft as a baby's. It should

be remarked that in very many mild cases of scarlet fever the only desquamation will be found on the palms and soles, and in these cases, the process is apt to be delayed and very tedious. In the opinion of the writer there are rare cases of this disease which do not appear to desquamate; and if the early picture, on which we must stand or fall in making the diagnosis, is clear cut and conclusive, I think we are justified in considering it true scarlet fever, even in the absence of peeling. The dark line across the flexure of the elbow, described by Pastia, a Roumanian physician, and said to be present before the eruption appears and for some time afterward, is not distinctive, in that it appears in other skin disturbances and does not occur in all cases of scarlet fever.

Examination of the blood in scarlet fever shows a leucocytosis. The white cells are increased from 12,000 to 15,000 in mild cases and up to 40,000 in rapidly fatal attacks. The percentage of polymorphonuclear cells is notably raised, the increase reaching its height about the second day of the rash and then gradually diminishing. There is also said to be a marked increase in the eosinophiles later in the course of the disease, though they are normal or subnormal at the onset. The leucocytosis is dependent on the severity of the angina and not on the height of the temperature. The blood picture in scarlet fever may sometimes aid in differentiating the disease from measles, in which there is no leucocytosis.

Scarlatinal synovitis and nephritis, both of which develop after the acute symptoms have subsided, are of occasional value as corroborative signs. The development of an apparently idiopathic nephritis in a child under twelve or fifteen years should prompt us to inquire carefully into the recent history of the patient, and to look for desquamation.

#### DIAGNOSIS.

It is in order here to utter a word of caution against hurry in reaching a final decision. With the frequent occurrences of rashes which resemble that of scarlet fever very much, and with the known tendency of various erythemas to look like one thing at night and another thing the next morning it is safer to see a patient twice, particularly in mild cases, and to see him at night, before announcing a positive diagnosis. Bearing in mind that a scarlet fever rash, as has been stated before, when once developed fully, is fairly certain to remain out a reasonable time, it is surely wiser to give the patient the benefit of the doubt by observing the rash more than once, and it is of real importance to see it by daylight. A considerable portion of the work of the department of health diagnosticians consists in endeavoring to correct the diagnosis in cases of doubtful scarlet fever, which have been reported in haste and repented of at leisure. Generally speaking it is next to impossible to make a diagnosis in the interim between the disappearance of the rash, together with the subsidence of the acute symptoms, and the appearance of desquamation. These cases should not be lightly turned down, for many times in their anxiety to be released from quarantine, the family will gloss over the history and withhold important information; but the keeping under observation of these patients will often cause hardship to

the family, which would have been obviated had the physician studied his case more carefully at the onset. To make a definite diagnosis we should at least have a sudden onset, together with sore throat and fever, followed within forty-eight hours by a rash. Without this syndrome it would be difficult to arrive at a conclusion. When to these symptoms we have added a history of exposure from one to seven days previously, vomiting or convulsion, rapid pulse with the rate high in proportion to the temperature, strawberry tongue, enlarged inguinal glands, circumoral pallor, and an ensuing desquamation after the eruption has faded; or if there is present even one or two of this group to be considered with the first named signs, we can rest confidently on our diagnosis. If the case is seen later after most of the acute symptoms have subsided, but a history pointing to scarlet fever is obtained, by all means isolate the patient and await desquamation. In no case where there is even a well founded suspicion of scarlet fever should the taking or any precaution in handling the case be neglected. Three weeks would seem to be a long enough period to isolate, provided of course that desquamation has not occurred in that time.

The minimum age of children affected by scarlet fever is interesting. It is certainly very rare in children under a year old, though common enough from one to ten years. Eruptions resembling that of scarlet fever are frequently seen and many babies should be and are isolated and watched, but a remarkably small percentage will be proved to have had the disease.

From a laboratory point of view the inclusion bodies studied in this country by Doctor Nicoll and Doctor Williams, are worthy of note. These small bodies are found in the polymorphonuclear leucocytes, and vary from one to six or more in each cell. They are regularly observed in cases of scarlet fever up to the fourth day, but unfortunately are also seen in sepsis and streptococcic angina. Their importance lies in the fact that they are readily found when present, and that they do not appear in German measles, measles, antitoxin rashes, drug rashes, the eruptions due to intestinal absorption, and probably not in ordinary tonsillitis.

In taking up differential diagnosis, I wish to discuss some of the conditions met in every day practice, which simulate scarlet fever, and are constantly being mistaken for that disease. Let us consider first diphtheria.

Cases of scarlet fever in which the rash is slow in appearing, or scanty and poorly developed, are frequently taken for diphtheria owing to the strong resemblance of the throat conditions in the two diseases. Contrary to the well established belief among the laity, a mixed infection of scarlet fever and diphtheria in the early stage of the attack is rare. The bacteriological examination and the use of antitoxin will clear up the trouble in a short time. Clinically it may be said, that the scarlet fever exudate is more tenacious than that of diphtheria; there is very slight danger of laryngeal involvement; there is no postscarlatinal paralysis and lastly, the destructive effect of the scarlet fever toxin on the tissues of the throat and glands of the neck is much more marked than the damage desulting from an attack

of diphtheria.<sup>1</sup> Unfortunately in some cases of true diphtheria, a serum rash will appear, scarlatiniform in character, and in many instances impossible to differentiate at the time from the real disease.

Measles should not as a rule cause much difficulty in diagnosis. Occasionally, a day or two before the measles rash appears, a scarlet erythema will spread over the body, evanescent in character, disappearing, while the prodromal stage of measles continues to develop. While out, this rash is apt to be very puzzling. The incubation period of measles is almost regularly fourteen days as opposed to five or six at the outside for scarlet fever; there is a prolonged prodromal stage (three days), characterized by increasing catarrhal symptoms, in contrast with the short and stormy onset of scarlet fever. The conjunctivitis and photophobia, the constant cough, the sneezing and running nose, the high initial temperature, followed by a remission to or nearly normal for two days, and a secondary rise with the appearance of the eruption, should put us on guard; the development of Koplik's spots on the buccal mucous membrane a day or two before the rash and lasting beyond its appearance, must clinch the diagnosis. The exanthem itself is maculopapular in character and dark red in color, differing from the erythematous rash of scarlet fever. It also appears on the fourth day from the onset. It shows a very marked predilection for the face where it is always prominently shown, and it will also be found early back of the ears—a characteristic point. The desquamation in measles is branny, not so profuse as in scarlet fever, and rarely involves the palms and the soles. It has been noted before that when the rash of scarlet fever is of morbilliform appearance, it is only so on the extremities and it shades off gradually into clear skin. Someone has aptly said that the measles rash looks as if red ink had been sprinkled on the surface, but in scarlet fever it appears to have been smeared on.

As to German measles, it is rather surprising to find it stated by some first class authorities that its differentiation from scarlet fever should offer no difficulties. I am confident that anyone who sees much of the eruptive diseases, in New York at least, will bear me out in the opinion that Rötheln is a constant trouble maker where the diagnosis of scarlet fever is concerned. It should be emphasized that patients sometimes are quite ill with German measles, the temperature being high and the throat very sore; furthermore, the tendency of the macules to coalesce after being out a short time, forming a generalized red rash, is deceiving. There is moreover another type of Rötheln, a real scarlatinous erythema, in which the eruption is interspersed with darker spots. This form is undoubtedly capable of upsetting the most expert diagnostician. Careful observation of the associated symptoms and another examination the following day will generally clear up the diagnosis. The following points are to be considered. The incubation period of German measles is two to three weeks in contrast to the comparatively short stage of scarlet fever. There is a distinct enlargement of the postcervical chain of glands, the individual glands standing out clearly,

<sup>1</sup>Van Jurgensen, *Scarlet Fever*.



particularly the one at or near the tip of the mastoid process, and the whole mass being practically painless; in scarlet fever the glands at the angle of the jaw are especially affected and are usually quite painful. This is a diagnostic point of the greatest value. The rash is marked on the face, is of a pinkish color and shows thickly over the chin and around the mouth; a decided difference from the circumoral pallor seen in scarlet fever. The eruption also makes its first appearance on the face, as small distinct macules, slightly raised, and of the size of a split pea, a little oblong in shape and rose pink in color. The macules often run together forming an erythematous rash, brighter in color than in scarlet fever, never typically punctate, and frequently giving the impression that it is piled up on the skin. It is true, moreover, that the most pronounced Rôtheln rashes are short lived compared to a rash of similar intensity in scarlet fever; the exanthem not uncommonly fading on the face while still coming out on the legs. Forchheimer's spots, small dark red blotches appearing on the soft and hard palates, are of value in diagnosing German measles. Desquamation, very profuse in character, may follow the eruption; it involves the body surface, sometimes the hands, but never, so far as I know, the soles. In a majority of cases no peeling is observed. The pulse in Rôtheln is much slower in proportion to the temperature than in scarlet fever.

Eruptions due to drugs, serum, sepsis, gastrointestinal and other toxemias—there are numberless rashes comprised in this group, simulating scarlet fever so closely that from the skin condition alone, it would be impossible to say that it was not that disease. The coal tar products, the salicylates, quinine and belladonna, may be mentioned as drugs especially prone to produce these rashes, and to these factors may be added the different serums, the shell fish, tainted sea food, canned foods of all descriptions, and strawberries; the tendency to scarlatiniform eruptions in septic conditions is also well recognized. It is hardly necessary to add that many individuals have a marked idiosyncrasy against certain drugs or forms of food, which manifests itself in the production of a scarlet rash. These eruptions may or may not be accompanied by gastric disturbances; are not likely to be punctate, and unless the rash is an incident in an attack of grippe or tonsillitis, sore throat will not be present. The desquamation most frequently starts while the rash is still in evidence; it proceeds rapidly and often in large pieces, and may repeat over the same area two or three times, in some instances including the hair, fingernails and toenails in the process. Peeling on the palms and soles is rather uncommon, but may occur. Another point of interest is that the fresh skin left after desquamation will often appear red and brawny, whereas in scarlet fever it is soft, pink, and looks like baby skin. The history of the case, which many times will tell of previous attacks of a similar nature, and the character of the peeling, helps us generally in the diagnostic difficulty.

In closing, I wish to draw special attention to one of the most interesting, at the same time most puzzling of the toxic rashes. I refer to the eruption which not infrequently follows burns, both superficial and

deep, and which involves a large and occasionally a small portion of the body surface. The rash appears within a few days after the burn is received, in many cases is punctate, and will sometimes be accompanied by a strawberry tongue and sore throat, the latter symptoms being due possibly to swallowing some of the flame. The temperature and rapid pulse can of course be accounted for by the burn. I do not believe that anybody can say at the time that these cases are not scarlet fever, and they should be isolated as a precaution, but the frequent occurrence of the rash in this condition, and the later history of its behavior while under observation and treatment, seem to add this affection of the skin to the many other freakish and noncontagious imitations of scarlet fever.

202 WEST EIGHTY-SIXTH STREET.

## POSTURE AND ARM MOVEMENTS IN DEEP BREATHING.

BY JAMES FREDERICK ROGERS, M. D.,

New Haven, Conn.,

Department of Physiology, Normal School of Gymnastics.

For the production of a maximum expansion of the lungs many teachers of physical training and physicians have recommended certain postures to be assumed and certain arm movements to be executed during inspiration. The standing position has been most used for the taking of breathing exercises, but the supine position has also been highly recommended. In both of these postures it has been taught that, for the greatest intake of air, the arms should be raised forward to the horizontal position, or sideward to the same level, or forward and upward, or sideward and upward. Still further to deepen or widen the chest it has been suggested that the person stand, or lie on his back, grasp the handles of pulley weights, the pulleys of which are attached to the floor at the feet of the breather, and, while inspiring, draw the handles of the weights forward and upward, as in the movements of the arms without the weights.

On what theory these exercises are based we have never seen stated, though doubtless a hint was given by the fact that the passive exercise of drawing the arms forward and upward or sideward and upward, as in the Silvester method of artificial respiration, expands the chest to a certain extent. Perhaps also the fact that yawning, which is of course deep breathing, is often accompanied, apparently with better effect, by an upward stretching of the arms, may have given ground for an exercise which has become established as a teaching custom.

It has been further taught by instructors in bodily exercises that the hanging posture, with or without deep breathing, tends strongly, by the pull of the muscles passing from the humeri and scapulae to the thorax, to expand the chest.

It occurred to the writer that, since the muscles which lift the arms forward or sideward and upward have nothing to do with the lifting of the ribs, nor the overcoming of the influence of gravity upon the chest, the lifting of the arms could have no special effect upon the depth of inspiration. The raising of the arms does apparently increase the measurements of the upper part of the chest, but the

increase is due to the change in the position of the muscles in this region, and to their contraction or stretching, which causes them to stand out from the thorax.

There can be but one test of the depth of inspiration or completeness of expiration, and that is a measurement of the amount of air taken in or expelled from the lungs. This can be accurately made by the use of the volumetric spirometer. To test the effect of posture and of arm movements upon the depth of inspiration, the subjects of the writer's experiments took the tube (a large one) of the spirometer in the mouth, and, with a nose clamp to shut off nasal breathing, drew as deep an inspiration as possible without moving the arms. Then, without removing the lips from the tube, the air was breathed back into the spirometer and again inspired with the accompaniment of the various arm movements which have been recommended.

The experiments were tried on fifty persons of both sexes ranging from sixteen to forty years of age. In no case, whether the special exercise or posture was used before or after ordinary deep breathing, was it found possible to take more air into the lungs by the use of arm raisings, and, in some instances, these seemed to interfere to a slight extent with the greatest possible intake of air.

These tests all showed that the deepest breathing can be done standing, at any rate compared with lying upon a hard surface, the very flatness of this surface interfering with the shape assumed by the thorax in its fullest expansion. In the hanging position (ligamentous hanging) it is difficult to take in as much air as in the standing position with the arms at the side, and with the use of the muscles of the shoulders and arms for any exercise, the air within the lungs becomes at once reduced in amount.

It is almost self evident that the pulling of chest weights during deep breathing, while strengthening the muscles which lift the arms and shoulders, has no effect in increasing the capacity of the lungs.

Whatever other effects there may be from the postures assumed and exercises carried out for purposes of deep breathing, there can be no advantage from them so far as increasing the intake of air is concerned. Deep breathing exercises are recommended for the tuberculous, and it is not long since we saw these same arm movements as an aid to breathing prescribed for patients by a leading authority on the subject of this disease. As the arms are not without weight, their lifting is not done without considerable muscular exertion and the fatigue of these exercises is added, without result so far as the effect on deep breathing is concerned.

With very deep inspiration there is a drawing backward of the head and a straightening of the thoracic spine—in other words, the assuming of the very erect posture, and, if any exercises are to be carried out as aids to deep intake of air, it seems that the drawing backward of the chin and the assumption of the most erect standing or sitting posture would be most useful as an aid or accompaniment of deep breathing.

447 GEORGE STREET.

## TREATMENT OF PARESIS *Intralumbar Injections of Neosalvarsan*

By CHARLES F. READ, M. D.,  
Dunning, Ill.,

Assistant Surgeon, Chicago General Hospital.

Paresis as a clinical entity has long been treated in many ways, and as yet there is apparently no cure. In February, 1913, Noguchi and Moore (1) announced the discovery of *Spirochæta pallida* in the parietic brain, but long before this an attack upon syphilitic infection of the central nervous system had been directed by way of the subarachnoid space. J. A. Sicard (2) appears to have been the first to make subarachnoid injections in some unpublished work done in 1899 and he also gives credit to Marinesco for similar work done quite independently in 1900.

Little, however, came of these fragmentary experiments until W. Wechselmann (3) published his account of intralumbar injections of neosalvarsan, basing his treatment upon the work of Kopke with atoxyl in sleeping sickness. Marinesco (4) likewise, working upon the basis furnished by Kopke, but quite independently of Wechselmann, treated some four cases of paresis in a similar manner in 1912. In 1913, A. Marie and Levaditi (5), following the method of Sicard, but ignorant of Wechselmann's and Marinesco's work, treated three series of parietic patients in a similar manner. In December, 1913, Paul Ravaut (6) described the technic which N. J. Wile has made familiar in this country. In Germany, Gennerich and Schubert (7) published in the fore part of 1914, accounts of their work done along similar lines, and from that time on, the subarachnoid injection of neosalvarsan has presumably been quite widely tried out, though a search of literature does not reveal much published work upon the subject.

The appeal of this procedure arises very evidently out of the hopefulness of salvarsan therapy in cerebrospinal lues as well as out of the pessimism that enshrouds the question of therapy in tabes and paresis. Ordinary systemic specific treatment, despite the assertion of various writers—notably Collins, Williams, Dana, Sachs, etc.—has not in the minds of the majority proved satisfactory in these latter disorders, though the discovery of spirochetes in the parietic brain has apparently done away with the conception of metasyphilitic disorders. Because we do not get results from ordinary antiluetic treatment, are we free to conclude that these especial medicaments do not pass where others find a way? Marinesco warns to this effect, and falls back half heartedly upon Ehrlich's suggestion that the spirochete in these conditions is possibly "poison fast," invulnerable to the weapons with which the ordinary strains are killed. Sachs, Straus, and Kaliski (8), in a recent communication, state that an analysis made for them by Professor Benedict, of the Cornell Medical School, has revealed in the cerebrospinal fluid of patients under systemic treatment, distinct traces of arsenic. Kaplan (19) cites Wechselmann, Sicard, and others as having found arsenic in the fluid of patients treated systemically. Thus the bugaboo of the choroid plexus, so far as its permeability to salvarsan is concerned, seems to be shelved. But in

any event we must concede that systemic treatment in the hands of the vast majority of workers, no matter how conscientiously carried out, has failed to influence the spinal fluid findings upon which we now base diagnosis and prognosis in paresis, regardless of mental and physical symptoms.

If, then, we cannot seem to penetrate the parenchyma of the brain by the ordinary route, another way, an inside passage leading apparently to nearly all parts of the central nervous system, is open, and this is the real argument for subarachnoid treatment, a good one provided that this route is actually as open as it seems to be. Unfortunately, little actually appears to be known concerning the movements of the cerebrospinal fluid, although there has been some experimentation and considerable theorizing on the subject. Sicard cites his own experiments upon dogs with the injection of India ink by the lumbar route, in which he found that particles "reached the cerebral cortex very slowly, several days after injection, and in minute quantities." Gene Cannes (9) after reviewing various opinions, concludes that the only thing one can surely say, is that there are to and fro movements in the fluid dependent upon the expansion and contraction of the brain mass. Charles Ballance cites the findings in fluid obtained by lumbar puncture in cases of cerebral meningitis and skull fracture, and argues for a downward movement in the spinal column and an upward one over the surface of the hemispheres, giving no proof, however, of the latter supposition.

Harry Campbell (10) quotes F. W. Mott to the effect that the perineuronic lymph and the cerebrospinal fluid are practically the same, and also cites F. L. Gollas's experiments with the subarachnoid injection of colloidal carbon, the particles of which were finally traced "into the perineuronic lymph spaces and even into the cells themselves." He believes the flow to be a sluggish one, "mainly caudward, though influenced somewhat by gravity," and that rhythmic commotions of the fluid tend to diffuse any substance throughout the space. Golla found definite blackening of the cerebral hemispheres after intralumbar injections of colloidal carbon. S. P. Kramer (12) injected intraspinaly two c. c. of a one per cent. solution of methylene blue into living dogs. Upon autopsy shortly afterward, he found that the outer surface of the cord (sometimes all the way up to the medulla), the floor of the fourth ventricle, the cerebellum, the aqueduct, the ventricular system, and subarachnoid space at the base, as well as the sheaths of the cranial nerves, also the central canal and gray matter about it, were stained. This result he attributes to the action of the ciliated epithelium of the central canal, which creates a current toward the orifices of the outlet in the sheaths of the cranial nerves. In dogs the central canal is patent. In human beings various authors hold that it persists, while others deny this. Its persistence, he suggests, may explain the occasional death in cases of spinal anesthesia by paralysis of the bulb.

The experiments of Weygandt, A. Jakob, and V. Kofka (13) are interesting in this connection. Using monkeys as subjects, they injected one with 0.0045 gram and two with 0.003 gram of neosalvarsan and none showed symptoms before they were killed. Another injected with 0.0015 showed

paralysis afterward, as did also one that received 0.0006; another receiving 0.0003 gram showed a slight paralysis. Certain findings were present in all autopsies to a greater or lesser degree. There was proliferation of the inner endothelium of the dura and likewise in places upon the epineurium of the descending nerve tracts. The parenchyma of the outgoing spinal nerves showed a high grade degeneration, mostly in the boundary zones of the separate nerve bundles. In the cord itself there was an acute ganglion cell degeneration and swelling and degeneration of nerve bundles with growth of the vessel endothelium and proliferative ganglial change. These changes were not marked and were found only in the lower portion of the cord, save in one animal where they were apparent in various parts of the cord and even in the brain. Elevation of the foot of the bed after lumbar injections should promote the upward flow of the spinal fluid, and it is upon this procedure that this method of therapy must base its hope of success, and apparently with reason, so far as reaching a portion of the cranial base is concerned, as witness the improvement apparently thus effected in cerebrospinal lues. Concerning the remainder of the journey to the cerebral cortex, we are still in grave doubt.

The writer has recently withdrawn fluid from the right lateral ventricle in a living subject who had been injected by the intralumbar route with 0.003 gram of neosalvarsan the evening before. During the night the patient slept with the foot of the bed elevated. A specimen of this fluid submitted to the laboratory of the Psychopathic Institute at Kankakee gave a negative test for arsenic by the very delicate Gutzeit test.

As previously stated, there is rather a remarkable paucity of literature concerning the results of this method of treatment in paresis, with which disorder alone the writer is at present concerned. Very possibly this may be accounted for by the fact that failure does not commit itself to print so readily as success. Marinesco reports four cases treated with one or two doses each of 0.005 gram of neosalvarsan without benefit, and in one case with a resultant irritation of the pyramidal tracts, as evidenced in a Babinski. Marie and Levaditi treated three series of patients. The patients of the first series received three injections at intervals of seven days. The first dose was 0.0057, the second 0.015, and the third 0.04 gram. Two patients died soon after the third injection, but with convulsions intervening. Two others died a month or two later, probably not as a result of treatment. Two Wassermanns, which had before been negative in the spinal fluid, became two plus. The patients of the second series were given a single injection of 0.02 gram. Of these five, three died from one month to five months afterward, and there was no improvement in any case save that one showed some regression of physical signs and a "satisfactory" mental condition. Patients of the third series were given a single dose of 0.01 gram. None of these showed improvement and one death occurred three months later. These authors attributed their failure to the fact that neosalvarsan, in their opinion, does not reach the cortex when given by the lumbar route.

Ravaut, in December, 1913, published the results



of sixty-three injections on nine patients. His procedure is essentially the one now familiar to us all, in which neosalvarsan is so dissolved in double distilled water as to give a solution, 0.01 c.c. of which will contain three mgm. of the drug. The dose determined upon is injected by the lumbar route, well diluted, into the patient's own spinal fluid. In these results he cites the Wassermann reaction but once. Only two of his patients were paretics. The spinal fluid findings remained unchanged, so far as cell or globulin content was concerned.

J. A. Wile (14), in his latest communication, cites three cases of paresis treated with but one injection each and negative results. Autopsy upon a case of tabes and upon one of tabetoparesis showed what was apparently a recent degeneration of the posterior columns of the cord in the lumbar and thoracic region, which degeneration the pathologist thought "might have been occasioned by the imbibition of toxic substances from the cerebrospinal fluid."

John Fordyce (15) reports a decreased number of cells in improved Wassermann in one case of paresis treated along with tabetic cases. The other laboratory findings or tests remain two plus, however. This author considers the limits of safety of subarachnoid doses to lie within five mgm., given at intervals of two weeks or longer. When larger doses and shorter intervals were employed, root pains, numbness, bladder and rectal paresis, and ataxia were noted.

Corbus reports three cases treated with four mgm. doses at two week intervals. After the third injection, bladder symptoms, ataxia, and numbness appeared, but his dilution was small, in five c. c. of spinal fluid.

Geo. W. Hall and Ralph Hamill (17) report one case of general paralysis treated by this method, along with others of tabes and cerebrospinal lues. This patient received but one injection shortly before the report was made and without noteworthy result. These writers conclude, from their experience with this treatment, that it is followed by no serious results when the technic is carefully followed out, but Doctor Hall now informs me that they are using a dilution of at least fifteen c. c. of spinal fluid. Julius Grinker has done some unpublished work along this line, but with negative results. Sachs, with others, using doses of from 0.02 to 0.01 gram in a case of paresis, reports an acute ascending paralysis of the Landry type, coming on three weeks after the sixth injection and proceeding to a fatal issue. Another case developed paralysis of the legs, bladder, and rectum, with death in three months. In view of this experience and that of others, these authors hesitate to urge any form of intraspinal treatment.

Alfred Gordon (18) reports very bad results in a tabetic subject to have followed one dose of 0.006 gram. The patient suffered great pain, gangrene of the penis and scrotum, fever, persistent vomiting, and finally death. The degree of dilution in this case is not noted.

W. Weygandt, Jakob and Kafka (*Münch. med. Woch.*, July 21, 1914) treated twenty-five cases with fifty-seven injections. The improvements noted were one "splendid remission," three improved in speech, two in weight, six as to conduct,

and one was got out of bed after being bedridden. Eight showed no improvement. The relatives of many "were delighted with the results, though the patients remained far from well." The ill results consisted of vomiting, headache, seizures, increase of ataxia, and incontinence, fever, and one death six days after the second injection. Sixty-four spinal fluid and blood examinations were made. Nine cases showed improved Wassermann reaction in the blood, eight cases showed improved reaction in the fluid. Three showed the Wassermann negative to 0.2 c. c. Six showed increased cells. Three showed decreased globulin content. Two gave a Herxheimer reaction.

The foregoing review fails to cover the entire literature upon this subject, but is believed to give a fair picture of what has been the experience of others with this method of treatment.

The writer's cases number twenty, treated with 123 injections by the lumbar route. In no case has the menstruum been less than ten c. c. of the patient's own spinal fluid. The method has been that of Ravaut, and the intervals have been at least two weeks in all cases. The dose for the first five or six injections has been three mgm., after which in a few cases it has been increased to 4.5 and six mgm. All cases were treated during the last five months of 1914. A detailed recital in each case is unnecessary, inasmuch as a number are without any special points of interest. All cases were those of male patients in varying stages of the disease and all with positive laboratory findings in the spinal fluid.

One group of nine received forty-seven treatments, from two to eight treatments each. In one of these the Wassermann reaction was reduced from four plus to two plus, in another a negative reaction became strongly positive, and in still another a faintly positive became strongly so. The cell count and Noguchi remained practically unaltered. The mental condition remained unchanged, save in one case which is now in a second period of quite fair remission, the first period being one of about six months, a year prior to the use of the neosalvarsan treatment. A few cases are worthy of more detailed description:

CASE I. Edward S., aged thirty-three years, a noisy, turbulent, destructive case of a year and a half's standing, received six Swift-Ellis treatments in February and March, 1914, by Doctor Rea of the Montreal General Hospital, upon the spinal findings or conduct. He received ten injections of neosalvarsan intraspinal and the Wassermann upon 0.2 c. c. of the spinal fluid ran as follows: February, 4+; April, 4+; July, 4+; September, —; September, +; October, +; November, —; December, —; January, 1915, +, but 4+ with 0.5 c. c. The cell count upon the latter date was forty one and Noguchi strongly positive. The patient is now much better behaved and a trifle brighter, but is filthy at times and apparently demented. Following the last injection, which was of 0.008 and following two others of 0.006, patient developed fever and retention of urine, but is now (March 9, 1915) in excellent condition.

CASE II. John C., aged forty years, has never shown mental symptoms of note aside from mild euphoria. Duration about one and one half year. He received three Swift-Ellis treatments, February to April, 1914, and two weeks after the last one, developed a Herxheimer reaction, the Wassermann on 0.2 c. c. going negative a month later. Two months afterward, the Wassermann was again positive, then following ten intralumbar injections of neosalvarsan, became negative, only to become positive once again in November, and in December was again negative. The last report, after eleven injections, was negative with



## THE TREATMENT OF RIGID SCLIOSIS.\*

BY S. KLEINBERG, M.D.,

New York.

Rigid scoliosis, which for many generations has been the subject of musing and very thorough investigation, has formed one of the most interesting and puzzling studies that the orthopedist has ever undertaken; puzzling and difficult, not that we have not understood the pathology or known what must be done to accomplish a cure, but, because of the complexity of the pathological and anatomical changes involving so many different and deep seated structures, it has been hard, nay impossible, to apply accurately methods known to be effective in other deformities. The orthopedic surgeon's usual optimism has constantly been taxed. Renewed hope has always been aroused by the most ordinary therapeutic suggestions, and many times has the pendulum of opinion swung between marked enthusiasm and extreme skepticism.

Before entering upon a consideration of the present new method of treatment, I wish briefly to review the procedures previously in vogue. It has always been recognized that the deformity of lateral curvature involved, not only alterations in the structure of the vertebrae and contractures in the ligaments between and about them, but marked changes in the muscles. Many felt that lateral curvature was the result of a weakened state of the muscles, and, guided by this belief, they concluded that the treatment of scoliosis was a muscle problem, and that strengthening the muscles by systematic and well directed exercises would enable us to correct the deformity. There is hardly a single large orthopedic clinic, here or abroad, that has not established a more or less elaborately equipped gymnasium for exercising lateral curvature patients. All exercises have a dual object; 1, to increase the mobility of the spine, and, 2, to improve the patient's posture. Toward this end, two types of exercises have been used, those which increase the general muscular tone, and those calculated to correct or reduce the deformity. To the latter class particular attention has been devoted by Doctor Teschner, who inaugurated and developed a thorough system of heavy work exercises in which the muscles whose action is opposed to the attitude of the deformity, are forced to develop rapidly and to an unusual degree, in the hope that by their hypertrophy an improved position of the trunk will be attained and assured.

The results from treatment by exercises alone were found satisfactory in the mild curvatures, but in the moderately severe types, they were not encouraging, and hence led to the combination of exercises with temporary forcible correction. This was obtained through special machines, many types of which were constructed by Lorenz, Hoffa, Zanda, Schulthess, and others. These appliances, most of which are very complex, were of two general kinds: Those which permitted the patient to exercise while in them, and were so constructed as to augment the mobilizing influence of the exercises; and those used only to produce a temporary change in the deform-

ity. One of the best of the latter is that devised by Hoffa and modified by Schede. In this apparatus the patient is suspended, the pelvis held firmly, and the fixed portions of the chest and back are pressed upon by screw plates in the hope of correcting or at least reducing the deformity. The degree, frequency, and duration of each stretching depend upon the type of deformity, health, and tolerance of the patient. Each stretching seance is followed by a session of vigorous exercises.

When the foregoing method did not succeed, the surgeon resorted to forcible correction with fixation. The patient was placed in a special apparatus, the spine always in extension, as much correction as possible was obtained by canvas or other bands or by screw plates, and the trunk, often including the shoulders and head, was fixed in a plaster jacket in the corrected attitude. The jacket was left on for a long period of time, removed, the patient again suspended, further correction attempted, and another jacket applied. The treatment was continued in this manner until the maximum correction was obtained. Wullstein went a step farther and advised forcible correction under anesthesia and fixation of the trunk and head in plaster.

In 1889, Volkman suggested that the deformity could be reduced and the appearance of the patient improved by resecting the ribs on the convex side. This suggestion was given serious consideration, and Cassé, in 1893, Hoffa, in 1896, and Hoke, in 1903, reported having performed this operation with good results.

From the foregoing observations it is obvious that many different methods have been employed in the correction of rigid scoliosis, and as in other branches of medicine, multiplicity of measures generally spells inefficacy. The different means, such as heavy work exercises, forcible correction with and without fixation, etc., are all very severe, and often employ a degree of pressure that taxes the patient's tolerance to the limit; the results have usually been only slightly successful. One of the main advantages of these methods is that they probably prevented progression of the deformity.

We naturally inquire as to what has impeded improvement and what are the difficulties. We find the explanation in an analysis of the pathology of this condition and the means at hand for correction. Rigid lateral curvature is a deformity of the bony structure of the spine and chest and occasionally of the pelvis. In addition there is a contracture of the soft tissues, such as ligaments and muscles, and a derangement of the viscera, abdominal and thoracic. We are therefore not dealing with a simple distortion, but with a deformity involving many bones, ligaments, and organs, including practically the entire trunk. Furthermore, the essential elements of the disfigurement, the spinal vertebrae, are placed at some distance from the surface, and in using any of the above mentioned methods our only means of exerting corrective influence upon the vertebrae is through the ribs as levers. We all know that the ribs are elastic, especially in children, and that they are attached by joints to the vertebrae. Therefore a force applied to the ribs will first exert a deforming influence on the ribs themselves, then will produce motion at either extremity of the ribs, and

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lastly will be transmitted to the vertebrae. A corrective force must be very great indeed to be of considerable strength when it reaches the spine. From personal experience, I am convinced that the force usually employed spends itself deforming the ribs and rarely reaches the spine. It is this feature in the treatment that has occasioned most of the difficulty in bringing the spine back to a normal position. Personal observation further leads me to conclude that the usual improvement obtained is due mainly, if not solely, to the changed and improved posture, and not to any actual reduction of the curve from pressure transmitted through the ribs. It is also necessary in this deformity to watch the effects of the treatment upon the patient's general condition, on account of the great degree of force frequently employed. We must therefore consider the influence of the treatment upon, 1, the general health of the patient, 2, the contractures of the soft parts, and, 3, the bony changes. A method strong enough to correct the bony and ligamentous deformities may be so severe as to be detrimental to the health of the subject and inapplicable on that account. This was the case with some of the corrective machines. Then again a method may be effective in overcoming the soft tissue contractures, but not strong enough to effect the bony changes. Such a method is represented by the heavy work exercises of Teschner, which improved the external appearance of the chest, but did not correct the vertebral deformity. We now see that in rigid scoliosis we are dealing with an extremely complicated lesion, involving many important and some very resistant structures, and that there are many obstacles in the way of the accurate application of apparent and well established methods of correction.

In spite of the evident difficulties just mentioned, we are confronted by the absolute need of treating these cases of scoliosis, because we know, 1, that scoliosis does not tend to right itself, 2, so great an orthopedist as Lovett states that "structural curves, whether simple or compound, in young children should be regarded as serious, as almost sure to increase and perhaps to increase rapidly. They are likely to affect the general health and to shorten life by inducing phthisis and ill health," and, 3, no less an authority than Whitman states that "all deformities of this class (speaking of scoliosis) are more likely to progress during the growing period" and that "it would appear, then, that lateral curvature of the spine is always of sufficient gravity to merit treatment and supervision until its cure or arrest is assured." Therefore all scoliotic patients during childhood and adolescence, and hence the majority who apply for advice, must be treated first with the hope of improving them and secondly at least to inhibit the progress of the deformity.

The methods thus far described have one and all been applied in the erect posture, stretchings, forcible correction, exercises, etc., all have been carried out with the spine extended, it being supposed that the erect posture was the most favorable attitude, and not having anything better, one or other of the above described measures was employed according to one's judgment. In June, 1911, the orthopedists were surprised by the announcement by Doctor Abbott, of Portland, that rigid scoliosis, the dread and

obstinate deformity, that had resisted all previous efforts at correction, was more easily corrected than bow legs or club feet. He explained the previous failures on the ground that the spine is locked in the erect posture and hence not amenable to correction, and as previous methods all depended upon the erect posture, failure was inevitable. His method depended solely upon the body being flexed. The deformity of scoliosis, he stated, had been produced in flexion and could retrace its course only in flexion. The report was so clear, the apparent results were so inviting that there was aroused practically throughout the medical world a renewed interest in the treatment of lateral curvature, and many men, particularly those who visited Portland, began this new treatment enthusiastically. Soon there were issued reports by men here and there hailing this method, which was acknowledged to be a bit complicated, as the greatest advance yet made in the study of that previously unilluminated page, the treatment of rigid scoliosis. The results recorded by the different men were not quite as brilliant as those of the originator of this new "flexion" method, nor was the duration of the treatment as short as it was originally supposed to be. These deficiencies, however, were accounted for by the feeling that the different orthopedists had not as yet mastered the details of the technic thoroughly. As time went on and experience accumulated, it became evident that while the method expounded by Doctor Abbott was decidedly an advance over previous ones, it yet was not a cure-all. Doctor Abbott himself became more conservative in his procedures and less dogmatic in his statements, and though sufficient time has not elapsed to enable us to set an absolute and positive value to this new method, yet our experience is sufficiently extensive to allow of a statement of its probable usefulness.

In a general way Doctor Abbott follows the same course and employs the same means as had previously been used, namely, forcible correction with fixation in a plaster jacket. This is kept up until a cure or maximum change is obtained, and replaced by a corset in the corrected or improved attitude, together with regular daily exercises to strengthen the musculature and instruct the patient voluntarily to hold the better attitude and more nearly normal posture. The manner, however, of forcible correction is new, as the entire treatment is carried out in flexion, and furthermore the Abbott method differs from former ones in that provision is made in the plaster jacket for continued correction. I do not intend to burden my reader with the many and complicated details of the technic,<sup>1</sup> but will only briefly outline the salient features. The method depends upon the observation that the spine is most flexible and therefore most susceptible of correction in the flexed position. The patient, appropriately prepared, is placed on his back with his feet elevated in a specially shaped canvas hammock, suspended in a rectangular gas pipe frame. By means of numerous bands the spine is pulled to the opposite side of its line of deformity, and by pressure upon the ribs opposite the deformity, there is a tendency to unrotate the vertebrae. Having allowed sufficient room for further correction, a plaster jacket is

applied. From time to time felt pads are inserted to increase the correction, and when the limit of change in any one jacket is reached, another is applied. This is continued until the maximum improvement or correction is obtained, when a removable corset of plaster or celluloid is made and gymnastic exercises are instituted.

Comparing my personal experience and that of others in this method, with the experience in the older methods, I am convinced that the Abbott treatment represents a distinct advance and occupies an important place in the management of rigid scoliosis. And though perhaps it does not come up to the standard of value given it by its originator, we are enabled to improve rigid curves not amenable to treatment by former methods carried out in the erect position, and we undoubtedly obtain more frequent and more marked improvements than ever before. Having been led by Doctor Abbott's reports to extravagant expectations, we looked for cures in impossible cases, and for cures where we should be satisfied with reasonable changes, and finding the method falling short of our expectations, we have been severely disappointed and some are inclined to turn away from it.

The greatest drawback to the Abbott method is that it is a severe treatment, trying to the surgeon and hard on the patient. A good many complications are encountered, which tend to discourage us. These are varying degrees of weakness, pain, insomnia, dyspnea, tachycardia, pressure, sores, etc., and the weight of the plaster jacket which is considerable. In spite, however, of all these discomforts, the treatment must be thought well of, because out of sixty cases, most of which were severe types, thirty-four were made better, some markedly so, and the few that have remained under observation have most of them retained the improvement.

Recognizing then the value of this new method, the writer sought some means of applying it and yet avoiding the pains and other discomforts, and devised a brace in which all of the principles of the Abbott method are accurately applied, and many of the disadvantages avoided or minimized. The manner of construction of this brace is reported in the *Journal A. M. A.* for April 25, 1914, and the results of its use recorded at the recent meeting of the New York State Medical Society. The writer feels that his brace is capable of actually causing a correction or at least a marked change in a fair proportion of the moderately severe cases of lateral curvature, since nineteen out of a series of thirty cases were definitely improved. An experience of over a year and a half has shown that the brace is fully as effective as the jacket and has the following advantages:

1. It is lighter.
2. The patients tolerate the pressure more readily.
3. The corrective force can be more accurately applied and more easily controlled.
4. One brace suffices for complete correction.
5. The patients are less uncomfortable than in the jackets.
6. The patients can walk with less exertion several attending school and traveling long distances to and from the hospital.
7. Complications of the plaster jackets, such as pain, insomnia, dyspnea, etc., are so slight as to be almost negligible.

Out of a total of ninety cases of rigid scoliosis treated by the writer according to the Abbott method, either in plaster jackets or the author's brace, fifty-three cases, or over fifty-eight per cent., were improved. Some of the results were very gratifying, as not only were the curves rigid, but in many the deformity was conspicuous. To be sure, no case has been cured, and a few have relapsed from their improved condition, but if we recall the complexity of the deformity, the length of time, frequently years, that many of these deformities have existed when we are consulted, and the very slight prospect for betterment offered us by previous methods, we will realize that fifty-eight per cent. of improvements constitutes no small number and is a very satisfactory showing.

In spite, however, of the fair percentage of improvements, a good many of the patients received no benefit, and that brings up the question as to which are and which are not favorable cases for this treatment. A review of the patients observed leads me to conclude that no improvement is obtainable in the following types of scoliosis.

1. Curvatures with sharp angulation of the ribs so called "razor backs."
2. High dorsal curves, such as are seen occasionally to follow infantile paralysis.
3. Cases with marked lumbar deformity.
4. Severe S shaped curves with the dorsal deformity equal in extent and degree to the lumbar.
5. Mild deformities with congenital malformations.

In this last group the mildness of the deformity plus the uncertainty of the result of treatment speak against the advisability of using this method. In the same study the following types were found favorable for treatment:

1. Single curves to the right or left of mild or moderate degree.
2. Cases with long dorsal and short compensatory lumbar curves.
3. Mildly shaped curves.
4. Cases with moderate deformity in the lower half of the dorsal region and very little compensatory deformity above or below this.

Having several times noticed improvements in the curves of older children, those fifteen years of age or more, and on the other hand seen no change in the spines of children of nine or ten years with apparently mild curves, I was led to investigate the particular characteristics of a curve that make for or against improvement, and believe that the prognosis in a given case depends upon the following factors:

1. Length of time the deformity has been in existence.
2. Site of the deformity, dorsal, lumbar, etc.
3. Degree of severity of the deformity.
4. Type of deformity, single, double, or triple curve.
5. Congenital malformations.

#### CONCLUSIONS.

From the foregoing observations the writer wishes to emphasize that—

1. The very mild cases of rigid scoliosis can be satisfactorily treated by gymnastic exercises of one type or another and preferably by the Teschner system.
2. The very severe types of scoliosis cannot be corrected or even satisfactorily changed by any known procedure.
3. In the moderate types of rigid scoliosis more frequent and more marked improvements can be obtained by the Abbott than by the older methods.
4. The writer's brace can effectively apply the Abbott

placations and reduce the pain and severity of the complications that are met with in plaster jackets.

5. The earlier the treatment is begun, the better will be the prospects for improvement.

6. The patients must be kept under observation for a long time to insure the permanency of whatever degree of improvement has been obtained.

## REFERENCES.

|                                      |   |
|--------------------------------------|---|
| 1. HUTCHINSON, J. C. <i>Surgery.</i> | 2. LOVETT: <i>Lateral Curvature of the Spine.</i> |
| 3. HALL: <i>Am. J. Surg.</i>         | 4. STARR: <i>Am. J. Surg.</i>                     |
| 5. HALL: <i>Am. J. Surg.</i>         | 6. HALL: <i>Am. J. Surg.</i>                      |
| 7. HALL: <i>Am. J. Surg.</i>         | 8. HALL: <i>Am. J. Surg.</i>                      |
| 9. HALL: <i>Am. J. Surg.</i>         | 10. HALL: <i>Am. J. Surg.</i>                     |
| 11. HALL: <i>Am. J. Surg.</i>        | 12. HALL: <i>Am. J. Surg.</i>                     |
| 13. HALL: <i>Am. J. Surg.</i>        | 14. HALL: <i>Am. J. Surg.</i>                     |
| 15. HALL: <i>Am. J. Surg.</i>        | 16. HALL: <i>Am. J. Surg.</i>                     |
| 17. HALL: <i>Am. J. Surg.</i>        | 18. HALL: <i>Am. J. Surg.</i>                     |
| 19. HALL: <i>Am. J. Surg.</i>        | 20. HALL: <i>Am. J. Surg.</i>                     |

117 WEST FIFTH AVENUE, NEW YORK.

## INFANT MORTALITY EIGHTY YEARS AGO.

*A contribution to the History of the Child.*

BY CHARLES HERRMAN, M. D.,  
New York.

AMERICAN PUBLICATION, 117 WEST FIFTH AVENUE, NEW YORK.

"What is the cause of the unnatural mortality of children in the first year of life and how can it be prevented?" is a question found in a *Prize Essay*, by Wilhelm Rau, professor of therapeutics at the University of Berne, published by C. Fischer in 1830. "In modern books and essays you meet with footnotes and quotations from the productions of yesterday that look so erudite, but also with rediscoveries of old knowledge which you would recognize if the quotation marks had not been accidentally forgotten."

Many things have been rediscovered after having been long forgotten. Many an author has hit upon what he considered an original idea, only to find to his surprise that it was as old as the pyramids. It is not always the first one who says a thing that receives the credit, but the one who says it often and loud enough to attract attention. It is remarkable how many views that have been accepted during the last ten years only are contained in Rau's splendid monograph. I shall simply translate a few passages without making comments.

"The future fate of the child depends largely on the health of the mother during pregnancy. If this was more generally recognized and appreciated, we should hear less of premature births and less of early decline and death of the child shortly after its entrance into the world. . . . The children of women who suffer from misery and hunger during pregnancy have less vital resistance, are often still-born, or die shortly after birth.

Children who receive a milk mixture too rich in fat, frequently suffer from flatulence, hyperacidity, eructations, vomiting, and constipation, and later from diarrhea with green, foul smelling stools. They also often have skin eruptions. . . . Foolish people think this frequent vomiting a sign of good health, according to their saying, *Stomachus est sibilans*.

The milk of a wet nurse cannot replace that of

the healthy mother. . . . The organism of the mother stands in the closest relation to that of the child, and the milk of the mother, other things being equal, will always be the most natural nourishment.

It is a sad experience that nothing is more difficult than the eradication of old deep rooted customs, sanctified by tradition, even when it is possible to demonstrate their injury beyond all doubt. The swaddling of infants may serve as an example. Hippocrates censured it in the ancient Egyptians, Lycurgus prohibited it among the Spartans, and later Buffon, Rousseau, and many others strove against it in vain. . . . When the entire child is bound, as is usually done in order to prevent curvature of the extremities, it really has the reverse effect. The arms which are usually bound for only a short time, are invariably stronger and their movements properly coordinated at an earlier age than the legs which are bound for a longer time.

Strenuous attempts at hardening newborn infants almost always fail, and may do more injury than exaggerated carefulness.

Unfortunately in many places there still exists the idea that all infants must have the frenum of the tongue cut. Midwives still keep up the delusion, and this operation, unnecessary in the majority of cases, is frequently performed.

The author belongs to those who consider teething a natural physiological process which is without danger, at least is not pathological, but which deserves our attention principally because it is coincidental with a marked development of the brain. At the time of teething there is an unusual mental development, the child begins to learn to speak, the sensitiveness of the nervous system becomes more pronounced, the child becomes master of movements previously automatic, and begins to creep and walk. The function of the intestinal tract becomes perfected, and the infant becomes capable of digesting a more solid nourishment.

It cannot be repeated too often or too emphatically that mother's milk is the best and cannot be replaced by any other nourishment.

Nursing mothers are free from many of the disturbances of the post partum period which frequently affect those who do not nurse.

The newborn infant should not receive the breast oftener than every two hours and older children every three hours. When the amount of milk secreted is insufficient, the child should be put to the breast frequently; this is the best method of causing early appearance of the milk after labor.

The appearance of menstruation is not an absolute indication for weaning.

At first the child if artificially fed should be given one part of milk to two parts of water, with sugar added. Gradually the strength is increased so that after three or four weeks the child receives two parts of milk to one of water.

It is unbelievable how much injury has been done by the erroneous idea that freely circulating air is injurious for infants. Instead of considering air as the true *pabulum vite*, they often intentionally make its enjoyment more difficult by allowing the infants to remain months in rooms heated to suffocation."

117 WEST FIFTH AVENUE, NEW YORK.



## DIRECT LARYNGOBRONCHOSCOPY AND ESOPHAGOSCOPY.\*

*Report of Cases.*By CHARLES B. BRODER, A. B., M. D.,  
New York.Visiting Otorhinolaryngologist, People's Hospital, Assistant Laryngologist,  
City and Beacon Hospitals, and Grand St. Station Hospital.

By direct laryngobronchoscopy and esophagoscopy, we mean the examination of the larynx, trachea, bronchi, and esophagus through a straight tube introduced through the mouth. Its discovery has opened up a new field in the diagnosis and treatment of morbid conditions of these regions. Before the discovery of direct tube work, foreign bodies and pathological lesions in the trachea, bronchi, and esophagus were practically inaccessible, because operative interference resulted almost always fatally. By the direct method of examination we can now make accurate observation of the clinical appearance of the tracheobronchial and esophageal mucosa and institute proper treatment.

The instruments used by me for this kind of work are those devised by Bruning, which depend for illumination on an electroscope, and those of Jackson, which have the light on a light carrier. The tubes are of different sizes, both as to length and lumen, and it is always advisable to use a tube with as small a lumen as possible for the proper performance of the work.

The examination is usually made with the patient in the sitting position, except in children over eight years old, where the supine position is advisable. As to anesthesia, in adults cocaine or novocaine is used. In children up to eight years, examination is best made without an anesthetic, except for bronchoscopy and low esophagoscopy, where ether is used. In older children, general anesthesia is advisable. Rectal anesthesia is ideal for this kind of work where general anesthesia is called for.

Before passing the laryngoscope, novocaine twenty per cent. is applied to the pharynx, base of the tongue, uvula, and epiglottis. The patient is requested to pull his tongue forward, and by using a tongue depressor, the epiglottis is brought into view, and direct application of cocaine can be made with a curved laryngeal applicator, without the aid of a mirror, both to the epiglottis and the larynx.

The laryngoscope is introduced between the left bicuspid teeth down to the base of the tongue, then lifted over the epiglottis, bringing the larynx into view. The bronchoscope is passed in the same manner. During inspiration it is gently pushed between the vocal cords into the trachea and down to the bifurcation. The main bronchi and the secondary bronchi may next be examined. The right main bronchus proceeds in almost a straight line from the trachea, which accounts for its being the place of predilection for foreign bodies. For upper esophagoscopy, Jackson's upper esophagoscope may be used. After sufficient cocaineization, the instrument is passed back of the larynx, and the cricoid cartilage is then carefully lifted forward.

For deep esophagoscopy, a separable speculum is first passed down to the pyriform fossa as a guide,

and then the proper sized esophagoscope is passed. When the instrument is in the esophagus proper, the separable speculum is removed.

To show the value of the direct method, a few cases will be cited:

CASE I (epiglottitis). Woman, aged thirteen, presented March 2, 1914, history of hoarseness. On direct laryngoscopic examination with the mirror revealed marked edema, and infiltration of the posterior wall of the larynx and congestion of the vocal cords. Jackson's speculum was passed and the diseased tissue removed by biting forceps. Thorough removal of the pathological growth was followed by the direct application of the cautery tip. With the aid of the straight tube absolute eradication was possible.

CASE II (singer's node). Man, aged twenty-eight years, seen November, 1914, history of hoarseness for several years. Examination showed a tumor situated at the junction of the anterior and middle thirds of the right cord. After thorough anesthesia with twenty per cent. cocaine solution applied to the uvula, posterior wall of the pharynx, epiglottis, and cords, the laryngoscope was passed and the growth sliced off with Pfau's forceps. No recurrence and voice was perfectly clear. With the laryngoscope and the direct method of operating, a better and more exact control of the biting instrument is possible.

CASE III (fibroma of larynx). Female patient, aged forty-five years, seen June, 1914. Hoarse for last ten years. Examination revealed a tumor one half inch long, attached by a broad pedicle to left vocal cord near the anterior commissure, the free end lying over the glottis. Part of tumor removed with snare under mirror. The base was sliced off even with the surface by Pfau's forceps through a direct tube. No sign of recurrence and voice was clear.

CASE IV (bone in esophagus). Female patient, aged thirty years, seen April 10, 1914. While taking soup, felt a sharp pain in the throat. Thereafter there was inability to swallow either liquid and solid food. The patient went to several dispensaries and was assured that there was nothing in the throat. Examination with the mirror was negative. Direct upper esophagoscopy with a Jackson tube revealed a bone one and a half inch long wedged transversely in the esophagus opposite the cricoid cartilage. With Pfau's forceps it was speedily removed.

CASE V (papilloma of larynx). Woman, aged fifty years, referred by Doctor Schwartz. History of long standing hoarseness. Examination showed a flat growth over anterior half of left vocal cord. Through the tube the tumor was removed with a few bites. The growth was near the anterior commissure, and with the mirror it was found to be impossible of removal. Recourse was then had to direct laryngoscopy.

CASE VI (bone in larynx). Child, aged two years, referred by Doctor Berkeley, with the history of symptoms pointing to a foreign body in the throat. Child was pinned in a sheet, and held rigidly in the lap of the nurse, head steadied by an assistant. The direct tube was passed. A fishbone imbedded in the left fossa innominata was seen and quickly removed with the forceps. Any other method of treatment in this case would hardly have been possible.

CASE VII (ulcer of esophagus). Annie G., aged thirty-two years, seen January 12, 1915, complained of pain and difficulty in swallowing. Jackson's esophagoscope was passed, with the patient in the sitting position. On the right lateral wall of the upper end of the esophagus a ragged ulcer was seen. The lesion was probably caused by the passage of some sharp body. The wound was healed after a few applications of silver nitrate solution.

The following cases illustrate the great value of direct laryngoscopy in children.

CASE VIII. Gertie S., seen January 14, 1915, aged three and one half years, a deaf mute, referred by Doctor Berkeley. Direct examination showed a normal larynx, excluding the vocal apparatus therefore as a causative factor.

CASE IX. Sam G., aged two and one half years, seen June 10, 1914, history gave all the clinical signs of laryngeal diphtheria. The laryngoscope showed a catarrhal condition. A smear the result of a swab directly applied to the larynx substantiated the diagnosis.

\*Read before the Clinical Society of the People's Hospital, March 16, 1915.

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**Treatment of Infected Wounds and Ulcerations.**—Alquier, in *Bulletins et mémoires de la société de médecine de Paris*, January 8, 1915, states that, in treating infected wounds and ulcerations, he has come to look upon the use of hydrogen peroxide solution in full strength, followed by ninety per cent. alcohol, as a most efficient antiseptic. Alcohol is used as a wet dressing. Addition to the alcohol of sufficient formaldehyde solution to make a one in 1,000 preparation of the pure gas was found of great advantage where hastening of granulation was re-

quired. Recently, in the treatment of suppurating wounds by firearms, Alquier became more than ever convinced of the efficiency of the foregoing procedure.

**Clinical Value of Subcutaneous Injections of Oxygen Gas.**—Mendel, in *Presse médicale* for July 4, 1914, is credited with the assertion that subcutaneous injection constitutes the most effective method of administering oxygen gas. Upon inhalation no very considerable amount of the gas is absorbed, and even the inspiratory efforts required for this purpose are often a burden to dyspneic patients. Subcutaneous oxygen injections are indicated, first of all, in mechanical anoxemia, due to physical conditions obstructing respiration. Thus, in a case of nasal obstruction associated with asthmatic paroxysms, the latter ceased as soon as injections of oxygen were given. Under the term dyscrasic anoxemia may be grouped a number of conditions also indicating oxygen injections, viz., poisoning by illuminating or coal gas, anemia, and in particular, toxemias due to impaired cardiac and renal functioning in cases of arteriosclerosis and high blood pressure. Finally, in pulmonary tuberculosis, which may belong at once to both of the preceding groups, the results obtained from oxygen injections are, according to Mendel, very striking. Delaunay treated successfully a case of syncope due to chloroform and Loevy a case of asphyxia due to embolism, by the measure referred to. There are no contraindications to the procedure, and the injections are painless.

**Use of Radium in Cutaneous Lesions.**—William Allen Pusey, in the *Pennsylvania Medical Journal* for November, 1914, refers to ease of application, of insertion in lesions, and accuracy of dose, as advantages of radium over the x rays, though in many respects the therapeutic uses of the two agents are exactly the same. Radium has, perhaps, its most nearly unique value in vascular naevi, especially in the flat port wine marks, against which no other satisfactory procedure is available, unless it be the application of the x rays with a most skillful technic. Radium is equally effective in the treatment of naevi composed of larger bloodvessels or thicker masses of vessels. It may also be used, in short exposures, as a stimulant in certain dermatoses in which the obscure effect of irritation in overcoming chronic inflammatory indurations has proved useful, as in patches of chronic eczema, in lupus erythematosus, in lichen planus, and in psoriasis.

In appropriate cases of epithelioma radium affords an eligible method of treatment. The residual scars are as slight as possible, the results permanent, and the method is both convenient for the physician and easy for the patient. Pusey mentions that successful treatment should not require the destruction of contiguous glands. If such removal of glands is necessary, primary treatment with radium is not justified. The epithelioma should not extend beyond the limits of application of the amount of radium at one's disposal. Unless a comparatively large amount of radium is at hand, the method is chiefly useful in small epitheliomas,—though extensive epitheliomas can be handled even with small amounts if numerous prolonged applications are

made. Warts, moles, senile keratoses, and many other skin tumors can be treated with radium as successfully as epitheliomas.

**Treatment of Pellagra.**—Messandrini and Seala, in the *American Journal of Tropical Diseases and Preventive Medicine* for November, 1914, are stated to have advanced a new specific theory of the causation of pellagra and a treatment based thereon which yielded distinctly gratifying results. The disease is attributed by these authors to silica from drinking water, the colloidal silica in the latter, fixing the sodium chloride with proteins in the tissues, promotes acid intoxication in the system through a consequent release of hydrochloric acid. The drug recommended by the authors in the treatment is sodium citrate, given in a five to ten per cent. solution by hypodermic injection:

R. Sodii citratis, . . . . . gr. xii to xxiv (0.75 to 1.5 gram).  
Aque sterilisatæ, . . . . . ʒss (45 gram).  
M. Sig.: Fifteen minims (one c.c.) to be injected hypodermically every day.

During the treatment the check on the elimination of chlorine by the sodium citrate is kept track of by regular examination of the urine. Extensive experimental observations and successful clinical trials are supplied by the authors as a basis for their recommendation of sodium citrate in pellagra.

**Treatment of Typhoid Fever.**—Pissavy, in *Bulletins et mémoires de la société médicale des hôpitaux de Paris*, February 11, 1915, points out the value of an icebag, kept constantly over the abdomen, in the treatment of typhoid fever where the customary cold bath treatment cannot be systematically applied. In a military hospital thirty-six out of 189 cases of typhoid fever were treated as follows: Icebag on the abdomen until return of temperature to normal; abundance of fluids; hexamethylenamine in a daily dose of twenty two and a half grains (1.5 gram), and camphorated oil and epinephrine when indicated. In these thirty-six cases the mortality was 8.4 per cent. In the remaining 153 cases, treated only by means of the ordinary measures, including cold sponging, cold pack, and cold baths (the latter being carried out only in so far as the facilities available permitted), the mortality was 16.9 per cent. The results of the icebag treatment are considered at least as good as those obtainable with systematic cold bathing. In contrast with the latter procedure, no contraindications to the icebag method exist. The icebag, provided its use is begun as soon as the patient is seen, renders the disease milder and generally prevents serious complications.

**Treatment of Poisoning by Mercury Bichloride.**—W. A. Hall, in the *Old Dominion Journal of Medicine and Surgery* for February, 1915, it is stated, recommends in corrosive sublimate poisoning gastric lavage, followed by the administration of egg albumin, which is to be removed soon after. The following solution is then to be given for every two grains (0.12 gram) of mercury bichloride which the patient is supposed to have taken:

R. Potassii iodid, . . . . . ʒi (30 gram).  
Quinine hydrochlorid, . . . . . ʒss (45 gram).  
Aque, . . . . . ʒss (45 gram).  
M. et f. solutio.



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CHARLES L. M. SAIGUS, M.D., LL.D., SC.D.

CHARLES WHITTEN, A.B., M.D.

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## NEW FOR PSYCHIATRIC CLINICS.

In the city of New York with its multitude of all kinds of clinics there is an astonishing scarcity of facilities for the treatment of mental disturbances. It is certainly not because there is a paucity of material to be treated at these clinics; on the contrary, the number of cases which could be benefited by clinical treatment is very large, and many could be found in the neurological clinics, already overburdened by the great hosts of patients not properly belonging there. There are very many reasons why the neurological clinic and the psychiatric clinic should not be combined in one, the chief being that mental patients require careful and prolonged observation, which is often impossible in crowded neurological clinics. It has long ago been pointed out that special mental clinics are greatly needed to aid in the prevention of insanity as well as for the after-care of patients who leave insane asylums.

No mental clinic at a private dispensary can be as efficient in that respect as a clinic established in connection with State hospitals for the insane. Such clinics should be maintained in large population centres and be administered by physicians who are the interns of the State hospitals for the insane. Their work should be under the supervision of the visiting physicians of the respective hospitals. By such an arrangement, very inexpensive and at the same

time very effective organization could be maintained. The beneficent results in the prevention of insanity and aftercare of persons discharged from the hospitals which would accrue from such a plan are manifest.

THE ROCKEFELLER COMMISSION ON  
HOOKWORM DISEASE.

The Rockefeller Sanitary Commission for the Eradication of Hookworm Disease has just issued its fifth annual and closing report, that for the year 1914. The report opens with a general summary of the work accomplished and proceeds to describe the activities and results by States; there are a number of maps and illustrations and the volume closes with the special report of the scientific secretary. The commission was organized five years ago to cooperate with the States in the cure and prevention of hookworm, acting, however, mainly as a directing agency with the following definite program: To demonstrate that the disease was a reality and a serious handicap; to make an infection survey that should give a trustworthy estimate of the degree of infection by counties and a sanitary survey to show the condition of soil pollution responsible; to conduct an intensive educational campaign; to help the practising physician to diagnose and treat the disease; to have medical schools provide definite instruction; to enlist the press of each State in the work as well as the public schools; to make definite reduction in the degree of infection, measurable increase in the sanitary index of infected areas, to make at least one complete community demonstration as a key to more extended operations, and, if possible, to lay the foundation of a State and local health service that should eventually take care of hookworm and other preventable diseases.

When the commission began its work, it found only a few physicians aware of the reality and menace of hookworm disease; most laymen regarded it as a myth. Since then the commission has examined 596 counties and 548,992 children, of whom thirty-nine per cent. were found to be infected. An average of 383 homes in each county was inspected annually, and the sanitary index was found to be 6.3 per cent. The system of dispensary campaigns inaugurated by the commission was a distinguished success, 1,087,666 persons having been examined and 440,376 treated, beside the many thousands benefited by lectures, demonstrations, pamphlets, etc. The medical profession has been reached by the State boards of health, by medical journals, and by special lectures. Medical schools have added instruction or improved what they had been giving. The work of enlisting the lay press was particularly

well done, and many papers which sneered openly when the commission began its work are now co-operating actively. The work in the public schools was also gratifying in its results, and sanitary privies have been ordered in many school houses. Special instruction in hookworm disease is now part of the curriculum in many schools in the infected area. The intensive community work is believed to have been most valuable, although it has not yielded an advance that can be easily measured and recorded; greatly improved, although by no means ideal privies have replaced the old dangerous type in numerous instances; but one hundred per cent. efficiency is demanded along this line. Finally, in the development of State and local health service the hopes of the founder of the commission seem to have been largely realized; eleven States report an expenditure of \$392,364 in 1914, an increase of eighty-one per cent. in five years. The chief purpose of the commission is apparently accomplished and, in the words of the report, the future for public health work seems bright.

#### MOMBURG'S ABDOMINAL TOURNIQUET.

No matter how innocent may be the aftereffects of Momburg's abdominal tourniquet in most cases, its action on the heart and blood pressure should cause this procedure to be absolutely rejected in every case in which ordinary means of temporary hemostasis are applicable. Its use in amputation of the thigh may render considerable service, but is not indispensable, as Wyeth's needles can very well be relied on for procuring absolute hemostasis. In operations for tuberculosis of the hip or osteomyelitic lesions of the pelvis, also interileoabdominal amputation, Momburg's procedure finds its application.

This method of hemostasis has been resorted to in operations on the perineum, such as perineal prostatectomy and traumatic rupture of the urethra. In the latter preventive hemostasis does not seem necessary unless the search for the upper end of the urethra is unusually difficult; therefore Momburg's procedure will be rarely resorted to. Operations on the rectum and the female organs of generation have frequently been a pretext for the application of the abdominal tourniquet, and it has given satisfaction in several cases of amputation of the rectum for carcinoma of the organ. In the domain of gynecology this method of temporary hemostasis has been employed in vaginal hysterectomy for fibroids or carcinoma or in abdominal hysterectomy for the latter affection. But it must be admitted that the use of this procedure in operations of this nature, leaving aside all its inherent

dangers, rather inspires one *a priori* with a certain apprehension.

In the first place, in abdominal hernia the band is in the operator's way and pushes down the intestinal mass into the lower abdomen, thus interfering decidedly with the field of operation. In vaginal hysterectomy Momburg's procedure appears to us not only useless but dangerous because it prevents the finding and ligature of numerous vessels which will later on give rise to hemorrhage after the abdominal constriction has been removed. The same objections are applicable in amputation of the rectum, and unless the patient is very weak and every drop of blood must be saved, it is more judicious to resort to the ordinary technic, particularly when the undoubted risks of the use of Momburg's tube are taken into consideration. In cases of acute intra-abdominal hemorrhage, if Momburg's tourniquet is applied, should the aorta escape the constriction, the intraabdominal hemorrhage would be naturally very greatly intensified.

Lastly, however, it may be said that in post partum hemorrhage from uterine inertia, the tourniquet has given some very excellent results.

#### A NEW THEORY OF THE CAUSE OF ENTEROSTASIS.

Since Lane first began to focus the attention of the medical profession on the importance of intestinal stasis and the occurrence of bands and kinks to account for its development, there has been an almost continuous controversy regarding the correctness of his mechanical theory. Some surgeons and radiologists have reported the constant presence of demonstrable mechanical obstruction in such cases, while others of equal ability have frequently reported obstruction in which there was no distinct mechanical factor at work. Arthur Keith (*Lancet*, August 21, 1915) now comes forth with an explanation of the mechanism of intestinal movements, which seems to account for the production of enterostasis upon a physiological basis.

In his histological studies of the mechanism of the heart beat, he investigated different portions of the intestine of various animals in the hope of finding the controlling mechanism of involuntary muscle. As a result of extensive research along these lines he seems to have been rewarded to the fullest extent by the discovery of a primitive tissue intermediate between nerve and muscular tissue and interposed between Auerbach's myenteric plexus and the smooth muscle of the intestinal wall. This intermediate tissue, consisting of branched cells which are in direct connection with both nervous and muscular elements, bears the same relation to the intes-

tinal musculature as the primitive nodes and conducting tissues of the heart bear to the auricular and ventricular muscular masses.

This tissue possesses two distinct functions; one, the initiation and regulation of the muscular contractions in the segment of the intestine which it controls; the other, the power of conducting impulses which lead to the forward propulsion of the intestinal contents. Notable collections of this "nodal and conducting" tissue were found in the region of the cardia of the stomach which initiated the movements of the stomach; near the ampulla of Vater which presided over the movements of the pylorus and upper duodenum; a lesser collection near the beginning of the jejunum which exercised the same function over the greater portion of the remaining small intestine; in the region of the ileocolic valve to control the lower ileum and proximal portion of the colon; and others in the transverse, descending, and iliac colon and in the rectum.

Not only do the anatomical site and the demonstrable physiological functions of these "nodes" explain the normal movements of the intestine, but it is obvious that a perversion of the function of any one of them is capable of giving rise to an inhibition of the forward progress of the intestinal contents with intestinal dilatation and stasis. The final step in the establishment of this as the physiological explanation of the mechanism of the production of enterostasis, was attained when Keith was able to demonstrate definite fibrotic and degenerative changes to be present in this nodal tissue in segments of the intestines removed by Lane and others for the relief of chronic intestinal stasis.

From his investigations Keith concludes that it is improbable that mechanical conditions or derangements of sphincteric action underlie the production of enterostasis, but that the true cause is the production of some "block" or disorder in the nodal and conducting system of the intestine analogous to heartblock and other similar disturbances of cardiac function. If Keith's conclusions are confirmed they bid fair to revolutionize our conceptions of motor disturbances of the alimentary canal and perhaps to open up entirely new fields of therapy.

#### PAN-AMERICANISM IN MEDICINE.

Among the resolutions adopted at the seventh Pan-American Medical Congress, held in San Francisco in June last, was one bearing on medical education which contains in it the germ of a most valuable idea. The resolution in question reads as follows:

*Resolved*, That the president of the Seventh Pan-American Medical Congress be and is hereby requested to

organize a Pan-American Committee on Medical Education, such committee to consist of one representative from each American country, the duty of which committee shall be, *a*, to investigate and report upon the status of medical education and medical practice in the different countries, and, *b*, the feasibility of a system of exchange professorships between American universities. The report of this committee is to be communicated ad interim through its individual members to the National medical organizations of their respective countries and a final report is to be submitted to the eighth Pan-American Medical Congress.

It is to be hoped that the Pan-American Committee on Medical Education, the appointment of which is provided for in this resolution, will prove an energetic and able body of men and will not be content with the merely formal discharge of the duties imposed by the resolution. No higher service could be done to the cause of medical education in America than that which is provided for here.

We in the United States are inclined to belittle the excellent work which has been done in some of the educational centres in South America, while our confrères to the south have exaggerated the value of European training and overlooked the excellent educational and clinical opportunities afforded in the United States. A series of adequate reports would command attention on account of the authoritative position occupied by the committee.

We feel confident that there will be little difficulty experienced in arranging for exchange professorships in a manner which would be advantageous alike to students, teachers, and the cause of medical education. Such a committee has it in its power to promote a Pan-Americanism in medicine which would be most beneficial.

#### CURATIVE VALUE OF IODINE.

Dr. Joseph William Gill has a letter in the *British Medical Journal* for August 21, 1915, in which he states that the practice in 1886, at the Middlesex Hospital, where he studied, was to use a weak solution of iodine to wash out the pleural cavity, sinuses, etc. At the Royal United Hospital, Bath, in 1883, he saw tincture of iodine used with absolutely sure curative results in ringworm and tinea kerion. Doctor Gill, for many years, has used liquor iodi fortior for cuts, scratches, etc., except in the neighborhood of the eye, and says he knows that repeated applications will cure housemaid's knee.

#### SUCCESSFUL TREATMENT OF UNDESCENDED TESTICLE.

In the *Medical Press and Circular* for August 4, 1915, H. Armstrong, of Wellington College, tells of his remarkable success in cases of undescended testicle in boys entering the college, simply by the administration of thyroid extract.

During the last four years, he writes, out of about



600 boys, of the age of thirteen to fourteen years, who have presented themselves for examination on entry, four have been found with complete absence of both testicles from the scrotum. In each case the penis was very small, and there was no appearance of hair upon the pubis. Two of them had Levi E. de Rothschild's sign of thyroid inadequacy—i. e., rarefaction of the outer third of the eyebrows. One boy was of the Mongolian type.

To each of them thyroid extract in half grain doses was administered twice a day over a considerable period, with satisfactory results. The effect of the treatment was almost immediately apparent; in a few weeks the testicles could be felt in the inguinal canal, and in three of them their complete descent into the scrotum was established in about three months. In the fourth, who is still under treatment, one testicle, the left, is completely and the other almost descended.

In the first instance the treatment was purely experimental, but it was so successful as to warrant its adoption in similar cases, the results of surgical interference being so highly unsatisfactory.

In the first two patients, who are now seventeen years of age, the growth of pubic or other body hair is still very scanty.

## DRUG ADDICTS IN THE UNITED STATES.

The figures given in a report on the number and kind of drug addicts in the United States presented at the recent meeting of the Pennsylvania Pharmaceutical Association show that many statements regarding the number of really habitual drug users are exaggerated. Even the most favorable view that can be taken of the situation is sufficiently distressing, but it is somewhat of a relief to find that instead of having two per cent. of the population, or 2,000,000 addicts to the use of opium and cocaine, there are probably not more than 200,000 who can be fairly termed habitual drug users. This was the estimate made by a committee of the American Pharmaceutical Association some years ago, and an analysis of available figures submitted by Mr. Wilbert indicates that this number is approximately correct even at the present time. Mr. Wilbert cites the report made by the City Health Inspector of Jacksonville, Fla., in 1914, which shows the origin of the habit in 213 cases studied personally by Inspector Terry. Of these 54.6 per cent. were said to have originated through prescriptions or personal treatment by physicians; 21.6 per cent. through the advice of acquaintances (for the most part themselves users), 21.2 per cent. through dissipation and evil companions, and 2.4 per cent. through chronic and incurable diseases. He agrees with both Brown and Terry that from ninety to ninety-five per cent. of victims use narcotics unnecessarily; that is, their lives would not be endangered by cessation.

## News Items.

**Laval University to Maintain a Hospital in France.**—The British war office has accepted the offer of Laval University, Quebec, to maintain a stationary hospital of 520 beds in France, or wherever it is most needed.

**A Fraudulent Subscription Agent.**—The war office with physicians against a man who represented himself as an agent of the Cornell Educational Association with authority to take money for subscriptions for the New York Medical Journal. He is a fraud. All our agents carry signed credentials, issued every month at two months. Any physician approached by this person would do us and the profession a favor by detaining him on some pretext until the police can be communicated with, by telephone or otherwise.

**Changes of Address.**—Dr. Jacob Diner, to 316 West Fifty-fourth Street, New York.

**An Addition to the Hospital of the University of Pennsylvania.**—An addition to the maternity department of this hospital is being built at a cost of \$150,000. It will furnish accommodations for forty-six patients.

**Cholera in Germany.**—According to reports received by the United States Public Health Service during the period from July 18th to 31st, 215 cases of cholera occurred among Russian soldiers in prison camps; during the same period 16 cases occurred among German soldiers in fifteen places.

**The Cholera Scare in Hoboken.**—The quarantine of the interned Hamburg-American liners was raised on Saturday, September 4th, by the health commissioner of Hoboken. The quarantine was ordered because it was thought that fifteen sailors who were taken ill suddenly had Asiatic cholera.

**A New Hospital Ship for St. John's Guild.**—Mrs. Helen C. Juilliard, of New York, has given to St. John's Guild a new hospital ship, which is now being built at a cost of \$100,000 and will be placed in commission next year. It will have five decks and accommodations for 400 patients. Electric lights, elevators, and many baths will be provided, and a heating system will be installed so that the hospital can be kept in service during the winter.

**Typhus Fever.**—The United States Public Health Service received, during the week ending August 27th, the following reports concerning the prevalence of typhus fever: In Budapest, 2 cases, 2 deaths; in Alexandria, Egypt, 15 cases, 5 deaths; in Glasgow, Scotland, one case; in Greece, 10 deaths; in Moscow, 10 cases, 2 deaths; in Petrograd, 3 cases. In Austria during the period from April 25th to May 22d there were reported 1,212 cases of typhus fever, mainly among soldiers, prisoners of war.

**Flies and Diarrheal Disease.**—The Bureau of Public Health and Hygiene of the New York Association for Improving the Condition of the Poor has issued a special publication entitled *Flies and Diarrheal Disease*, descriptive of its three months' study in the homes of over a thousand infants in New York city on the relation of flies and diarrheal disease. Special attention has been given such influencing factors as dirt and artificial feeding, and their relative importance determined. A full description of the study with its important conclusions may be obtained by request from the superintendent of the bureau, 105 East Twenty-second Street, New York.

**A New Hospital in England for Wounded Canadians.**—A site has been selected for the Ontario Government Hospital at Orpington, Kent, fifteen miles from London. The hospital will contain 1,040 beds, and will primarily be used for acute cases among the wounded men of the Canadian contingent, and provision will also be made, as far as circumstances allow, for convalescents and those suffering from shock. The building will be a substantial one, the cost of construction and equipment being borne by the Ontario Government, subject, on completion, to the grant made by the war office to hospitals on the recognized voluntary aid list. A beginning has been made, and the work will be pushed on without delay.

**Indiana to Investigate Causes of Mental Deficiency.**—A commission has been appointed by the governor of Indiana to investigate the causes and prevention of mental deficiency in that State. The following physicians are members of this commission: Dr. George F. Edenharter, superintendent of the Central Indiana State Hospital, Indianapolis; Dr. Samuel E. Smith, superintendent of the Eastern Indiana State Hospital, Richmond; Dr. Charles P. Emerson, dean of the Indiana University School of Medicine, Indianapolis; Dr. Walter C. Van Nuys, superintendent of the Indiana Village for Epileptics, Newcastle; and Dr. George S. Bliss, superintendent of the State School for Feeble-minded Youths, Fort Wayne.

*Resolved, a,* That this commission shall formulate rules for the exact and reliable conduct of its investigations, *b,* that its reports shall be published in the original language of the country of origin, *c,* that such reports shall be printed simultaneously in the Spanish, Portuguese, and English languages, *d,* that they shall be issued in bulletin form from time to time as may be justified by the progress of the work, *e,* that the publication of such bulletins be provided for by an international fund and *f,* that the publication and distribution of all bulletins and reports be intrusted to the Pan-American

**American Physicians Send Aid to Teutonic Armies.**—The American Physicians' Expeditions Committee, composed of Americans of German origin, has been incorporated, the object being "to equip and send to foreign countries and maintain therein surgical, medical, and other relief expeditions." The incorporation is the result of work that has been going on for several months for the purpose of forming a system that would send from America aid to the medical forces of the German army. Funds have been raised, elaborate plans made, and the assistance of the American Red Cross obtained. The first of the expeditions, sailed from New York last Thursday for Copenhagen, whence the members will proceed to Berlin and Vienna, to be sent to points at the front where they are most needed. It is said that the first unit consists of twenty persons, surgeons and nurses, all American citizens. Dr. Herman Fischer, who has been for years connected with the German Hospital, heads the initial expedition. The medical and surgical supplies will not go with the surgeons and nurses, but will be sent on a separate ship, under the supervision of the American Red Cross, and turned over to the expedition in Austria and Germany.

## Pith of Current Literature.

### CORRESPONDENZ-BLATT FÜR SCHWEIZER AERZTE

**Albuminuria in Healthy Soldiers.** by Max Laber and Paul Lauener.—Of five hundred and twenty-eight soldiers, fifty-six, or 10.6 per cent., had albuminuria. The amount of albumin was small in the great majority. To determine the influence of work and rest on the excretion of urine, the latter was examined immediately after work, and in the morning after a night's rest. It was found to be present in 11.5 per cent. after working, in 7.9 per cent. after rest. Of twenty-seven soldiers who had albuminuria after work, fifteen, or 55.5 per cent., did not have it in the morning, while the remainder, 44.4 per cent., had. This shows that bodily exertion plays some part in the origin of albuminuria, though it is certainly not the only cause. It was also found that the ratio of those who excreted albumin did not correspond to the bodily exertion; the nature of this exertion did not appear to be particularly important. The younger soldiers seemed to be the more subject. An albuminuria can be induced not only through lordosis in the upright position of the body, but also by standing with straight backs. The number affected and the quantity of the excreted albumin increased with the duration of the lordosis. Drilling and individual training were more active in exciting albuminuria than long marches.

### MEDIZINISCHE KLINIK.

August 1, 1915.

**Should One Diagnose Traumatic Neurosis in Military Accidents?** by M. Nonne.—The author concludes that the symptoms of a true neurosis are very seldom encountered. Such neuroses as are seen are most frequently local or general hysterias, neurasthenia, exhaustion neuroses, or combinations of these conditions. The condition arising from combinations of hysterical, neurasthenic, and hypochondriacal symptoms along with vasomotor anomalies should not be called a traumatic neurosis for the same picture often occurs without trauma. Grenade explosions are the commonest causes and the psychic shock is the most important factor. The sudden cure of these cases by suitable suggestive therapy is opposed to the view that there is any anatomical change in the central nervous system. Ideas of personal gain play no part in the acute development of the condition, but such ideas are important in fixing the condition as a chronic one which is very hard to influence. The prognosis is good, not only where there are no ideas of advantage to be gained held by the patient, but also where such ideas are present when they can be effectively removed.

**The Behavior of Freshly Regenerated Nerves,** by Paul Hoffmann.—It is possible by the percussion test to determine whether a sutured nerve is growing peripherally before either a sensory or motor recovery is discoverable. The percussion test consists in striking peripherally to the point of suture and over the course of the nerve, using a moderate blow with the extended finger. The blow should be

sharply localized and different points tested. When regeneration is progressing, the blow will be followed by a sensation on the part of the patient as of pricking or of foot asleep. Summation of stimuli seems to occur easily in newly regenerated nerves for several repeated blows will often be followed by the sensation when a single one is not, or will give rise to an increase in the intensity of the sensation produced. Instead of using a blow, the test may be made by firm pressure with the thumb on the point to be examined. The test can be used to measure the rate of regeneration in the nerve under observation, for it will be found to extend away from the blow to a distance corresponding to the advance in the new fibrils. A further use of the test is in the determination of the approximate site of a nerve injury, for after nearly every nerve injury there is some regeneration of fibres in the callus or scar tissue and these will give the typical response to the test.

**Anaphylactic Phenomena in the Symptom Complex of Hemicrania,** by F. Rohrer.—A detailed record of a case of hemicrania is set forth, the essential features being that the patient was a young, apparently healthy man who had had recurrent attacks for a number of years and whose mother had suffered from a somewhat similar condition. The attacks came at irregular intervals, with intervening periods of normal health. Each attack was marked by a flame scotoma, nausea, sometimes vomiting, sweating, intense pain in the orbital regions, and hypersensitiveness to light. A careful study of the case led the author to the conclusion that the underlying cause was in the nature of an anaphylactic phenomenon which had its chief point of attack in the cortical regions of the brain in which the visual centres lay. He conceived it to be due to a local cellular hypersensitiveness and the intervals of freedom between attacks were thought to be occupied by the development of the antigen in the body of the patient.

### BULLETIN DE L'ACADÉMIE DE MEDECINE.

Volume 200, 1915.

**Heteroplastic Repair of Cranial Deficiencies in Military Practice,** by Paul Reynier.—Reference is made to cases in which a certain area of the bony cranium has been lost through injury by a shell or bullet, and the underlying brain tissue, poorly protected by the soft coverings, tends to form a hernia and pulsates under the skin. In such cases dizziness is complained of on the least exertion or stooping over, and headache, coming on especially in the evening, is experienced. Striking improvement in these symptoms is caused by exerting slight pressure on the tissues tending to protrude. Permanent relief through the introduction of a bony layer level with the surrounding cranial surface was therefore sought by the author. Autoplasty being not often practicable and metallic or celluloid plates sometimes badly borne, Reynier determined, in a case recently under his care, to close the opening in the left frontal region by heteroplasty. The superficial coverings were separated from a fibrous layer found over the brain substance, and a piece three cm. in diameter, with its periosteum, cut from the scapula of a rabbit and placed in the cranial opening, its peri-



osteum being sutured to that of the margins of the opening. A linear opening for escape of fluids was closed to prevent the integument then closed over the transplanted bone. Rapid healing took place, and two months after the operation, the transplant was still firmly in position. The patient's symptoms had disappeared, and he was soon to be sent back to the front. A like procedure in all similar cases is recommended.

**Typhoid Fever in Vaccinated Subjects**, by H. Boerge. — Among 550 cases of typhoid fever treated at the naval hospital at Brest, fifty-three were in subjects previously vaccinated against this disease. Confirmation of the clinical diagnosis was obtained by bacteriological or pathological examination in only thirty-two, and the author's contribution is based upon these. Five of the thirty-two cases were fatal, but one of these had received but one preventive injection and is therefore excluded. Thirty cases had received from two to five injections, and of these four were fatal—a mortality of 13.3 per cent. Malignant diphtheria followed by bronchopneumonia had been, however, the apparent cause of death in one case, and staphylococcal meningitis followed by intense congestion of both lungs, in the other. Excluding these two, the mortality actually due to typhoid infection would be reduced to 6.6 per cent., whereas in the aggregate of unvaccinated cases it had been 15.2 per cent. From these observations it is concluded that whereas antityphoid vaccination confers immunity in most cases, insufficiency of immunization may occur in a certain number. This insufficiency is shown by the advent, at some period after the vaccination, of a typhoid infection which is generally mild, but at times severe. The symptomatology and course of these cases at times closely resemble ordinary typhoid, but other instances the symptoms are characterized by an irregular type of fever. Complications are rather infrequent. The time and number of the preventive injections have no influence on the severity or course of the disease. The precise causes of the depreciation of immunity noted in certain cases cannot now be stated.

#### RIFORMA MEDICA.

**Chorioepithelioma and Infiltrating Mole**, by S. Cappellani. — In these conditions attention is attracted by a special form of cachexia characterized by a high grade of progressive anemia out of proportion to the loss of blood and by a startling waxy tint of the skin. This anemia denotes either an alteration in the blood itself or special lesions in the blood forming organs. Pestalozza says that it cannot be denied that the presence of chorioepithelioma alters the blood crasis. Cappellani has seen three cases in the past year, one of which he reports in detail, showing at first a grave metaplastic anemia which four months after operation had become a simple orthoplastic oligemia. As in true blastomas such as sarcoma and carcinoma there are evidently in chorioepithelioma grave blood lesions with inhibition of the myeloid tissues probably from absorption of toxic products into the circulation.

**Carcinoma and Sarcoma of the Rectum**, by P. Marogna. — In reporting eight cases, Marogna

agrees with Zimmer that it is impossible to establish a relation between the variety of carcinoma and its malignancy—also that cylindrical carcinomata are of four main groups: 1. Adenocarcinoma; 2, solid tumors which may take the type of adenocarcinoma; 3, infiltrating, and, 4, mixed. An exhaustive review of the literature is given with a comparison of the operative measures.

#### BRITISH MEDICAL JOURNAL.

August 2, 1913.

**Influence of Intravenous Injections of Neosalvarsan on the Arterial Blood Pressure**, by H. D. Rolleston. — One hundred patients were examined; practically all had syphilis in the secondary stage, being nearly twenty to thirty years of age. The systolic and diastolic pressures were taken before and for several days after the injection, at the same hour of the day, and by the same observer. In some cases they were also read during the injection and seven hours afterward. It was found that in the majority of cases, the systolic and diastolic pressures were both lower on the days following the injection than on those preceding it. The fall was slight and was probably not due solely to the drug, but rested in part on the fact that the patients were kept at rest in bed following the injections. Both systolic and diastolic pressures were also usually lower seven hours after the injection than before it, the fall in the diastolic being a little less than in the systolic. The fall could not be attributed to the occurrence of fever. The average of both blood pressures taken for several days after the injection was usually a little lower than for those taken seven hours after the injection. Both pressures were found to be higher in nearly all cases when taken during the injection than at any other time; the systolic pressure during injection often showed considerable fluctuations. The rise in the blood pressures during injection was probably largely due to excitement. Where two injections were given at a considerable interval of time the blood pressure before the first was found to be generally higher than before the second, possibly also due to the difference in mental excitement. It is obvious from this investigation that the general effect of the intravenous injection of neosalvarsan is rather to lower than to raise the general blood pressure.

**Our Present Position with Regard to the Prescription of Proprietary Foods in Infant Feeding**, by Hector Charles Cameron. — Some form of cow's milk is regarded by the author as the standard artificial diet for infants and it does not matter greatly what form of cow's milk is employed, fresh, condensed, or powdered, as the infant will show fairly normal growth and development on any form if adapted to his digestive capacities. In nearly any case there will be one or more evidences to the critical eye of relatively slight deviations from the normal of breast fed infants, but none of these is serious compared with the disturbances which ensue from the use of high percentages of sugars and starches as they occur in all artificial infant foods. The proprietary infant foods undoubtedly have a certain limited field of usefulness as therapeutic diets to be given over short periods of time and for

definite indications. Malt soup or dextrinized flour is the chief constituent in all of these foods and, aside from their detrimental effects if used over long periods of time, their undue cost is a factor of great importance, particularly among the poor. In addition to these objections there may be mentioned the misleading character of their advertisements and the fact that they are very commonly given by mothers without medical direction on the belief that they are proper foods. Recognizing the dangers just mentioned and the legitimate utility of malt and dextrin preparations as therapeutic measures to be given under the direction of the physician, Cameron suggests that a pharmacopoeial preparation of each be made official and dispensed at a low cost only on the prescription of the medical attendant.

**Causes and Treatment of Severe Pruritus ani**, by P. Lockhart Mummery.—Severe constant or paroxysmal forms are alone considered, and it is held by the author that in such cases there is a fibrosis of the nerve terminations supplying the skin areas affected. This is probably secondary to the traumatism of constant scratching. The medical or surgical relief of all local contributing factors such as fissure, fistula, etc., has proved to be a failure in chronic cases. The only satisfactory method of treatment is Ball's operation of careful and complete division of all of the nerves passing to the skin affected.

#### LANCET.

August 21, 1915.

**Some Notes on the Bacteriology of Gas Gangrene**, by Alexander Fleming.—In a series of thirty-two cases of gas gangrene, *Bacillus aerogenes capsulatus* was uniformly present and the bacillus of malignant edema was never found. Along with the bacillus aerogenes other organisms were almost always present, the commonest being the streptococcus. All the wounds with gas gangrene occurred in the extremities and all were such as showed deficient drainage so that there was a nidus in which a gross local infection could develop. Aerogenes was found in large numbers in amputated extremities at some distances from the wounds and especially in the fascial planes. Considerable phagocytosis was almost always present; there seems to be normally present in the blood a considerable amount of opsonin toward this organism. This accounts for the fact that the disease does not develop in wounds which drain freely and which therefore do not afford an opportunity for the excessive multiplication of the organism and its overpowering of the normal defenses. The symbiosis of *Bacillus aerogenes capsulatus* with the staphylococcus, streptococcus, or proteus leads to an increased rapidity of gas formation and the production of a larger amount of gas than occurs when the aerogenes is grown alone. Aside from the provision of free drainage in the treatment of gas gangrene, or its prevention, it is suggested that the early administration of a vaccine containing the aerogenes and streptococci might result in a temporary increase in the powers of resistance sufficient to prevent the spread of the organism into the tissues. Such a vaccine would seem to be perfectly safe, as

large doses of aerogenes vaccine give no reaction and are not followed by any negative phase.

**Bacteriology of the Peritoneal Exudate in Perforation of the Stomach and Duodenum**, by Leonard S. Dudgeon and B. C. Maybury.—A study of twenty-three cases showed an absence of bacteria in thirteen and the presence of streptodiplococci in ten. In two of the ten, bacilli were also found. In both cases the bacilli were of the colon group and both cases terminated fatally. The streptodiplococcus is described and experiments are reported to determine its pathogenicity for the rabbit, mouse and guineapig. It was invariably found not to be pathogenic for any of these laboratory animals and, in addition, proved not to be hemolytic for human red cells. In previous work, Dudgeon and Sargent found a similar organism in several cases of gastric and duodenal ulcer in the walls of the lesion. The origin of the organisms is believed to be from the food ingested, as the frequent negative findings in this investigation seem to confirm those of Cushing and Livingood, who found the empty stomach and duodenum almost invariably free from living organisms.

**A New Sign and Its Value in the Diagnosis of Pulmonary Tuberculosis**, by Clive Riviere.—Characteristic bands of impaired resonance to light percussion are present in pulmonary tuberculosis and are constant in position, size, and shape. They are present over both lungs. These bands can be found before any other demonstrable sign of tuberculosis and persist throughout the disease. They are not referable to the presence of tuberculous deposits in the underlying portions of the lungs, but are due to a pulmonary reflex arising from parenchymatous inflammation of the lung tissue. Their reflex nature explains their constant site, size, and shape, as well as the fact that they occasionally are encountered in nontuberculous inflammations of the lungs, particularly bronchopneumonia. The fact that they are of reflex origin also explains their appearance before all other signs of lung involvement. They are absent in health and in all forms of catarrhal disease of the bronchi and lungs. It is possible by a sharp blow on the chest below either clavicle to induce the temporary appearance of these reflex bands of impaired resonance in normal healthy persons. The lower band extends across both sides of the posterior chest between the levels of the fifth and seventh dorsal spines, and is usually more marked on the diseased side than on the healthy one. The upper zone lies above the level of the interval between the first and second dorsal spines. Very light percussion with the pleximeter finger held transversely across the chest will bring out the change in resonance, and percussion should proceed from the resonant areas to the areas of impairment. In doubtful cases the breath should be held during percussion in a position midway between inspiration and expiration. Some increase in the definition of the zones can be secured by brisk skin friction in doubtful cases. The zones are present only when the tuberculous process is active and disappear when the process is cured. They therefore constitute, not only an accurate means of very early diagnosis, but also a means of accurately determining when a cure has resulted.

## BOSTON MEDICAL AND SURGICAL JOURNAL

**Digitalis in the Various Forms of Cardiac Arrhythmia**, by Henry A. Osterman.—The following is a summary of Christian's views: "If you use a single digitalis preparation which you know to be active by mouth, and use it in a dose which you have learned to be effective, it seems to me you have solved the problem for all cases, except those requiring intravenous or subcutaneous digitalis therapy, and these latter are few. If, in addition, you have chosen a potent preparation for these occasional requirements, it seems to me you are in a position to toss into the waste basket all samples and literature on improved preparations of digitalis. You can reduce it to two forms, one for mouth use and one for intravenous use, and get as good results as any of your colleagues if you select the suitable type of case in which to push your digitalis therapy. One good preparation for mouth use, with common sense and a knowledge of cardiac pathology and physiology, will suffice for the successful treatment of most of your cardiac cases."

**The Relationship of the Abnormal Heart Beat to Prognosis**, by Paul Dudley White.—Of disturbances of the rhythm of the heart beat, auricular fibrillation and auricular flutter have the gravest prognosis, for these conditions are not only indexes of myocardial damage, but themselves increase the difficulty of the circulation by their rapid driving of the heart, yet some patients live long. Premature beats and paroxysmal tachycardia are compatible with a long and active life, but their frequent association with cardiac damage should lead one to be cautious in prognosis. Permanent damage to the atrioventricular bundle of His or its branches is evidence of widespread damage to the myocardium. Defective contraction of the heart has a prognosis dependent on the number and degree of its symptoms and signs, plus a consideration of similar trouble in the past and of the way in which the heart responds to rest and digitalis. Of all the individual signs of abnormal contracting power of the heart, pulsus alternans is one of the most important and consistent.

**Treatment of Heart Disease**, by F. C. Shattuck.—We rarely treat heart disease. We may use salicylates in rheumatic endocarditis, potassium iodide for a syphilitic heart, or rest and time for a weak heart, but aside from these cases we usually treat patients who have diseased hearts. If compensation is good and the lesion apparently not progressive, the patient should live so as to maintain myocardial nutrition. He is more likely to do this if he knows why, so it is usually best to be frank and to tell him when his heart is affected. When compensation is inadequate the patient appreciates better his need of help. The major marks of myocardial failure are edema, pain and shortness of breath. To meet the edema, we reduce the load of the heart, mainly by rest, or stimulate its power. When the right ventricle is greatly overdistended, venesection up to a pint or more may have an almost miraculous effect, and this may pave the way for digitalis, which would be of no use until the right ventricle was relieved. A patient subject to angina should never be without

a nitrite ready for use, but the all important therapy is a regulation of the mode of life. The innocent and the grave cases vary more in prognosis than in treatment. Every effort should be made to avoid bringing on pain. Sometimes it is well to put the patient to bed for a week or two. Usually it is enough to limit activity to that which is compatible with comfort. The details of medicinal treatment depend on the origin of the angina. We can add years of comfort and activity to life by inducing patients to adapt their lives to their powers.

## JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

August 28, 1918.

**Chronic Intestinal Stasis with Infection from a Surgical Point of View**, by W. B. Russ.—Even in the presence of gross abnormalities, the colon and ileum may fulfill all reasonable needs from the point of view of functional usefulness, and constipation, *per se*, does not seem to make the patient ill, although it predisposes to infection of the intestinal canal. The results of the dragging of a displaced and overloaded colon and terminal ileum have probably been grossly exaggerated, because the weight of the abdominal viscera is not supported by their mesenteric attachments. By braces, posturing, massage, exercise, stimulation, bathing, diet, etc., the majority of these patients, even many of the apparently hopeless ones, can be made comparatively strong and vigorous. Psychotherapy and mental encouragement are also required. It is only the neurotic and viscerotopic patients who require surgical treatment—those who under the most favorable conditions cannot withstand the ordinary wear and tear of life. For all of the others with few exceptions proper medical treatment is all that should ever be employed, and the practice of short circuiting and removing the colons of such patients should be regarded as a temporary and dangerous fad.

**Ileocolostomy and Colectomy for Arthritis deformans**, by Rea Smith.—In eighteen cases of arthritis deformans, marked ileac stasis was found by fluoroscopic examination, usually associated with dilated and prolapsed cecum and colonic stasis. On the hypothesis that the joint condition was due to the spread of organisms from the diseased intestine and the knowledge that the terminal ileum is the natural habitat of *Streptococcus viridans*, fourteen of these cases were operated in. From three cultures were taken and the intestine yielded *Streptococcus viridans* in all; while cultures from the walls of three other colons removed for other causes showed no viridans. In some of the cases ileocolostomy gave satisfactory results, while in others there was a recurrence of the arthritis and the colon had subsequently to be removed. In ten of the cases the patients have been cured or greatly relieved and their arthritis arrested. One of the patients died and the remaining three of those operated upon have relapsed and will have to have their colons removed.

**Plasma and Blood Volume in Pregnancy**, by J. R. Miller, N. M. Keith and L. G. Rowntree.—A new method of performing the test by means of a dye is outlined. It consists of the intravenous injection of vital red, a nontoxic and slowly absorbable dye, and the subsequent colorimetric determina-



tion of its concentration in the plasma by comparison with a standard mixture of the dye and plasma. This gives the total plasma volume, and the hematocrit can be used to supplement it and give the total blood volume. Determinations were made in thirteen women, and they seemed to show an absolute as well as a relative increase in the plasma volume late in pregnancy and a decrease in the puerperium. The plethora seemed to be a serious one, for the volume of the red blood cells was below normal during pregnancy. The total blood volume was increased in pregnancy, a fact which has some bearing on the observation that women stand the loss of large amounts of blood in labor better than under other conditions. Where there was no excessive hemorrhage, the blood volume returned to normal slowly after delivery. The dye was found not to pass through the placenta.

**Etiology and Treatment of Ozena**, by Henry Horn.—Working with the methods of Hofer and using some of his strains, Horn experimentally confirmed the fact that ozena is usually due to an infection with *Coccobacillus fetidus ozenæ* of Perez. There was evidence, however, that other organisms commonly present in the nose might in some cases play an important part in the production and maintenance of the disease. The use of mixed vaccines made from several strains of the specific organism usually gave excellent results, but it was necessary at times to use in addition vaccines made from the other organisms isolated from the nose.

**A New Method for the Prophylactic Application of Tetanus Antitoxin**, by H. E. Robertson.—The antitoxin is absorbed in measured amounts in weighed pieces of cotton, on which it is dried. The cotton can then be divided into pieces corresponding to the contained units of antitoxin. For use it is to be applied at once to the fresh wound. If the wound contains dried or clotted blood this should be removed or the cotton moistened before application. Animal experiments have proved the effectiveness of this method of application as a prophylactic.

#### MEDICAL RECORD.

August 28, 1915.

**A Rational Method of Treating Lobar Pneumonia**, by Edward E. Cornwall.—A series of 133 cases is reviewed in which Cornwall's treatment was used. Its features are a special fluid diet containing less proteid than the minimum health ration, avoidance of purgatives, the giving of heart stimulants according to a definite plan, avoidance of symptomatic treatment which might increase difficulties in other directions. The diet during the febrile stage and for three days after the crisis consists of milk and barley water, orangeade, with ten grains of calcium chloride every four hours. The bowel problem is simplified by this diet which provides less culture medium for putrefactive bacteria and therefore there is less toxic material to be absorbed. In the early stage castor oil may be given to move the bowels, but later only soapsuds enemas are used and salines never administered. Heart stimulants are withheld in the young or middle aged until evidence of heart strain appears, which is seldom later than the fourth day, when strychnine sulphate one sixtieth grain is given every four hours.

To this it may be necessary to add tincture of strophanthus one and one half to two and one half minims every four hours. Seldom does a patient need more than grain one thirtieth of strychnine with two and one half minims of tincture of strophanthus and two grains of caffeine every four hours. In the aged and alcoholics, whisky or brandy is given throughout. Things avoided are saline purgation, antipyretics, diuretics, expectorants, cold draughts and alleged specific drugs. In the 133 cases observed, defervescence occurred by crisis in sixty-four and by lysis in thirty-nine; the mortality was 10.5 per cent.

**Chronic Appendicitis; Relation to Cardiospasm and Other Neurospasms**, by T. A. Kenefick.—There seems to be a definite connection between chronic appendicitis and spasm, especially of unstriped muscle. Three cases are reported, one of false angina in a man aged fifty years, one of esophageal spasm in a woman aged forty-five years, and the third of reversed peristalsis of the stomach and esophagus in a girl aged twenty-two years, in all of which a chronic appendicitis was proved to be the exciting cause. Two of these patients were operated upon and a diseased appendix was removed, and the third, while declining operation, showed a distorted and kinked appendix by x ray. This irritation or traction spasm originates at some attachment of the appendix to a branch of the mesenteric plexus. It may go through the hepatic plexus, the right gastroepiploic plexus or the plexus gastrolinalis. Afferent impulses in general pass from an inflamed appendix to the mesenteric ganglia, suprarenal ganglia, and the vagus to the medulla and cortex independent of the spinal centres.

**Chemical and Pathological Observations in a Case of Mercury Poisoning**, by Max Kahn, Vernon Andrews, and J. H. Anderson.—An autopsy on a patient who had taken between twenty-five and fifty grams of bichloride of mercury showed that the liver, the intestines and the brain contained the bulk of the poison. The large amount of mercury recovered from washings of the colon seems to indicate that these washings should be resorted to in every case. The blood findings in the case during the few days that the patient survived were very interesting. The red cell count was 7,570,000, the white cell count 27,100, and the hemoglobin was 137 per cent.

#### AMERICAN JOURNAL OF THE MEDICAL SCIENCES

August 1915.

**Raynaud's Syndrome; Raynaud's Disease**, by Oliver T. Osborne.—Raynaud's disease is a syndrome caused by the disturbance of one or more of the internal glands, rather than a distinct entity. There is primarily no real disease of the blood-vessels, but the vasomotor control is disturbed so abnormally that most profound contraction of certain bloodvessels may occur in different parts of the body, perhaps more or less coincidentally with an abnormal dilatation of other vessels. If the contracted vessels are peripheral, the parts lose their functions more or less and show various trophic disturbances. The spasm of the bloodvessels may occur in the internal organs of the body as well as peripherally, though this is more rarely observed.

difficult of diagnosis. The syndrome is probably due to disturbances of more than one of the ductless glands, but there always seems to be some disturbance of the thyroid, perhaps a diminution of its vasodilator substance. Thyroid treatment when judiciously applied, improves the majority of cases, perhaps all, and cures some. Nitroglycerin is always of temporary benefit, and so is local heat.

**Syphilis in Hypertensive Cardiovascular Disease.** by Henry Wassermann, M.D. Syphilis is the underlying or basic factor in many more of these cases than has been realized hitherto. Ninety per cent. of the fifty individuals studied gave either a positive Wassermann or luetin test, were known to have had the disease, or had children with hereditary syphilis. Nineteen were from cardiovascular families; in seventeen of these one test or the other was positive. This suggests the existence of what might be termed familial cardiovascular syphilis. Hypertensive disease seems to be one of the most common, possibly the most frequent, of the so called late manifestations of hereditary syphilis. Apoplexy and sudden cardiac death, occurring in middle life, Stoll considers to be due almost always to syphilis, which cannot be considered a negligible factor even in the aged. When a person dies in middle life from cardiovascular renal disease the other members of his family should be tested for syphilis, as they are often infected. Specific treatment has given satisfactory results in a few cases, for the most part of individuals whose systolic pressure was under 200. The careful administration of mercury over a period of several months has not appeared to be injurious to the kidney, even when there was considerable reduction of phthalein output, and in a few instances the function of the kidney was increased. The luetin test is often of more value than the most sensitive Wassermann in detecting these late manifestations of syphilis, especially if the disease is activated by a week of mixed treatment.

**Certain Physical Signs Referable to the Diaphragm and Their Importance to Diagnosis,** by Richard Dexter.—Inflammation or irritation of the pleural or peritoneal surface of the diaphragm does not give rise to local symptoms. The pain resulting from such processes is referred upward along the phrenic nerves to the third or fourth cervical segments, or downward along the sixth to the twelfth intercostals into the lower dorsal segments. The pain is usually accompanied by tenderness and hyperesthesia or hyperalgesia of the skin. The recognition and interpretation of these signs may be of considerable importance in differential diagnosis between intrathoracic or intraperitoneal disease, in the absence of any signs in the lungs. When a part or the whole of the diaphragm is forced downward, the contraction of the diaphragm exerts a more powerful inward pull along the line of its attachments, which is particularly marked when the anterior portion of the diaphragm is depressed. This results in a lessening of the outward excursion of the subcostal angle, or in actual retraction along the line of attachment. Any condition which lifts the diaphragm upward, lessens the strength of the inward pull when it contracts, so that the normal outward movement of the costal margins is increased. Hence the presence of a retraction, or of

an abnormal outward flaring of the subcostal angle often is of aid in the differentiation of obscure diseases of the viscera that lie just above or below the diaphragm.

**Recurrent Pneumothorax,** by Clyde L. Cummer.—So few data are at hand that conclusions in regard to the etiology of recurrent pneumothorax can hardly be drawn, but it is reasonable to suppose it to be the same as that of spontaneous pneumothorax. In the case reported the writer thinks that the cause was a dormant tuberculous infection, a view that was supported by the existence of apparently healed foci, shown by a röntgenograph, by slight though definite physical signs at one apex, and a transitory dry pleurisy, but not borne out by the continued good health of the patient. He suggests that it is possible that the pneumothorax served as a therapeutic measure and retarded the flaring up of a slight tuberculous focus.

#### JOURNAL OF NERVOUS AND MENTAL DISEASE

June 1915, 1:15

**Mental Disease and Language,** by William McDonald.—The vocabulary would appear to be not a negligible quantity in the diagnosis of organic brain disease. The degree of loss from the word treasury, the changes in the use and the variety of the different parts of speech, and especially the degree of preservation of the normal balance between the noun adjective group and the verb adverb group, are matters to be taken into account when diagnosis is difficult. The writer states that these pathological features may be so pronounced that merely careful attention to a few sentences from the patient may suffice for a diagnosis of brain disease.

### Proceedings of Societies.

#### NEW YORK ACADEMY OF MEDICINE.

SECTION IN GENITOURINARY SURGERY.

*Regular Meeting, Held May 19, 1915.*

Dr. LEO BUERGER, President, in the Chair.

(Continued from page 538.)

**Tumor of Inguinal Region.**—Doctor STEVENS presented a patient, who two years ago had an accident which injured his thorax and leg, but he apparently recovered easily; he gave no history of having had any other trouble of the left leg or foot nor of the scrotum. Two years ago he first felt a little lump in the left groin, a little within the middle of Poupart's ligament. According to his history, he was under the care of a good man for a portion of the time, but no conclusion was reached as to the nature of the growth. Five weeks ago he came to Bellevue Hospital with a mass almost as large as a fist in the groin. At first it was thought it might be a bubo, but there was no source of such infection in the history or examination. The Wassermann reaction was negative, so a probable diagnosis of sarcoma was made. Four weeks ago an operation was performed and the mass was removed. It was deeply situated, hugged the femoral vessels tightly, and was adherent to the pubic bone

for an inch and a half, so that there was some difficulty in removing it. It was thought to be a sarcoma, but the pathologist reported that it was an epithelioma. There were very definite pearls. When the pathologist was told the region from which the growth was removed, and that no evidence of prior growth had been found, he was very much astonished and somewhat incredulous until he had looked at the case himself. He then examined the specimen again, but said the histological diagnosis was correct. Another careful examination of the patient was made with negative results. So far as the finger went, the prostate and rectum were normal. Doctor Stevens had not before seen such a case, where the source of the growth was a complete mystery. The patient had not lost any weight; if it was a secondary growth, he would have lost a great deal of weight.

**Cystic Kidney.**—Doctor STEVENS also presented a man, forty years of age, who during the past fifteen to eighteen years had suffered occasional attacks of pain in the left kidney, accompanied by bleeding, the attacks coming at intervals of two to six months. At times the pain was so intense that morphine was required and he had to go to bed. The main interest of the case lay in the specimens presented. The man had a slight infection of the right kidney, and a more marked infection of the left one; the function of the right kidney was three and a half times that of the left. It was not a very promising case, but it seemed justifiable to take out the kidney. The left kidney was palpable, not the right. There was no thought of a cystic kidney until the patient was operated upon, and although cystic kidneys are not usually removed there seemed sufficient cause for this procedure in the pain and trouble which the patient had suffered, so it was taken out and he had been well since. The operation was performed a year ago, and the subsequent clinical course had justified the removal of the kidney.

Doctor MACKENZIE had operated on a patient a week before for inguinal adenitis and took out several glands the size of the end of the thumb, and some a trifle smaller. They were encapsulated and easily enucleated. He had, however, just received the report from one pathologist that it was round celled sarcoma; from another, that it was a secondary epithelial tumor. The duration of the condition was six weeks, and the patient had lost ten pounds.

Dr. C. G. BANDLER, referring to the case of tumor of the inguinal region, said that he had treated a patient in Bellevue Hospital with a tumor of the femoral region of six months' duration, which had increased very much in size during that time. The man gave a very unsatisfactory history, but stated definitely that he had had an injury to his heel, followed by swelling in the femoral region. A diagnosis of femoral adenitis was made, and the house surgeon was instructed to remove the infected nodes. He removed the entire mass, and no other elements, apparently, were involved. The specimens were sent to the laboratory, and were reported to be melanosarcoma. Subsequently a section was made in the heel, and some melanotic material was found under the skin. Neither in the eye grounds

nor in any other portion of the body was there any evidence of similar growth.

Doctor BEER said that bilateral cystic condition was one of the most difficult conditions to recognize. He had opportunity of seeing and operating upon a number of these polycystic kidneys; and told of a case in private practice recently which reached a tragic conclusion and was a terrific surprise to him. The patient came to him, apparently in perfect health, and with no evidence of being uremic. A medical consultant also had no idea of such a condition. A diagnosis of malignant tumor was made, and about ten days later the man came to the hospital for a nephrectomy. The fact that the patient wanted to be rushed through, was the only excuse for not doing the routine study. On cystoscopy nothing came out of the kidney that was diseased so that the patient was living on the opposite organ. Doctor Beer suspected that this was due to inhibition of the other kidney, as the diseased kidney was not secreting. The enormous tumor was exposed and found to be a congenital cystic organ. The superficial cysts were punctured and the wound closed. Blood taken at commencement of operation showed six times the normal amount of urea. The patient died in forty-eight hours of uremia.

Doctor MACKENZIE said that last fall a man come to the Cornell Clinic complaining of passing bloody urine, with masses in both hypochondriac regions. Intramuscular phthalein only gave a trace in four hours, and a cystoscopy showed low urea output for both sides, with only a faint trace of phenosulphonaphthalein (given intramuscularly) for each kidney, in twenty minutes. Forty-eight hours later, while he was waiting on one of the other patients in the ward, he dropped on the floor, dead. Both kidneys were cystic. Autopsy showed hydronephrotic kidneys, with several stones in one. No cortical tissue was evident.

Doctor PEDERSEN told of a case in the service of Doctor Weir at the New York Hospital while he was house surgeon, of a patient who had been referred from the outpatient department. To all appearances the man was in good health. At that time there were no such tests as they had today; the kidney was exposed and found to be polycystic. At the operation Doctor Weir said that very likely the other kidney was in the same condition, but that he would have to take out the diseased one. The kidney was removed and the man died of uremia during the next forty-eight hours much as Doctor Beer's patient had died.

**Ureteral Stone with Unusual Features.**—Dr. EDWIN BEER presented the patient, a girl, fourteen years of age, who gave a history of pain in the right lumbar region and occasional pain on urination, the onset of the trouble dating from three months before admission. There had been no hematuria, pyuria, or unusual frequency. Examination revealed slight tenderness in the lower part of the right iliac fossa. Repeated examinations of the urine revealed no red cells. March 29 she was cystoscoped; there was no indigocarmine from right kidney in thirty minutes; fair indigocarmine from left kidney in twenty minutes. The catheter was obstructed temporarily at 2.5 cm. in the right ureter,



and then entered to higher level; the left ureter was easily catheterized. Right kidney: urea, 0.7 per cent., red cells and epithelial cells; left kidney: urea, 0.7 per cent., red cells and epithelial cells; phenol-sulphonephthalein test, forty-five per cent.

The x ray picture showed two sharp shadows in the right pelvis, in the region of the ureter. Owing to the peculiar excretion of the right kidney—no indigocarmine, while urea was equal to the other kidney—another cystoscopy was performed. Slight obstruction was encountered in the right ureter at three cm., but was readily passed. Again, no indigocarmine in thirty minutes from right kidney, while a good excretion was seen from the left kidney in fifteen minutes. Right kidney: urea, 1.1 per cent., hyalogramular casts, white and red cells; left kidney: urea, 0.9 per cent., hyalogramular casts, white and red cells. In this test a similar relation between excretion of urea and indigocarmine was noted, and to make sure that the shadows were in the ureter an argyrol ureterograph was taken. This showed the dilated ureter and suspected stone shadows were

On March 31st, an operation was performed through the right outer rectus muscle, and the dilated ureter was exposed. The appendix was felt and drawn out through a small peritoneal incision and removed. Then a small incision was made in the ureter and two calculi were removed with the Mayo forceps, without dissecting free the inflamed ureter. The ureter was then probed and found to be empty. The small incision in the ureter was closed, and a rubber drain was left in, to site of ureter. The rest of the wound was closed. The patient made an uneventful recovery, and was discharged on April 11th. Chemical examinations of calculus showed calcium oxalate and magnesium phosphate.

The points of interest in the case were, 1, absence of indigocarmine and the high urea output; 2, the absence of red blood cells in three examinations, though two stones were in the ureter; 3, easy passage past stones with ureter catheter; 4, great value of ureterograph; 5, the ready delivery of the stones with the forceps without dissecting the ureter free from periuterine adhesions down to the bladder.

**Tuberculoma of Kidney.**—Dr. EDWIN BEER also presented this patient, forty years of age, a Russian cigar maker. In January, 1914, he had a prostatic abscess. On February 12th, he was admitted to the hospital, with the abscess still discharging, and with a large tumor in the right hypochondrium, which the x ray showed to be a very much enlarged right kidney. An argyrol picture taken at this time of the right kidney, showed a perfectly regular pelvis of about twice the normal size. The parenchyma (cortex) appeared to be two or three times the normal thickness. A cystoscopic examination showed the left kidney qualitatively normal. The right kidney showed slightly diminished function, and very small quantity of pus cells. Right kidney, urea, 1.7 per cent.; left kidney, urea, 2.2 per cent. Wassermann, negative; bladder urine, sterile.

On the strength of these findings, it was thought that the patient had a neoplasm and intrarenal hydronephrosis in his right kidney, despite the regularity of contour of the pelvis. On March 4th, an

exploratory nephrotomy and drainage of the right kidney was performed by Doctor Buerger. The kidney was found to be very much enlarged, but symmetrically, not suggesting tumor. There was extensive perinephritis and argyrol necrosis. After the operation, the sinus closed and reopened from time to time, discharging urine profusely, so that the patient was incapacitated for work. He lost weight and strength, and was readmitted June 18th. At that time his right kidney showed less good function than at previous examination. Urea output of right kidney, 0.5 per cent.; left kidney, two per cent.

In September, the patient again returned in the same condition, with numerous right inguinal glands and right tuberculous epididymitis. The numerous glands suggested possible metastasis from the kidney, but on excision the whole condition proved to be tuberculous. In addition, there were signs at the apices, although the sputum was negative. Cystoscopy showed slightly diminished function of right kidney. The urine from the right side showed *Staphylococcus albus*. Guineapig inoculation was negative from both sides. On account of the pulmonary, testicular, and inguinal gland conditions, the question came up whether the renal enlargement was not part of a chronic miliary tuberculosis, despite the fact that all tests of urine, including inoculation, had been negative.

The patient was readmitted February 24, 1915, in much worse condition than before. On surgical roof ward with forced diet, he improved considerably prior to operation. An x ray of the chest showed tuberculosis and what was interpreted as syphilitic aortitis. Wassermann, negative. Repeated urinalyses were negative for tubercle bacilli. Lumbar sinus discharge, on and off, pus and urine. A series of x ray pictures, taken at intervals of a few months throughout the year, showed that the right kidney had gradually grown. Cystoscopy showed that the right kidney was functioning better than at any previous examination. The persistent sinus was very difficult to explain, as there was no definite constriction to the outflow of urine through the ureter. The ureter catheters could regularly be passed well up into the kidney, after meeting a slight obstacle at about twenty-four cm. The question came up whether the sinus might have been kept open because of gauze left in at previous operation. The enlargement of the kidney was thought to be due most likely to an infected neoplasm or chronic miliary tuberculosis.

On April 10, 1915, an exploratory incision of the right kidney was done by Doctor Beer. The incision was made through the old scar, circumscribing the sinus which led into the kidney. The kidney was found to be very firmly adherent in its bed and about three to four times its normal size. On stripping back the peritoneum from its anterior aspect, an elastic nodule was found near the lower pole on the anterior surface of the kidney mass, which was aspirated with negative result. After a great deal of difficulty, and after resection of the twelfth rib, the kidney was liberated down to a very thick pedicle, without excessive hemorrhage. A rubber ligature was thrown around the pedicle and this controlled all oozing. Before cutting off the kidney, the pedicle

was transfixed with several caught ligatures proximal to the rubber ligature, so that the pedicle tissues would be left *in situ*. The kidney then was cut away and a few bleeding points in the pedicle were caught and tied.

Examination of the specimen suggested (incorrectly) that all the kidney had not been removed, and above the position of the kidney a mass which simulated the upper pole of the kidney, about equal in size to two thirds of a normal kidney, was felt attached to the diaphragm, spine, and structures lying over the spine. Up to this stage, the patient's general condition was satisfactory; but in the manipulations necessary to liberate this mass of tissue, due both to hemorrhage and tugging in the diaphragm, the patient was severely shocked and went into collapse from which he could not be resuscitated, and died on the table. The mass was probably a large metastasis in the adrenal body.

Examination of the specimen showed a solid, in part necrotic, tuberculous mass, infiltrating the posterior half of the kidney and enveloping most of the kidney, as in a thick shell. The pelvis showed no disease. As far as Doctor Beer knew, this was a unique type of renal tuberculosis.

Doctor PEDERSEN desired to show an x ray photograph with a shadow exactly where stone should be if at the end of the ureter, that is to say, from the base of the coccyx. When the x ray catheter was passed and another photograph was taken, the ureter was found to pass three quarters of an inch away from the shadow, thus showing the importance of using this method to distinguish such shadows. Doctor Pedersen also asked Doctor Beer whether the bacillus of tuberculosis had been found in the urine.

Doctor Beer replied that an effort had been made to find it, but without success.

Doctor LEWALL had been interested in the case of the stone in the ureter. If one was fortunate enough to have an x ray catheter, when inserted into the ureter, actually coil around a suspicious shadow, as he had demonstrated radiographically several times, then there was no need of further evidence; otherwise, the only definite way was to inject the opaque solution and determine the dilatation. Brash insisted upon that, and it seemed to be the only satisfactory way, unless the catheter was found by a stereoscopic radiograph to be in contact with the shadow, and thus shown to be in the ureter.

**Suppurative Pyelonephritis Following Post-operative Utererovaginal Fistula.**—Dr. H. D. FURNISS presented two cases, the first, that of Mrs. S. N., sixty-five years old, was operated upon in December, 1907, by a panhysterectomy for carcinoma. Ten days after the operation there developed a discharge of urine through the vagina, which upon examination proved to be due to a uterovaginal fistula. Cystoscopy showed that there was a discharge of urine into the bladder from the right ureter, but none from the left. The left ureter could be catheterized only one inch. She put up with this discharge of urine until August 7, 1908, when by a plastic operation through the vagina the ureteric opening was anastomosed into the bladder. Following this she had complete relief from her symptoms, and had no trouble at all until February,

1914. When the bladder was catheterized, the turbidity of the bladder, the speaker noticed that her urine was quite turbid. At this time examination showed that the urine contained a large amount of pus, which settled to the bottom of the glass just like sand. Cystoscopy showed on the left side of the bladder, well back, a small opening the size of a match stick, through which pure pus could be seen coming. On March 25, 1914, the patient underwent the left kidney through an oblique lumbar incision. The kidney was very much smaller than usual, but quite adherent to the pelvis; the calyces and the ureter were very much dilated. The cortex was quite thin. From an observation of the specimen it could be seen that there was practically no renal tissue left. The patient had made an uninterrupted recovery and had had no trouble since. There had been no evidence of the recurrence of the carcinoma for which she was originally operated upon.

The mistake made in the first operation was in anastomosing the ureteric opening into the vagina. It was not a real anastomosis of the ureter into the bladder, but an anastomosis of the fistulous tract, that extended from the ureter into the vagina. What should have been done in the first place was to remove the kidney, or to make an anastomosis of the ureter into the bladder by the extraperitoneal abdominal route. As the speaker looked back upon the case, he thought that a nephrectomy in the beginning would have been the best procedure.

**Colon Bacilli with Hematuria.**—Dr. VICTOR PEDERSEN said that this young man had had no severe renal pains, and had gained in weight under treatment; and up to January, after a treatment of four months, his kidney condition so improved that he was passing nearly normal urine, and had had no hemorrhages. He was nineteen years of age, and up to July, 1914, was well, when he noticed pain in his right side and blood in the urine. The pain increased, and when he was seen at the hospital, in September, an examination was made and a moderate cystitis was found, with pus coming from both ureters, a little more from the right than from the left. The function test showed less phenolsulphonaphthalein from the left than from the right. The x ray apparently showed a stone on the right side, but it was an adventitious shadow and was not in the right ureter as shown by the photograph. The patient was put on ascending doses of hexamethylenamine, with added acid phosphate soda, and acid urine secured. Washing the pelvis of both ureters seemed to make him worse. He had pain and other severe symptoms, so it was discontinued. He was better now, but seemed to go through a cycle. After three or four months of treatment, he improved and went back to business, and then the condition reappeared. It was a question of what to do with the kidney. He had held back from operation, hoping to be able to effect a cure without operation, by the same treatment that had been successful in other instances, and the patient had gained fourteen or fifteen pounds under this regime. Physical examination of the abdomen showed no rigidity, no pain. The guinea pig test for tuberculosis had been negative. The colon bacillus was present, a little more from the right than from the left side. The left kidney showed less pus, but a lower functional capacity;

the right kidney had more pus, but a better function, the one being forty and the other about twenty, almost two to one. The x ray showed the right ureter to be a little dilated. On the other hand, the left ureter was more difficult to enter. It was rather a complex case. There was no residual urine. The patient had gone on from September until now with practically no hematuria. He might, after all, have a tuberculosis, but showed no sign of it so far. Many of these kidneys might be saved by waiting.

Doctor LEWALD was not surprised at Doctor King's results. In a case of his own, that of a private patient, a young man with hemorrhage from his bladder, after about six months, had symptoms of acute appendicitis. That recurred after the appendix had been removed, which would not account for the symptoms. He was cystoscoped by a capable man, the urine was tested bacteriologically, and a guineapig was inoculated with colon bacilli from the kidney. The guineapig remained healthy, but later the young man was found to have a tuberculous kidney on the right side, and it was removed.

### Letters to the Editors.

#### THE CASE OF JOHN BUNYAN.

SPRINGFIELD, MASS., September 2, 1915.

To the Editors:

I beg leave to submit the following exceptions to a recent article published in the NEW YORK MEDICAL JOURNAL, from the pen of Dr. Howard D. King, of New Orleans. Doctor King diagnosed the psychological condition of John Bunyan as hypochondriasis. It would seem quite difficult to determine just how it was possible—even in this very scientific age, with many practical means at the disposal of the learned profession, to arrive at correct conclusions in psychopathology nearly two centuries and a half after the supposed condition existed.

It hardly appears logical or agreeable to any mind that is fairly well acquainted with the frailties of human life, and psychocrities, with their many discouraging conflicts with the world of humanity, the flesh, and the devil, to accept the conclusion that what most of the educated Christian world looks upon as a beautiful allegory, was the result of a morbid mind or hypochondriasis, in the author of the *Pilgrim's Progress*. Doctor King, as a learned physician—whether he is an alienist or not has not been indicated—must certainly remember that the characteristic symptoms of hypochondriasis are entirely in the patient's imagination. They may develop into delusions, but the symptoms have no existence save in the morbid fancy of the individual.

While it has been recorded that John Bunyan had not been an exemplary character in his earlier life, he was not, apparently, so much condemned for that as for his religious faith. We still have many sentiments of skepticism along the line of religious thought, yet there hardly seems any evidence whatever to class poor John Bunyan as an ancient hypochondriac. While he sat in a cold damp prison, among toads and snails, there were really no evidences from his writing that he was afflicted with insanity of mild degree, nor were there symptoms of delirium tremens resulting from previous inebriety, nor are there evidences in the *Pilgrim's Progress* of morbidly from any other cause, unless we so class the condition of intense remorse while going over in memory the deeds of the past. The psychocrity of John Bunyan in jail was nothing more or less than that same old contest with the world, the flesh, and the devil.

Bunyan's allegory has been handed down through many generations, and human beings, both old and young, have gained much inspiration from the object lesson, very true to life. St. Paul is recognized by historians as having

been a very remarkable moral philosopher, yet it would seem almost as reasonable to diagnose St. Paul's condition as chronic melancholia as to call Bunyan a hypochondriac. St. Paul dealt with a very gloomy side of life, at a period of much darkness and doubt. Paul did not, however, direct attention especially to his own condition, save for the purpose of illustration, but rather to the cause of humanity that he strenuously advocated. Only one instance is recalled when Paul was referred to as a crank, that was on the part of a very learned, independent woman. It has been thought, however, that her severe criticism may have resulted from Paul's position relative to matrimony.

For a more recent illustration of hypochondriasis—by way of comparison—a very neurotic spinster called frequently at the office of her medical adviser, a dispensing doctor, and after she had stated, with many repetitions the various symptoms that were distressing her, the good old doctor put a separate, specific ingredient for each symptom into a four ounce bottle. Just as the patient was about to make her exit, she suddenly remembered another symptom, a distressing pain that appeared regularly in the cardiac region, just before she retired each night. The physician requested the hypochondriac to return the bottle, already well loaded, that he might put in an ingredient for the cardiac symptom. The patient was then satisfied and did not return to the doctor until the bottle was empty.

Unless the ancient hypochondriasis was very different in its symptomatology from what we know of the condition today, I think that Doctor King was very much in error in his John Bunyan diagnosis.

ROBERT H. MACNAIR, M.D.

### Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*A Textbook of Medical Jurisprudence and Toxicology.* By JOHN GLAISTER, M.D., D.P.H. (Camb.), F.R.S.E., Professor of Forensic Medicine and Public Health in the University of Glasgow; Ex-President and Fellow of the Royal Faculty of Physicians and Surgeons of Glasgow; etc. Third Edition. With 137 Illustrations and 1 Colored Plate. New York: William Wood & Co., 1915. Pp. xv-857. (Price, \$5.)

Among the briefer works on medical jurisprudence, we rank this first. It contains 857 pages including an index, and in this relatively small space, Professor Glaister has treated the subject in a clear and compressed way which enables us without loss of time to find a special fact or facts expounded. To study medical jurisprudence year after year, to go through the apprenticeship of post mortem examinations, exhumation of bodies, and analysis of the viscera in cases of poisoning, are requisites for any who would write a book on so technical and multifarious a science. Professor Glaister has clearly had his apprenticeship; he knows the ground from actual sight. The book begins with chapters on finger prints, on medical evidence, professional privilege, and secrecy. We can commend his opinion of medical men as witnesses; "medical men usually make bad witnesses," because, there is "a want of knowledge of legal procedure on the part of the medical man, coupled with a want of familiarity with law courts and a legal atmosphere." We have ourselves noted this lack in medical witnesses; it is a fault that doctors can, and should overcome. One way of overcoming it is to visit trials and accept the teaching of lawyers, even if our vanity suffers. There is a good deal about the relation of doctor and coroner. In England and Scotland they have not reached such depths as we have here in this branch of criminal procedure. There is a chapter distinguished by good sense on the procedure in lunacy. Each chapter has illustrative cases and references to the literature. We are quite astonished at the amount and variety of the information. Hence this book is a good guide to larger ones, like Taylor's, or the monumental German works of Casper,



Masella, Tulenburg, and Hassler. In one respect we wish it contained more; the subject of toxicology is too brief, and there is not enough of the so called occupational diseases. In this province the Italians have done much better.

*Infant Nutrition and Management.* By FRED PRITCHARD, M. A. M. D. (Oxon), M. R. C. P. (Lond.), Physician to the Queen's Hospital for Children, Physician to Out-Patients, City of London Hospital for Diseases of the Chest, Victoria Park, etc. New York: Longmans, Green & Co.; London: Edward Arnold. Pp. vii-265. (Price, \$1.)

This is a new book, that is to say, it contains all the latest information on lactation, constipation in infants, the use of dried milk, of petroleum, the treatment and cause of rickets, and the physiological principles of feeding. The kind of reverence with which his task is pursued is consonant with the perfect reliance of the author upon the unaided appeal of his theme. It is a reverence quite unlike the professional reverence of a specialist aware that he is using new things for his own purposes of practice. "This work," writes Doctor Pritchard, "contains views which, in many cases, are still regarded as unorthodox and revolutionary," and he adds, "a little breaking away from precedent, even if it is not in all cases an improvement, may perhaps broaden our ideas." The author shows good sense in these words. Such a man is vigilant and careful. He shows judgment in avoiding narrowness and prejudice to the instincts of mother and child. This is an uncommon merit in books on the feeding of infants; this particular work is well written and there is nothing of the aloofness and exotic science of those critics who can see in their own special formula the sole method or ritual of feeding babies. Doctor Pritchard devotes special attention to teaching the mother; we are not convinced that women need all this instruction. He uses petroleum in the constipation of infants.

*Proceedings of the New York Conference on Hospital Social Service.* Volume II, 1914-1915. Pp. 90.

The series of papers and discussions embraced in this pamphlet all bear directly upon the ever growing problem of the extension and betterment of social service. While the matter is primarily of interest to those who are engaged in social service work, there is much that should be profitable to physicians who visit our large hospitals and dispensaries. Special mention, in this respect, might be made of the papers on night clinics by Mr. James K. Paulding and Dr. Hubert V. Guile and of Dr. N. Gilbert Seymour's final report on the Sharon Cardiac Experiment. An interesting short paper on the Treatment of Mental Hygiene Cases is contributed by Dr. Menas F. Gregory. The problem of unemployment is discussed by S. Herbert Wolfe and Police Commissioner Arthur Woods, but little in the way of useful suggestion as to how to combat it is offered by either, except Mr. Woods's suggestion that we first really find out the extent and some of the causes of the evil as it occurs in New York. Having accomplished this, it might then be possible to devise measures to meet the evil in a more or less effective manner, instead of going ahead upon pure theories as has been the practice in the past.

### Interclincal Notes.

In the face of the pronouncement of the Women's Christian Temperance Union in favor of water wherewith to christen ships, the *Outlook* for August 4th insists editorially that champagne is better for three reasons. If the two hundred million quarts of that beverage annually consumed in the United States were all devoted to christening ships, we should abolish a large share of the liquor traffic, and at the same time secure both an adequate navy and an adequate merchant marine.

\* \* \*

In the *Guide to Nature* for September there is a sympathetic study of Dr. Robert T. Morris, by Edward F. Bigelow. It is not as a surgeon, but as an author and a naturalist—one who considers many subjects—that Mr. Bigelow envisages the genial doctor. Quoted scraps of

conversation show that Doctor Morris is perhaps even more eloquent  *viva voce* than with his ready pen. As evidence of his kindness, we may quote: "When about to make a sarcastic remark, stop to think if you would do it beside a man's coffin when his hands are folded on his breast, and the white face can make no reply. If you would not do it then, why do it now?" Doctor Morris, we observe, loves and admires Oliver Wendell Holmes as all medical authors should.

\* \* \*

Lyman Abbott, according to his *Reminiscences* in the issue of the *Outlook* for August 25th, is living in a house forty years old which has been twice brightened by weddings and never darkened by a funeral. We all hope that the venerable editor will continue to enjoy similar good fortune for years to come; his contributions to the *Outlook* continue to be marked by fearlessness and virility, a broad and sane viewpoint most refreshing to the reader of average periodical literature.

\* \* \*

*Leslie's* for September 2, 1915, editorially finds fault with the fact that when, last winter, 40,000 men were wanted to shovel snow, only 20,000 responded; "the bread line was good enough for the rest." This is hardly fair. Snow shoveling is the hardest kind of work and is best done by those with experience; it is not a job for a hungry man. Among the 20,000, moreover, who declined to tackle the snow, were doubtless many bookkeepers and other office workers, men whose soft muscles were no disgrace, provided that their brains were in good order to handle their own particular kind of labor.

### Meetings of Local Medical Societies.

- MONDAY, September 13th.—Roswell Park Medical Club, Buffalo; Williamsburg Medical Society, Brooklyn.  
TUESDAY, September 14th.—Federation of Medical Economic Leagues of New York; Medical Society of the County of Schenectady; Newburgh Bay Medical Society.  
WEDNESDAY, September 15th.—Medicolegal Society, New York; Buffalo Medical Club.  
THURSDAY, September 16th.—Auburn City Medical Society; Geneva Medical Society; Æsculapian Club of Buffalo; New York Celtic Medical Society.  
FRIDAY, September 17th.—Mount Vernon Medical Society.

### Official News.

#### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending September 1, 1915.*

**Billings, W. C.,** Surgeon. Granted three days' leave of absence from August 25th, under paragraph 193, Service Regulations. **Butterfield, C. T.,** Sanitary Bacteriologist. Directed, when instructed by the medical officer in charge of the Ohio River investigations, to proceed to such points on the Ohio watershed as he may designate, for the purpose of collecting samples of water, and making sanitary surveys of laboratory investigations. **Carter, H. R.,** Assistant Surgeon General. Five Days' leave of absence from August 17, 1915, revoked. **Cofer, L. E.,** Assistant Surgeon General. Directed to accompany the Surgeon General to Norfolk, Va., to inspect a possible quarantine detention site. **Cumming, H. S.,** Surgeon. Directed to proceed to Newport News, Va., for the examination of oyster grounds in that vicinity. **Draper, W. F.,** Passed Assistant Surgeon. Directed, on request of the director of the office of public roads, to proceed to Fulton County, Georgia, for cooperative study of the operation of an experimental convict camp. **Fox, W. F.,** Assistant Surgeon.

Hickins, J. C., Assistant Surgeon. Directed to proceed to Mobile, Ala., to take temporary charge of the marine hospital during the absence of Surgeon John T. Burkhalter. **Moore, D.**, Surgeon. Granted fourteen days' additional leave of absence from August 27, 1915. **Perry, J. C.**, Senior Surgeon. Directed, on request of the State and local health authorities, to proceed to Columbia, S. C., to conduct an investigation of sanitary organization and administration in that city. **Robertson, H. McG.**, Surgeon. Granted one month's additional leave of absence from September 6, 1915. **Robinson, D. E.**, Surgeon. Leave of absence for twenty-one days from August 1, 1915, amended to read fifteen days' leave of absence from August 1, 1915. **Stiles, C. W.**, Professor. Detailed to attend and address a meeting of the Homeopathic Medical Society of the State of Pennsylvania at Buena Vista Springs, Pa., September 7-9, 1915. **Tanner, W. F.**, Assistant Surgeon. Relieved from duty at Spartanburg, S. C., and directed to proceed to Columbia, S. C., for experimental studies of pellagra, with special reference to diets. **Warner, H. J.**, Passed Assistant Surgeon. Directed to proceed to Tampa, Fla., for vaccination of crew and fumigation of quarters of steamer infected with variola. **Wayson, N. E.**, Assistant Surgeon. Granted three days' leave of absence on account of sickness, from August 10, 1915. **Wertenbaker, C. P.**, Surgeon. Directed to deliver first aid lectures in cooperation with the American Red Cross, to seamen of the merchant marine, New York city.

#### Board Convened.

Board of commissioned medical officers convened to meet at the bureau for the purpose of making a physical examination of a commissioned officer of the Service. Detail for the board: Assistant Surgeon General W. G. Stimpson, chairman; Assistant Surgeon General L. E. Cofer, member; Surgeon A. M. Stimson, recorder.

#### United States Army Intelligence:

*Official list of names in the status and duties of officers serving in the Medical Corps of the United States Army for the week ending September 4, 1915:*

**Anderson, John B.**, First Lieutenant, Medical Corps. Now at Texas City, Texas, will report in person to the commanding general, Second division, for assignment to duty pending the sailing of the transport with the Twenty-seventh Infantry, when he will proceed on that transport to the Philippine Islands, as heretofore ordered. **Duckwell, Bertram F.**, First Lieutenant, Medical Corps. Relieved from duty at Fort Sill, Oklahoma, to take effect at such time as will enable him to comply with this order, and will proceed at the proper time to Seattle, Wash., and take steamer to sail from that place on or about November 10, 1915, to Fort Liscum, Alaska; upon arrival will report in person to the commanding officer of that post, and by letter to the commanding general, Western Department, relieving Captain William B. Meister, Medical Corps, who, upon being thus relieved will proceed to Seattle, Wash., and upon arrival report by telegraph to the Adjutant General of the Army for further orders. **Edwards, D. B.**, First Lieutenant, Medical Reserve Corps. Relieved from duty at Fort Screven, Georgia, August 27th, and from active duty in the Service, paragraph 34, S. O. 171, War Department, July 24, 1915. **Finney, Harry S.**, First Lieutenant, Medical Reserve Corps. Resignation of his commission as an officer in the Medical Reserve Corps has been accepted by the President, to take effect August 25, 1915. **Fort, Samuel J.**, First Lieutenant, Medical Reserve Corps. Resignation of his commission as an officer in the Medical Reserve Corps has been accepted by the President, to take effect August 28, 1915. **Johnson, H. H.**, Captain, Medical Corps. Left Walter Reed General Hospital, Washington, D. C., August 28th, paragraph 25, S. O. 179, War Department, and granted leave of absence for four months. **Newberry, Frederick H.**, First Lieutenant, Medical Reserve Corps. Upon relief from duty at Fort Wayne, Michigan, ordered to proceed to his home and upon arrival there report by

telegraph to the Adjutant General of the Army; relieved from active duty in the Medical Reserve Corps to take effect upon the expiration of the leave of absence for two months and twelve days which has been granted, to take effect upon his arrival home. **Newlove, George**, First Lieutenant, Medical Corps. By paragraph 5, S. O. 188, Western Department, August 23, 1915, is granted leave of absence for three months, upon arrival of First Lieutenant R. W. Newton, Medical Reserve Corps, at Calexico, Cal. **Newton, R. W.**, First Lieutenant, Medical Reserve Corps. By paragraph 7, S. O. 188, Headquarters, Western Department, ordered to proceed from Fort George Wright, Washington, to Calexico, Cal., in time to arrive about September 20th for temporary duty during the absence of First Lieutenant Newlove. **Roberts, William M.**, Major, Medical Corps. Now on leave of absence at Baltimore, Md., is relieved from further duty at Fort Yellowstone, Wyoming, and will proceed to Texas City, Texas, and report in person to the commanding general, Second Division, for assignment to duty, with station at Fort Reno, Oklahoma. **Smith, William A.**, First Lieutenant, Medical Reserve Corps. Relieved from duty at Fort Moultrie, South Carolina, and will return to his home and stand relieved from active duty in the Medical Reserve Corps.

#### Births, Marriages, and Deaths.

##### Married.

**Higgins—Donham.**—In Union, Me., on Tuesday, August 24th, Dr. Everett Higgins, of Phillips, Me., and Miss Hazel Donham. **McVety—Pushor.**—In Newport, Me., on Wednesday, August 25th, Dr. Joseph James McVety and Miss Hattie Elzena Pushor. **Mikes—Marx.**—In Morris Plains, N. J., on Sunday, August 29th, Dr. Frank M. Mikes and Miss Dora Marx. **O'Brien—Gould.**—In Somerville, Mass., on Wednesday, September 1st, Dr. Charles O'Brien and Miss Grace M. Gould. **Snyder—Wagner.**—In Marysville, Pa., on Saturday, August 28th, Dr. Charles R. Snyder and Miss Marian Wagner. **Walker—Upcraft.**—In New York, on Thursday, August 19th, Dr. Charles H. Walker and Miss Margaret E. Upcraft.

##### Died.

**Aborn.**—In Sterling, Ill., on Monday, August 23d, Dr. Claud E. Aborn, of Des Moines, Iowa, aged twenty-nine years. **Bliss.**—In Delaware, Ohio, on Monday, August 23d, Dr. D. P. Bliss, aged seventy-two years. **Bowman.**—In San Francisco, Cal., on Tuesday, August 17th, Dr. Frank A. Bowman, aged sixty-three years. **Chedeck.**—In Omaha, Neb., on Wednesday, August 25th, Dr. Benjamin H. Chedeck, aged thirty-six years. **Combs.**—In Freehold, N. J., on Sunday, August 22d, Dr. William S. Combs, aged seventy-three years. **Dana.**—In New York, on Thursday, September 2d, Dr. Samuel Dana, aged eighty-eight years. **Edwards.**—In Portland, Ore., on Thursday, August 26th, Dr. John Milton Edwards, formerly of Mankato, Minn., aged forty-one years. **Harris.**—In Milwaukee, Wis., on Sunday, August 22d, Dr. Philander H. Harris, aged fifty-nine years. **James.**—In Columbus, Ohio, on Saturday, August 28th, Dr. Albert David James, formerly of Mt. Gilead, aged fifty-nine years. **Kennedy.**—In Covington, Ohio, on Wednesday, August 25th, Dr. Edward W. Kennedy, aged fifty-four years. **Kincaid.**—In Pine Park, Ga., on Wednesday, August 25th, Dr. James G. Kincaid, aged forty-five years. **Maloney.**—In Rochester, N. Y., on Monday, August 23d, Dr. Frank W. Maloney, aged fifty-one years. **Morris.**—In Utica, N. Y., on Wednesday, August 25th, Dr. William Seymour Morris, aged forty-three years. **Reeder.**—In Sulphur, Okla., on Friday, August 20th, Dr. Philander C. Reeder, aged eighty-five years. **Richardson.**—In Summerville, Ohio, on Monday, August 23d, Dr. A. J. Richardson, aged eighty-three years. **Scanlan.**—In Volga, S. Dak., on Monday, August 23d, Dr. William Scanlan, formerly of Page, N. Dak., aged forty-six years. **Tyler.**—In Redlands, Cal., on Wednesday, August 25th, Dr. Hoell Tyler, aged sixty years.

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### Original Communications.

#### GYNECOLOGICAL ASPECTS OF BACKACHE.\*

By GEORGE W. KOSMAK, M. D.,  
New York.

*Attending Surgeon, Long Island Hospital.*

In women of from thirty to fifty years of age backache, broadly speaking, is a very common complaint, varying from a simple discomfort to an intense pain. Gynecologically speaking, backache is limited to painful sensations in the lumbar, sacral, or coccygeal areas. It is usually attributed by women themselves to uterine disease. This is not necessarily the case, as women with marked pelvic disturbances may have no backache whatever, whereas others with minor pelvic lesions may complain of severe backache which fails to be improved after the pelvic abnormality has been corrected. Therefore in every case the gynecological findings must be carefully compared with the neurological, medical, surgical, and orthopedic possibilities, which means that a physician gynecologically inclined must honestly weigh the evidences found in his domain and accord to them their proper value.

Many lumbar and sacral backaches are due to nervous disturbances of various kinds. Patients of a neurasthenic type, run down in general health, are often afflicted with backache which may be entirely due to the condition of lowered nerve tone which they present, although we must not forget that the presence of pelvic lesions such as tumors, inflammations, exudates, uterine displacements, and constipation, may result in the production of backache in such neurasthenic individuals, which would have little or no effect in an ordinary woman with a stable nervous organism.

Uterine displacements are accepted by both the physician and the laity as a frequent etiological factor in the production of backache, yet it is often found that marked degrees of retroversion, for example, may be present without producing this symptom. Although such displacements may be productive of other symptoms, they do not seem to cause backache unless there is either a decided enlargement of the uterus with adhesion to the posterior pelvic wall or where this is combined with subacute inflammation in the surrounding tissues. On the other hand, a large subinvolved uterus associated with pelvic congestion, as we find it during the first few weeks after a woman gets up from labor, may

be productive of very distressing pain in the lumbar and sacral regions.

Displacement of the kidneys, especially that associated with a general splanchnoptosis, is very apt to result in backache referred to the lumbar region. The test of the question depends on the relief of the same when these organs are replaced by a properly adjusted bandage. The slight mobility of the kidneys, which only a comparatively short time ago was accepted as an excuse for suspending these organs, must be regarded as an exaggeration, for in these women the backache frequently complained of was due rather to their run down condition than to the abnormal position of the kidneys.

In judging the effect of pelvic lesions in an individual patient who complains of backache, the presence of a rheumatic or gouty condition must be carefully eliminated. We are particularly liable to confound the muscular rheumatism of this region with sacroiliac joint affections. Both are accompanied by a similar train of symptoms, and it may be difficult to distinguish them until a test of treatment with salicylates has been made.

Affections of the sacroiliac joints as a cause of backache have been given increasing attention since Goldthwait showed the frequency and importance of this condition. The acceptance of this lesion depends on the assumption that the sacroiliac articulations are true joints and are not as immobile as has been supposed, even under normal conditions. During pregnancy in particular there is a physiological increase in this mobility, and it has also been assumed that this may occur during menstruation. Combined with injury, constitutional disease, and a general lack of muscular and ligamentous tone, these changes in the joints constitute one of the most frequent causes of backache in women. Goldthwait divides the cases into a number of groups, the first including the relaxation associated with pregnancy, the second that associated with menstruation, and the third that in which the lesion is due to trauma, weakness, or some other definitely known pathological process. I desire to call particular attention to the first group. The backache which is frequently complained of during the first few weeks or months after childbirth is undoubtedly due to a mild degree of luxation following the relaxation of the sacroiliac joints already referred to. As long as the patient remains in bed there is no pain, but after she gets up, any motion in which the trunk or thigh muscles are used, necessarily causes the bones of the pelvis to slip up and down and thus results in the production of painful sensations. In very severe cases standing or walking may be impossible, where-

\*Read report of a communication on backache at a meeting of the New York Medical Society, May 17, 1915.



as in the milder cases the symptoms may be so vague that the exact nature of the difficulty is not appreciated. In every patient, therefore, complaining of backache after pregnancy, a careful pelvic examination should be made and if nothing abnormal can be found within the pelvis, the sacroiliac joint regions should be carefully examined. With the patient on her abdomen, pressure along the lines of these joints will usually elicit tenderness, and this is aggravated by having the patient bend over or twist the body from side to side. If this condition is recognized and properly treated, a great deal of distress may be saved to the patient and annoyance to the attending physician.

Acute backache often comes on after operations in which the dorsal position on a hard table has been employed for a considerable period. This is due to the strain on the lumbar ligaments and may be often more intense than that directly associated with the operation itself.

Coccygodynia is a term first used by Sir James Simpson to designate the painful affections localized around the coccyx. Although clear cut as regards its clinical features, the pathology is still more or less in doubt. The affection is peculiar to women and may often be traced to a fall on the buttocks or a blow, and frequently results from excessive horse-back riding. Pregnancy and labor have also been regarded as etiological factors, particularly where a sharply curved coccyx has apparently been strained or fractured during the delivery of the head. In a great many cases, however, coccygodynia is present in unmarried women and in women whose previous labors have been normal. Neuralgic conditions depending on a purely neurasthenic basis must always be borne in mind in the presence of a coccygodynia. Although frequently associated with a variety of pelvic disturbances, there need not be any relationship between these two conditions. The diagnosis depends on the presence of pain in and around the coccyx, which is exaggerated by the act of rising or sitting and occasionally by walking. An attempt to move the bowels is always painful.

#### TREATMENT.

In summarizing the treatment of backache in women, attention must again be called to the necessity of making a proper diagnosis of the causes of the complaint and eliminating them in turn. As already stated the various symptoms must be carefully weighed, and especially in the presence of gynecological conditions the prognosis given to the patient must not be based on any possible good results from the correction of the pelvic lesions alone. Where the backache has been determined to be due to a retroverted uterus, relief ought to be obtained within a comparatively short period after the restoration of the uterus, if movable, to a more favorable position by the insertion of a pessary. Before this is done, however, it is well to do away with all evidences of pelvic inflammatory conditions. If exudates in the perimetrium are present, the application of astringent and sedative tampons at regular intervals, together with the use of hot prolonged douches, must be employed before pessaries are made use of. Pelvic tumors, including fibroids, annexal disease, broad ligament cysts, or collections of pus in the

pelvis must be taken care of in the accepted manner. Inflammations of the uterus from any cause, whether acute infections or produced by subinvolution, need to be brought to a condition of subsidence before relief may be obtained. If it is determined that the backache is due to a dislocation of the sacroiliac joints, absolute rest in bed with the application of adhesive plaster strapping, or in the very severe cases a plaster cast may be necessary before a cure can be secured. In the milder cases application of a tight pelvic band which is worn constantly by the patient will do much to overcome the distress. Similarly the wearing of low heeled shoes will do much to overcome a false position of the spine which often increases the pain in sacroiliac luxations. Coccygodynia may be treated by conservative or radical measures depending on the severity of the case. In the milder forms hygienic and medical remedies, including the application of the electric current, will do much to alleviate the distress. Attention to the bowels and any hemorrhoidal conditions present will also act in a favorable manner. Where these measures fail, and especially where a deformity of the coccyx can be elicited on examination, it may be necessary to remove this appendage. Sedatives, including morphine, chloral, etc., should be employed with the greatest care, as the complaint is apt to be a chronic one and necessity for continued administration may lead to unfortunate consequences.

In conclusion, I would again call attention to the fact that this common complaint in women should not be dismissed without due attention to the detailed findings in every case that presents itself. A diagnosis as to the etiological factor or factors in each instance must precede any method of treatment. It is possible that two or more causes may be present in the individual case and these must be treated in order. The mere finding of a gynecological lesion is not sufficient finally to determine the treatment.

23 EAST NINETY-THIRD STREET.

#### BACKACHE FROM THE STANDPOINT OF THE NEUROLOGIST.\*

By M. NEUSTAEDTER, M. D., Ph. D.,  
New York,

Lecturer in Nervous Diseases, University and Bellevue Hospital Medical College.

Since it is still an open question whether there are special nerve filaments conveying pain in particular apart from other sensations, Schleich is inclined to interpret pain as a result of the failure on the part of the nervous system to discharge impulses in chronological order. The impulses seem at times to come in too rapid a manner and to be blocked and then suddenly discharged, giving rise to a discord which, in direct proportion to its intensity, gives discomfort or pain. This theory seems to be fortified by the contention of Sherrington, who maintains that the sensory nerve filaments in the skin are anelective. The stimuli are endogenous, when coming from within our body, and exogenous, when coming from the outside. It is then apparent that disturbances of various organs will be referred to

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the sensory nerve roots and cause backache or pain in the back if there is any block to the propagation of these stimuli. These are, however, remote influences, and local manifestations in the respective organs will at once clear up the situation. The most frequent cause of backache is local irritation of the spinal cord membrane and posterior nerve roots, and it is of this that I shall speak in this paper.

We are speaking of pain as sharp, shooting, and lancinating or burning in character. The tissues involved may be the spinal nerve roots and intervertebral ganglia, the spinal dura mater, or the body of the vertebra. The spinal leptomeninges, and the cord proper *per se*, never give rise to pain.

Inflammatory conditions of the posterior spinal nerve roots with their attendant exudates are the most frequent in order of occurrence. Quite early in tabes we hear of severe lancinating pains referred to the back and radiating toward the extremities and abdomen. They are paroxysmal in character and may last only a few seconds, so that patients are apt to overlook them; when severe, patients refer to them as rheumatic. As such they may last days or even weeks and prove most distressing. Hyperesthesia in the affected area is not an infrequent accompaniment and may at times be so pronounced that the mere touch of the bed cover will cause distress. The radiating, lancinating pains give place frequently to a localized, dull, and boring pain. The abdominal girdle sense and gastric crisis, viz., pain and vomiting, are in the majority of cases present. Very frequently such pains are interpreted as due to gastric ulcer, carcinoma, and cholelithiasis. I have seen cases ready to be operated in for such conditions, which was desisted from only when the other classical symptoms of tabes were elicited. An Argyll Robertson pupil, Romberg, and absence of patellar reflexes with hypotonia will at once clear up the diagnosis. I desire to note here that at times the reflexes are still present, especially in the exudative stage, when pain is most severe. The hypotonia in tabes is a very prominent symptom and yet frequently overlooked. The patient is able to flex the leg upon the abdomen to such an extent as to bring the toe to his lips. These concomitant manifestations, then, together with a positive Wassermann in the blood serum and spinal fluid, do unmistakably point to the true condition.

Burning pain is always referable to the dura. Such pain alternating with a lancinating type and paresthesias in the parts supplied by the particular cord segment we meet with in cases of dural posterior nerve root involvement. In such cases trophic disturbances in the first place will give a clue to the disease. We find more or less pronounced atrophy of the muscles, a motor weakness or even paralysis of the affected group when the mixed nerves are involved. There is always a hypesthesia, even an anesthesia and quantitative and qualitative electrical changes in the affected muscles. There may at times be a loss of temperature sense, simulating syringomyelia. Hyperesthesia in the region of exit of the nerve roots will at once clear up the matter. At times the condition is accompanied by a herpetic eruption.

A dull aching pain along the spinal column, accompanied by a feeling of stiffness in the muscles, is

met with in the various types of spinal meningitis, both acute and chronic. We have here exudates quite extensive or only circumscribed. The symptoms then will be either local or general. The quantity of the spinal fluid becomes augmented and thus exerts pressure upon the spinal cord. In direct proportion to the pressure the concomitant symptoms will be accentuated. There may be a partial or complete anesthesia below the level of compression. There is always present an area of hyperesthesia around the body corresponding to the involved segments. We may get also a paraparesis or complete spastic paraplegia of the extremities below the involved segments as a result of the pressure upon the lateral tracts. The reflexes are exaggerated and there is clonus and the Babinski phenomenon is present. If the spinal meninges high up in the cervical region are affected, we have in addition the Kernig and Brudzinski signs and a retraction of the head. All of these symptoms will be present irrespective of the etiological factor. The history of the case, together with the bacteriological examination of the blood and spinal fluid and their cytology, will definitely establish the nature of the affection. Thus we may have internal hemorrhagic, purulent, tuberculous, syphilitic, and hypertrophic meningitis. It is needless to say that the meningitis may be of an infectious character, when various bacteria will be responsible for the infection, or a noninfectious or traumatic.

I desire to call attention here to pain in the back of such a severe nature that a flexion of the spinal column will give rise to the most excruciating pain, not only because of the extent of the affection, but on account of the age of the patient. I refer to pain in poliomyelitis. In this disease we are dealing with a transverse myelitis, the involvement of the posterior roots, intervertebral ganglia, and meninges. There is, however, no exudate to speak of, but rather an interstitial meningitis. The pain here is due to the nerve root and meningeal involvement. As it is an infantile disease, the tender age of the patient is certainly a factor in the intensity of the pain. This disease, coming on during the summer months, is accompanied at its onset in fully one third of the cases by gastrointestinal disturbances and is frequently mistaken for summer diarrhea. The intense pain in the back as described with an edematous nasopharyngeal mucosa, and a frothy transudate thereon should awaken suspicion. The spinal fluid should be examined and a high cell count, from thirty to nine hundred cells per c.mm. with eighty-five per cent. or more lymphocytes, a high globulin content, and an intense reduction test of the Fehling solution can positively be accepted as evidence of poliomyelitis. From these signs a diagnosis can be made before paralysis sets in.

Local and circumscribed pain of a burning character limited to one or two vertebrae is the beginning symptom of a neoplasm of the cord. The insidiousness of the onset, coupled with motor weakness and paresthesias, are as a rule pointing to a neoplasm. As the growth increases in size exerting considerable pressure, the picture becomes definite. There is an area of hyperesthesia around the body to the extent of the segments involved and a complete or partial loss of sensation of the entire body below the

segment. A spastic paraparesis or paraplegia, clonus, and the Babinski sign are invariably present. If the base is of long standing there may be contractures to such an extent that the reflexes can no longer be elicited. The spinal fluid in such cases will be negative, since there is no inflammatory process. I have seen one case of spinal cord tumor in a young married woman, whose sole complaint early in the disease was burning pain in the back in the lumbar region. She was operated on by a well known gynecologist for adhesions. The condition grew worse for six weeks after the operation, when the pain subsided and a complete spastic paraplegia in both lower extremities set in, with sphincter involvement. She was unable to retain urine or feces. The diagnosis of a cord tumor proved correct.

Pain in the back, finally, may be a beginning symptom of an involvement of the body of the vertebra or its periosteum. I desire to call attention here to syphilitic and tuberculous spondylitis and the typhoid spine. Traumatic conditions, such as fractures and dislocations, are not to be overlooked. In all such cases local pain on pressure is the first symptom. The history of the onset, the radiographic examination of the spinal column, and the cytological findings of the spinal fluid will enable us properly to interpret the physical signs in the limbs below the lesion.

In syphilis of the spinal column we deal preeminently with pronounced carious processes affecting the spinous processes and arch of the vertebra. There is a gummatous osteitis and periostitis. The cervical vertebrae are as a rule attacked. Beside destroying the bone, the syphilitic granulation tissue behind and in front of the periosteum exerts irritation and pressure. The involvement of the dura gives rise to the characteristic burning pain, and the irritation of the posterior nerve roots gives radiating pain and paresthesias in the extremities below. A zone of hyperesthesia around the body referable to the segments involved will always be present. The usual motor disturbances due to pressure, as stated above, will invariably be found. Slight deformities of the spinal column may be present in cases of long standing.

Tuberculous spondylitis, which is a disease of childhood in the vast majority of cases, attacks the lower thoracic and lumbar vertebrae. The tuberculous process is usually localized in the spongiosa of the body of the vertebra. Since there is a hematogenous infection, we find the primary focus in some remote organ. The spinous process, arch, and the periosteum do not escape infection. In such event abscess formation is by no means rare. These processes give rise to a peripachymeningitis tuberculosa. At times these abscesses gain access into the spinal canal through the intervertebral foramina and involve the leptomeninges and the cord. The sensory and motor disturbances will, of course, be those of a local inflammation and pressure. A cyphosis as a rule is the deformity in these cases.

As a sequela of typhoid there is sometimes an acute spondylitis accompanied by swelling of the soft parts in the vicinity of the spinal column and spinal cord symptoms. The sensory and motor symptoms will depend entirely upon the area involved and will be those of pressure and irritation.

That pain is present quite early is evident from the fact that the periosteal involvement will influence the spinal meninges and nerve roots.

From the foregoing discussion it is perfectly evident that pain would be the first symptom in injuries of the spinal column. It is, of course, referable to the place of fracture or dislocation. The sensory and motor disturbances will be those of pressure on a particular segment. Since the character of the lesion is immaterial so far as motor and sensory phenomena are concerned in cases of pressure, it would be needless repetition to enumerate them.

I have enumerated most of the pathological conditions of the spinal column and cord where pain is the prominent and early symptom. It would be outside of the scope of this paper to enter into a detailed discussion of the various diseases. I have endeavored to give a short résumé of the concomitant manifestations of backache from the standpoint of the neurologist with a view to help localize the lesion and leave it to the reader to consider the rationale of possible treatment.

1215 PARK AVENUE.

## THE INFLUENCE OF CIVILIZATION UPON INSANITY.

BY MORRIS J. KARPAS, M. D.,  
New York,

Assistant Resident Alumnist, Psychopathic Department,  
Bellevue Hospital.

### INTRODUCTION.

The question, what influence has civilization upon the production and growth of insanity, is not purely academic. It is of great practical interest, not only to the psychiatrist, but to the sociologist, economist, pedagogue, and social service worker. It is lamentable, however, that the statistical documentary information is inaccurate and inadequate for the relative estimation of this important issue. For many long years, the whole subject of insanity was misconceived and misinterpreted, which was due partly to deficient scientific knowledge and partly to the influence of the erroneous conceptions of theology. In the historical development of psychiatry, we find three striking epochs, the *ancient*, *medieval*, and *modern*, which may only briefly be reviewed here.

In *ancient times*, a correct appreciation of abnormal mental states was wanting. The Mosaic law offers no provision for recognition and care of the insane. However, in *Deuteronomy* (xxviii) the following passage occurs: "The Lord shall smite thee with madness, and blindness and astonishment of heart." Saul was supposed to have been afflicted with a mental upset, and that Nebuchadnezzar, the King of Babylonia, imagined himself to have been transformed into an animal and to have acted as such. David is said to have feigned insanity. Solomon, according to Josephus (1), "left behind him those means of exorcising demons, which were so effectual as to prevent their return."

In Greek and Roman poetry, we find allusion to madness, and Plato in *Phaedrus* (2), speaks "of the



greatest blessings we have, spring from madness when granted by divine bounty. For the prophets at Delphi and priestesses at Dodona have, when mad, done many and noble services for Greece, both privately and publicly, but in their sober senses, little or nothing." In *Timæus* (3), Plato again refers to insanity in terms which, in many respects, have some scientific value:

In the foregoing manner are the diseases of the body produced; but the diseases of the soul, resulting from the habit of the body, are as follows. We must admit that the disease of the soul is folly, or a privation of intellect; and that there are two kinds of folly, the one madness, the other ignorance. Whatever passion, therefore, a person experiences that induces either of them, must be called a disease. Excessive pleasures and pains, however, are what we should deem the greatest diseases of the soul; for when a man is overelevated with joy, or unduly depressed with grief, and so hastens immoderately either to retain the one, or fly from the other, he can neither perceive nor hear anything properly, but is agitated with fury, and very little capable of exercising the reasoning power.

And indeed it may almost be asserted that all intemperance in any kind of pleasure, and all disgraceful conduct, is not properly blamed as the consequence of voluntary guilt. For no one is voluntarily bad; but he who is depraved becomes so through a certain bad habit of the body and an ill governed education. . . . All the vicious are vicious through two most involuntary causes, which we shall always ascribe rather to the planters, than the thing planted; and to the trainers, rather than those trained. . . . There are two kinds of madness; one arising from human diseases, the other from an inspired deviation from established custom.

The great and keen observer, Hippocrates, gave recognition to this important subject, and took "these cases from the hands of the priests, who (in temples dedicated to Æsculapius) treated such patients and gave oracular consultations" (4). "The Hippocratic theory of mental diseases"—in the words of Krafft-Ebing (5)—"may be expressed in the following sentences, as a translation into the scientific language of today: The brain is the seat of mental activity, and, like the other organs, is obnoxious to the natural causes of disease. Mental diseases arise from abnormalities of the brain."

Later, Diocles, Asclepiades, Galen, and others attempted to treat this subject in a rational manner, but with the decline of Roman civilization, medicine deteriorated and psychiatry continued to be the subject of theological speculations.

In the *Middle Ages* the whole subject of insanity was in a state of abject deterioration. The demonic conception of the abnormal mind was in vogue and much accentuated. In the eloquent words of Andrew White (6), "The evolution of divine truth was interrupted by theology. There set into the early church a current of belief which was destined to bring all these noble acquisitions of science and religion to naught, and, during centuries, to inflict tortures, physical and mental, upon hundreds of thousands of innocent men and women—a belief which held its cruel sway for nearly eighteen centuries; and this belief was that madness was mainly or largely possession by the devil."

Thus the unfortunate patients afflicted with the well defined mental infirmities were deprived of actual care and treatment, and, indeed, were subjected to infernal tortures. Scourging, imprisonment, whipping, subjection to noxious drugs and the like, were frequently resorted to. Indeed, patients

suffering from mental diseases in which delusional ideas expressed a grandiose religious trend as identifying themselves with God, Holy Spirit, or with some other sacred personage, were punished with death. Thus Simon Marin, who believed himself to be the Son of God, was on that account burned alive at Paris and his ashes were scattered to the winds (7). It is needless to state that the great number of witches had well defined cases of mental diseases. Note the worthy remarks of Andrew White (8):

On one side was the spirit of Christianity, as it proceeded from the heart and mind of its blessed Founder, immensely powerful in aiding the evolution of religious thought and effort, and especially of provision for the relief of suffering by religious asylums and tender care. Nothing better expresses this than the touching words inscribed upon a great medieval hospital, *Christo in pauperibus suis*. But on the other side was the theological theory—proceeding, as we have seen, from the survival of ancient superstitions, and sustained by constant reference to the texts in our sacred books—that many, and probably most, of the insane were possessed by the devil or in league with him, and that the cruel treatment of lunatics was simply punishment of the devil and his minions. By this current of thought was gradually developed one of the greatest masses of superstitious cruelty that has ever afflicted humanity. At the same time, the stream of Christian endeavor, so far as the insane were concerned, was almost entirely cut off. In all the beautiful provision during the Middle Ages, for the alleviation of human suffering, there was for the insane almost no care. Some monasteries, indeed, gave them refuge.

On the ground of this conception of insanity, many theories were developed by the learned theologians to explain the great variety of abnormal mental states. "But the most contemptible creatures," writes Andrew White (9), "in all these centuries, were the physicians who took sides with religious orthodoxy, while we have, on the side of truth, Flade sacrificing his life, Cornelius Agrippa his liberty, Wier and Loos their hopes of preferment, Bekker his position, and Thomasium, his ease, reputation, and friends, we find, as allies of the other side a troop of eminently respectable doctors mixing Scriptures, metaphysics, and pretended observation to support the 'safe side' and to deprecate interference with the existing superstition which seemed to them 'a very safe belief to be held by the common people.'"

Briefly stated, the conception of insanity until the middle of the eighteenth century was hopelessly misunderstood and misinterpreted, unquestionably to the decided detriment of afflicted humanity. Gradually, with the subsidence of superstition and with the progress of medical sciences and intellectual liberty, the old ideas of insanity commenced to lose their vitality. In fact, as early as 1725, St. André (10), a court physician, dared to publish a treatise in which he discarded the demonic doctrine of mental diseases. Subsequently other works appeared in various European countries which strengthened this idea. However, the actual Renaissance in psychiatry dates back to 1792, when the great French physician, Pinel, boldly and fearlessly asserted his views on psychiatry, and thus abolished the unnecessary brutal restraint of the insane. He discarded the old doctrine of the diabolic possession of the abnormal mind, and maintained that insanity is the result of bodily disease. Likewise, Tuke, in

England, introduced similar reforms. In the beginning of the nineteenth century the condition of the insane materially improved.

With the slowly evolving progress of science and better understanding of theology in the light of higher criticism, our knowledge of the nature and process of abnormal mental phenomena gradually assumed a scientific and rational turn. Nevertheless, for many years psychiatry was the stepchild of medicine, and the half brother of criminology, and, indeed, it has not yet fully gained such an important position in the medical domain as the other branches of medicine. The medical profession and the laity, however, are awakened to the fact that psychiatry is an invaluable and indispensable acquisition to our knowledge.

In the evolution of the modern conception of psychiatry, several important factors were in force; on the one hand, the psychological investigations associated with careful clinical observation of cases and experimental studies, and on the other, the great advance of anatomical, biological, and chemical studies. In the light of our present knowledge of psychopathology, insanity is viewed as a biological reaction to the environment. In other words, a mental disease is an expression of a *maladjustment between internal and external relations*. Insanity, therefore, is a disturbance of the psychic mechanism, and in the words of Adolf Meyer (11), "mind, like every other function, can demoralize and undermine itself and its organ, and the entire biological economy, and to study the laws of the miscarriage of its function and life is one of the conditions for any true advancement in psychopathology."

A psychosis being a disorder of adjustment may strike "the various levels of human activity (12) for example, the *instinctive* (dementia præcox, manic depressive insanity, hysteria, paranoid states, etc.), *physiological* (arteriosclerosis, senile psychosis), *biochemical* (general paresis, cerebral lues, etc.), *chemical* (alcoholic psychoses, etc.), and *physical* (traumatic disorders).

Not in all psychoses does the brain show abnormal changes. For instance, in general paralysis, cerebral syphilis, senile dementia, and arteriosclerotic insanity, the brain cortex presents definite histopathological pictures. However, in manic depressive insanity, paranoiac conditions, alcoholic and drug psychoses, etc., the anatomical background is not as yet defined. In some forms of insanity (e. g., in general paresis, alcoholic psychoses, infective exhaustive conditions, etc.), the exciting etiological factors can be satisfactorily determined. In all instances, however, the constitutional make-up of the individual is of prime importance, and doubtless far more important than heredity, although the latter is of dynamic significance. The composite picture of the clinical display is not determined by one symptom, but from the point of view of development, course, and the psychological construction of the symptoms with their underlying mechanisms—indeed, the whole mental reaction must be gauged from the standpoint of adaptation to one's environment.

In our present knowledge of mental pathology, an individual with a mental infirmity is regarded as a *sick person*, and is *treated as such*. We there-

fore speak no more of inmates, but *patients*, and the term asylum has become obsolete, being substituted by *hospital for the insane* or *psychopathic hospital*.

#### STATISTICAL TESTIMONY.

Since our present understanding of insanity varies so much from the older views, we can fully appreciate our difficult task in attempting to interpret the statistical data for the purpose of making a comparative estimate of the vital question, as to whether insanity increased with the approach of civilization. To meet this issue we may resort to three sources of information: First, the utilization of available *statistical data*, for the past five or six decenniums; second, the occurrence of *insanity among primitive races and children*, and third, the determination of the *insane index* in an individual *cultural race*, such as the *Jew*.

1. *Statistical*.—In Prussia, in 1875, there were 18,000 patients in 118 asylums; in 1905, there were 76,000 patients in 280 asylums; the total population in 1875 was twenty-six million, in 1905 thirty-nine million. The population increased one third; the patients in asylums, however, were four times as many as in 1875 (13). In other words, in 1875 there were 5.7 insane per 10,000 inhabitants, and in 1905, 16.9 per 10,000 (14). According to Voss, in 1850 and 1899, the proportions were 5.16 and 14.12 (15) to 10,000 inhabitants respectively. In 1859, England cared for 39,762 insane, and fifty years later there were 128,787 patients (16). The insane increased 250 per cent., while the population increased only eighty-one per cent.

According to Kraepelin (17), the recent statistical status in Europe was as follows:

Saxony, 25 insane to 10,000 inhabitants.  
Prussia, 26 insane to 10,000 inhabitants.  
England, 18.8 insane to 10,000 inhabitants.  
Berne (Switzerland), 56.1 insane to 10,000 inhabitants.  
Zürich (Switzerland), 97 insane to 10,000 inhabitants.

In other countries the insane ratio to the population is practically the same.

In the United States, according to the report of the Department of Commerce, Bureau of the Census (18) for 1910, the total number of the insane for 1910 was 248,560, "of whom 187,791 were present in the institutions on January 1, 1910, and 60,769 were admitted during the year 1910. The number of insane enumerated in institutions at the census of 1904 was 199,773, including 150,151 inmates present at the beginning of the year, and 49,622 admitted during the year. In the six years, from 1904 to 1910, there was, therefore, an increase of 37,640, or 25.1 per cent. in the number of insane confined in institutions for that class, compared with an increase of only twelve per cent. in the total population of the United States; the number of insane in hospitals per 100,000 population, advancing from 183.6 in 1904 to 204.2 in 1910. . . . The increase during this period in the number admitted to such institutions during the year was 11,147, or 22.5 per cent., the ratio of admissions per 100,000 population increasing from 60.7 in 1904 to 66.1 in 1910" (19). In this connection it is interesting to note that in 1850 the number of insane in the United States was 15,610, that is, 67.3 per 100,000 inhabitants; in 1860, 24,082 insane, 76.5 per 100,000; in 1870, 37,432 insane, 97.1 per 100,000; in 1880, 91,-

950 insane, 183.3 per 100,000; in 1860, 100.485 in sane, 170 per 100,000 (20).

The present ratio of the entire insane in the United States is 204.2 (21) per 100,000, and ratio of groups of States may be tabulated as follows (22):

| States                 | Admitted in the year 1910 in the United States | Population of the United States |
|------------------------|--|---------------------------------|
| New England States     | 13.5   | 2,778                           |
| Middle Atlantic States | 13.9   | 2,778                           |
| West North Central     | 94.1   | 6,649                           |
| East North Central     | 10.5   | 2,661                           |
| South Atlantic         | 6.3  | 2,661                           |
| East South Central     | 13.8   | 6,649                           |
| West South Central     | 33.8   | 95.8                            |
| Mountain               | 1.6  | 1.6                             |
| Pacific                | 82   | 213.1                           |

2. *Insanity among primitive people and children.*—It is important to bear in mind that insanity among primitive people is rare. In India, the population is 304,000,000 inhabitants. There are only 4,300,000 patients in asylums—the ratio of one to 70,000 inhabitants, and in Java one to 50,000 (23). Says William A. White (24):

The ratio of insanity in the negro population is smaller than in the white population, being as one to 1,066 in the former and one to 505 in the latter. Although this is so, it is generally admitted that the percentage of insanity has been gradually increasing since the Civil War. There are, however, some extremely interesting facts relative to this increase. The percentage of colored insane increases rapidly as we leave the natural home of the negro and go in any direction. In other words, as soon as the negro goes north and enters into active competition with the white, who is mentally his superior, he succumbs to the unequal struggle. So in Georgia, where we find the greatest number of negroes, there was one insane negro to 1,764 of the colored population in 1880, while in New York the ratio was one to 333, or almost exactly the same ratio as for the white population.

Then again, if we take the Southern States alone, viz., Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Tennessee, Texas, and Virginia, we find the ratio of the colored insane is one to 1,277, while for the whites in the same territory it is one to 456. For the remainder of the United States, the ratio of colored insane as shown by the tenth census was one to 542 while for the whites it was one to 520. The ratio of colored in the United States minus Southern States is, then, almost exactly the same as the ratio of the white insane.

According to the last census (25), the insane negro population in various hospitals of the United States, 12,910, or 131.4 per 100,000. In contrast to the whites, 204.2 per 100,000, whereas in 1880, the insane index was 26.1, in 1860, 57.5, and in 1901, 102.8 per 100,000.

The occurrence of insanity among Indians is still more infrequent. Hummer (26) says: "In an Indian population of more than 300,000 in the United States, there were, at the close of June, 1911, fifty-eight Indians in this asylum, fifty-two applications on file, necessarily unacted upon because of our limited capacity. Twenty odd cases in various State institutions and more than twenty being cared for by relatives or friends of the more enlightened class. This gives a total of upward of 150 known cases of insanity, a ratio of one to 2,000. As a matter of fact, judging from the reports of employees and sane Indians of several of the 140 schools and reservations of the United States, there must be at least double this number, a ratio of one in 1,000 of the population. For instance, I have

been informed that there are from fifteen to twenty epileptics on the Flathead reservation in Montana, the majority of whom present symptoms of mental alienation."

The estimation of the insane ratio (27) of the Indian population is 62.5 per 100,000 according to the census for 1910.

In children, insanity as a rule is very infrequent, and when it does occur, in the majority of instances, precocity is quite often demonstrated. The infrequency is explained by the fact that the child's adjustment to the environment is much simpler than that of the adult. Furthermore, it is not subjected to such pernicious influences as alcohol, syphilis, emotional excitement, and other factors which aid the development of a psychosis. According to the Bureau of Census (28) of the United States for 1910, "the inmates of hospitals for the insane include very few children and a comparatively large number of old people. Of the insane enumerated in hospitals on January 1st, 1910, only 0.2 per cent. were under fifteen years of age and 11.9 per cent. were sixty-five years of age and over, while of the total population of the United States in 1910, 32.1 per cent. were under the age of fifteen, and only 4.3 per cent. had reached the age of sixty-five."

The following tables will show the number of cases admitted to the various hospitals grouped according to the States:

| NUMBER ADMITTED TO HOSPITALS IN 1910    |     |
|---|-----|
| Total number under fifteen years of age | 327 |
| New England                             | 11  |
| Middle Atlantic                         | 21  |
| East North Central                      | 35  |
| West North Central                      | 5   |
| South Atlantic                          | 5   |
| East South Central                      | 28  |
| West South Central                      | 44  |
| Mountain                                | 13  |
| Pacific                                 | 7   |

| NUMBER PER 100,000 POPULATION           |     |
|---|-----|
| Total number under fifteen years of age | 2.7 |
| New England                             | 3.9 |
| Middle Atlantic                         | 7.9 |
| East North Central                      | 5.2 |
| West North Central                      | 0.7 |
| South Atlantic                          | 1.8 |
| East South Central                      | 0.9 |
| West South Central                      | 1.3 |
| Mountain                                | 1.0 |
| Pacific                                 | 0.7 |

These tables, however, reveal that the insane ratio of children's admissions does not, as a rule, correspond with that of the adult insane. For instance, in the Pacific States, the number of insane is relatively higher than in other States, yet insane children are unusually low. In the West South Central States insanity among children is rather higher than in the adults. This apparent inconsistency may be explained by the fact that possibly mental defectives were actually included among the insane. It is well known that inbreeding in primitive regions prevails, which fosters feeble-mindedness.

3. *Insanity among Jews.* In marked contrast to the primitive races, the Jew forms an interesting subject of study from the standpoint of insanity in a cultural environment. The Jew is regarded as the product of civilization; he lives in large cities and is not agricultural; is subject to great stress and strife in life, brought about both by modes of living in civilized communities and by the deep seated prejudice directed against him; he embraces such occupations and professions as require considerable



mental concentration, and furthermore he pays relatively little attention to his bodily wants.

According to many prominent authorities, it is said that Jews become more disproportionately insane than non-Jews. However, others believe that the evidence so far is not sufficient to prove this point. Dr. A. A. Brill and I made a special study of insanity among Jews in New York (including only the boroughs of Manhattan and the Bronx), and we found that the Jewish insane in the public hospitals are relatively low. To quote from our paper: "The relative percentage of the insane population is 0.0013 for non-Jews, and 0.0009 for Jews, or about thirteen insane for every 10,000 non-Jews and nine for every 10,000 Jews, or one to 751 non-Jews and one to 1,053 Jews" (29). However, our statistical studies do not include the private sanatoriums, and furthermore it must be borne in mind that many insane are sheltered at home. We all agree, however, that the Jew is predisposed to particular forms of insanity for which civilization in part plays some etiological role.

#### ANALYSIS OF THE STATISTICAL DATA.

The analysis of the statistical data shows that insanity has increased with civilization, and on the other hand, in primitive countries mental alienation is relatively not so frequent. It is extremely interesting to note that in the United States insanity has also been on the increase. Furthermore, the insane index is greater in States where civilization is at the higher level. For instance, in New England States we find 298.8 per 100,000 inhabitants; in the Middle Atlantic States 271.2 per 100,000, and in the Pacific States 243.4 per 100,000. In the Western States the number of insane is slightly lower, but as we approach the Southern and Mountain States the insane ratio is comparatively small. Thus, in the West South Central States there are 95.4 per 100,000 inhabitants.

It is rather interesting to observe the appalling contrast between those States where the stress of life is intense and the others in which culture is not fully developed, e. g., in Massachusetts the insane ratio per 100,000 population is 344.6; in New York, 343.2; and California, 279.8. On the other hand, Oklahoma is only sixty-seven per 100,000 population; Arkansas, 69.4; Alabama, 95.4; and Tennessee, 100.9. However, this difference may also be ascribed to the fact that in some Southern States the care of the insane is inadequate. To quote from the report of the Department of Commerce of the Census Bureau for 1910:

... the high ratio for the District of Columbia, for instance, results from the fact that the United States Government Hospital for the Insane receives patients from the army and navy of the United States and not alone from the population of the District; and in many of the States private institutions receive numbers of patients from other States. Probably to a great extent, however, the variations of insane in hospitals to population reflect differences in the provisions made for the institutional care of the insane and in the practice and laws regarding commitment, discharges, and transfers. A very low ratio in any State or division may simply indicate inadequate provision for this class of defectives. The very general complaint of overcrowded hospitals implies that in many States the number of insane under institutional care is kept down by the mere lack of accommodations for them, and that an increase would immediately follow the

construction of a new hospital or the extension of an existing one." (30) . . . The contrast, for instance, between North Dakota, which has 108 insane persons in special institutions for this class to each 100,000 of the general population, and Iowa, which had 242, may be partly attributable to differences in the provisions made for the care of the insane, as indicated by the fact that North Dakota has only one special institution for the insane—the State Hospital at Jamestown—said to be overcrowded—while Iowa has four State hospitals and twenty-six departments for the insane in country homes or farms (31). . . . In some States, for instance, feeble minded and idiotic persons may be committed to such hospitals, while in other States they are by law excluded (32).

Furthermore, an important point must be borne in mind that the number of immigrants in the Northern is much greater than in the Southern States and this in part may explain the high rate of insanity in the former States. Indeed, "of the total number of inmates of asylums on January 1, 1910," according to the Bureau of Census, for 1910, "28.8 per cent. were whites of foreign birth, and of the persons admitted to such institutions during the year 1910, 25.5 per cent. were of this class. Of the total population of the United States in 1910, the foreign born whites constituted 14.5 per cent. It is evident, then, that the foreign born have an unduly large representation in insane asylums. There were, in fact, 405.3 foreign born whites in insane asylums to each 100,000 of the total population, while for the native whites the ratio was 168.7 to 100,000; the number of admissions during the year was 116.3 per 100,000 in the case of the foreign born whites, compared with 57.9 in the case of the native whites" (33).

"Without attempting at this point to trace out"—the report concludes—"or establish any causal relationship between the ratios and percentages presented in this table, attention may be called to the fact that a high ratio of insane in institutions appears to be associated with a relatively high percentage of urban population and of foreign born, and with a relatively small percentage of children, and a relatively high percentage of old people" (34).

It is important to bear in mind that negroes are less afflicted with insanity than the white races in their native States. However, in the Northern States the insane ratio is higher, but does not approximate that of the white.

#### CRITICAL INTERPRETATION.

The statistical interpretation supports the view that mental diseases are on the increase, but can this phenomenon be attributed to civilization only? Or are there other reasons to explain it? It must be borne in mind, however, that there are other causes which, in part, may be held responsible for the growth of the insane population, viz.:

First, our statistical data are better kept and consequently more careful and accurate computation is possible; secondly, the prejudice against insane hospitals is slowly dwindling away; thirdly, our improved psychological and laboratory methods aid us to recognize mild or incipient forms of mental diseases; fourth, because of the fact insane patients are better cared for, they naturally live longer; fifth, the total population is increasing and the immigration to large cities is prevailing.

Although these facts may partly interpret the relatively high insane census, nevertheless civilization

is regarded as an important factor in aiding the production of mental alienation. In the words of Krafft-Ebing (35): "Increased civilization has been held responsible for this augmentation, and it has been pointed out that, among uncivilized peoples insanity is a very infrequent phenomenon, while actually there is at least one insane person to every 500 sane in the highly civilized nations." And Giddings (36) remarks: "Degeneration manifests itself in the protean forms of suicide, insanity, crime, and vice, which almost abound in the highest civilizations, where the tension of life is extreme, and in those places from which civilization has ebbed and from which population has been drained, leaving a discouraged remnant to struggle against deteriorating conditions."

Our statistical testimony restricted itself to mental diseases only, but it must not be forgotten that the borderland cases of mental abnormalities ranging from mild neuroses to vagrancy, prostitution, chronic alcoholism, and drug saturation, delinquency, and other degeneracy also increased with the advance of civilization.

We may now ask the question, What is the fertile soil that civilization offers for the production and growth of mental diseases?

It is an indisputable fact that nowadays the strife for existence is abnormally intense. It is not the ordinary sustenance of life, such as appeasing hunger, quenching thirst, and finding ordinary shelter for simple adaptation, but in civilized communities the struggle for existence is more complex because the adjustment to the environment is more complicated. The mere gratification of physical desires is not sufficient, but there is a great effort exerted in achieving social distinction, intellectual attainment, and unnecessary luxury and wealth for the purpose of maintaining a certain conventional position in life. To accomplish this end, mental strain and physical energy are drained almost to exhaustion. In addition, an element of fear invariably haunts the men of civilization—the feeling of "not making good" in life is a dominant obsession of modern times.

All these factors are conducive to shatter one's nervous system to such an extent as to make one emotionally unstable and create that nervous temperament upon which certain psychoses are readily engrafted. Indeed, this is the reason why affective mental diseases, such as manic depressive insanity, etc., are in preponderance in the civilized society. Among the Jews such types of mental diseases are also predominant.

One of the other unfortunate means, so common in our day, of crippling mental health, is to cause artificial stimulation of a fatigued brain. In order to dispel surmenage we resort to tobacco, tea, coffee, narcotic drugs, and alcohol, which are used indiscriminately to the detriment of the nervous system. The overworked business and professional man does not stop to ponder on the harm such artificial agencies may produce upon his mental life. He continues to indulge in some form of drug in order to assist temporarily in carrying him through critical periods. Sooner or later, however, the vicious habit is formed, which not only wrecks his mentality but is also responsible for degeneration of his offspring. For this reason, it is not at all surprising that alco-

holic insanities are so frequent in modern times. It is estimated that in the various hospitals for the insane in the United States over ten per cent. of all mental diseases are of alcoholic origin. In New York State hospitals the percentage is higher—fifteen per cent. In the European countries the ratio is much greater, ranging from twenty to thirty, and in some parts to forty and fifty per cent. These are the direct effect of alcoholic intoxication, and indeed, epilepsy and feeble mindedness, in a large majority of instances, can be traced to alcoholic parents. Likewise, in nervous and mental diseases, chronic alcoholism in the ancestry is often demonstrated. The influence of drugs is as detrimental to mental health as alcoholism.

One other point must be strongly accentuated, and that is, in the strife and struggle for existence in civilized societies, the actual care of the body is quite often neglected. Hunger is not appeased in time; we take our meals without appetite; we either eat too fast or do not eat at all; there is not time for recreation or exercise; our whole attention is directed toward competition with our fellow men.

The congested offices, sweat shops, tenement houses, lack of air and sunlight, crowded cars, overpopulation, etc., are products of the modern industrial form of society. It is apparent that by neglecting the care of the functions of the body, the nervous system directly and indirectly is affected.

Because of the great demands of civilization in maintaining economic independence in all its phases, late marriages have become one of the many great evils of today. There are three conditions that attend late marriages—sexual irregularities, sexual repression, and sterility or defective offspring.

Sexual irregularities are responsible for venereal diseases. Syphilis is one of the most potent and dangerous diseases in attacking the nervous system of the cultural race. It is interesting to note that although syphilis exists in great abundance among primitive people (37), yet general paresis is very infrequent among them. In modern society, syphilis, in addition to that nervous temperament which is so common to the civilized man, causes this fatal disease.

General paresis is one of the comparatively frequent mental affections of today. It is the offspring of *civilization* and *syphilization*. It forms from twenty to twenty-five per cent. of all cases admitted to hospitals for the insane. According to Salmon (38), one out of nine deaths between the ages of forty and sixty years in New York is due to general paresis. It is important to bear in mind that this mental disease prevails more in the city than in the country. It is also interesting to note that the Jew (not the orthodox) shows a great proportion of general paresis.

Sexual repressions associated with faulty habits and thinking play important etiological roles in the production of mental and nervous diseases in certain individuals—this is striking especially in neuroses, which are in great abundance nowadays.

It is generally conceded that in late marriages sterility or defective offspring is of frequent occurrence. The former is possibly due to previous venereal diseases, and the latter is caused either by par-

ental syphilis or general deterioration of germ plasma.

The attempt was made to outline the various underlying objective factors which are invariably controlled by civilization, and to show how they operate upon mental life in bringing about a neuropathic constitution. However, another fact of paramount importance must be recalled, that our mental life is composed of two parts (39): the *unconscious* or *instinctive*, and the *conscious*. In the early development of the child, mental adjustment is purely instinctive. The child cries when it pleases; it gives vent to its feelings without discretion or being controlled by rules and laws; it has no shame; duty or respect has no significance for it; in a word, the child acts according to instinctive desires. However, as the child grows older, the unconscious or instinctive life becomes gradually subordinated to the conventional and cultural requirements. Here the influences of education, religion, morality, and environment begin to exert their influence upon the child and the conscious life (which emanates from the external world) begins readily to assert itself. The characteristic difference between a very young child and a civilized man lies in the fact that the former's behavior is not controlled by conventional ties or tenets, whereas the latter conforms with the rules and customs of society. The poet very beautifully expresses it:

Crying they creep among us like young cats  
Cares and continual crosses keeping with them,  
They make time old to tend them, and experience  
An ass, they alter so; they grow and goody  
Ere we can turn our thoughts, like drops of water  
They fall into the main, are known no more.

It is evident that the more complex is civilization, the greater is the need to repress the instinctive life for the purpose of maintaining conventional adjustment—this is why civilization is such an effective factor in upsetting the mental equilibrium. Freud (40) very truly remarks:

The claims of our civilization make life too hard for the greater part of humanity, and so further the aversion to reality and the origin of neuroses without producing an excess of cultural gain by this excess of sexual repression. We ought not to go so far as fully to neglect the original animal part of our nature. We ought not to forget that the happiness of the individual cannot be dispensed with as one of the aids of our culture. The plasticity of the sexual components, manifest in their capacity for sublimation, may cause a greater temptation to accomplish greater cultural effects by a more and more far reaching sublimation. But just as little as with our machines we expect to change more than a certain fraction of the applied heat into useful mechanical work, just as little ought we to strive to separate the sexual impulse in its whole extent of energy from its peculiar goal. This cannot succeed, and if the narrowing of sexuality is pushed too far, it will have all the evil effects of a robbery. I only venture the indirect presentation of my conviction if I relate as an old story whose application you may make yourself. German literature knows a town called Schilda, to whose inhabitants were attributed all sorts of clever pranks. The wisecracks, so the story goes, had a horse with whose powers of work they were well satisfied, and against which they had only one grudge, that he consumed so much expensive oats. They concluded that by good management they would break him of his bad habit by cutting down his rations by several stalks each day until he had learned to do without them altogether. Things went well for a while; the horse was weaned to one stalk a day, and on the next day he would at last work without fodder. On the morning of this day, the malicious horse was found dead; the citizens of Schilda could not understand why he had died. We should be inclined to believe that the horse

had starved, and that without certain rations of oats, no work could be expected from the animal.

#### CONCLUDING REMARKS.

The psychological interpretation of the statistical documentary evidence points very strongly to the fact that civilization with its destructive forces exerts pernicious influences upon mental life. However, we must not be too pessimistic and feel that civilization offers nothing in the preservation of conserving mental integrity. Indeed the constructive forces of our present culture are manifold in their scope of application. Science in all its branches has made a wonderful progress and has produced a beneficial effect upon the whole mode of living in facilitating general adaptation.

The sanitary conditions of today are ideal. Engineering, mechanical and electrical means of assisting men in adaptation to their environment are unquestionably of ingenious human achievement. Commerce, economic and sociological relations display more order, system, and organization, hence undue stress and emotionalism become gradually more and more lessened. Educational methods are more rational and pragmatic today than in the past. Our pedagogical institutions give more attention to practical and vital issues in life, and education is an essential means of facilitating adjustment.

The progress of medical science has accomplished a great deal toward the amelioration of the general welfare of mankind. Diseases can be recognized in their incipency; a fatal outcome is more readily delayed or prevented; prophylactic measures are based upon rational scientific methods, and infectious diseases today are practically preventable.

The scope of mental hygiene is far reaching and deep seated in its effort of establishing healthy mental adjustment. It concerns itself not only in the education of masses against such evil influences as syphilis, alcohol, and drugs, but further, attempt is made to detect and correct early mental deviations in the child, and already schools, juvenile courts, and correctional institutions begin to recognize the importance of psychiatric methods of examination.

Indeed, we are now in the transition epoch, where the constructive forces are beginning to counteract the destructive influences. It must be admitted that this is a very critical period, the problems of which, however, are much facilitated by the activities of mental hygiene, and we are gradually becoming more and more adaptable to the intricacies of civilization. The harmonious cooperation of the physician, educator, sociologist, philanthropist, and social service worker is indispensable in reducing the high rate of insanity. It should be remembered that the *preservation of mental health implies national efficiency.*

#### REFERENCES.

1. BUCKNILL and TUCKE: *Manual of Psychological Medicine*, 1908, 2. IDEM: *Ibid.*, page 8. 3. IDEM: *Ibid.*, pages 9 and 10. 4. KRAFFT-EBING: *Textbook on Insanity*, page 38. 5. IDEM: *Ibid.*, page 38. 6. A. D. WHITE: *History of Warfare of Science with Theology*, page 99. 7. IDEM: *Ibid.*, page 120. 8. IDEM: *Ibid.*, page 119. 9. IDEM: *Ibid.*, page 124. 10. MEYER: *British Medical Journal*, Sept. 29, 1906, page 12. 11. *Handbook on Mental Hygiene*. 12. WEBER: *Archiv f. Rassen u. Gesellschafts Biologie*, vii, pages 707 and 708. 13. *Handbuch der Psychiatrie*, iii, page 16. 14. KRAEPELIN: *Psychiatrie*, i, 1913, page 162. 15. *Handbuch der Psychiatrie*, iii, page 20. 16. KRAEPELIN: *Psychiatrie*, i, page 162. 17. *Department of Commerce, Bureau of the Census*, 1910, page 11. 18. *Ibid.*, page 12. 19. *Ibid.*, page 12. 20. *Ibid.*, page 16. 21. *Ibid.*, page 16. 22. *Ibid.*, page 16. 23. KRAEPELIN: *Psychiatrie*, i, 1913, page 162. 24. *Journal of Mental and Nervous Diseases*, 1903, pages 267 and 276. 25. *Department of Commerce, Bureau of the Census*, 1913, pages 23 and 34. 26. *Transactions of the*





of ulcer. At the age of thirty-eight years he was operated on by a very skillful and well known surgeon, who, finding an ulcer in the stomach and one in the duodenum, did a gastroenterostomy. For a while after operation, relief was secured, but in a few months all symptoms recurred and at the end of two years were as severe as before. The patient returned to the surgeon for examination, after which the abdomen was opened. Food was found to be passing out of the pylorus. It was said the stoma of the gastroenterostomy had closed. This was reopened and enlarged and, after a short interval of relief, symptoms returned. The surgeon was again consulted and the abdomen was opened for the third time, as food was found to be passing out through the pylorus as well as through the stoma of the gastroenterostomy which the surgeon then closed permanently. The events in this case are not surprising in the light of the facts demonstrated by the Röntgen ray studies on animals. The importance of these studies in demonstrating the futility of this operation in the treatment of ulcer is not fully appreciated at the present time.

The clinical diagnosis of carcinoma at a time when the diagnosis could be of greatest value to the patient is extremely difficult and usually impossible to make. The failure to diagnose the disease early is a factor in the high mortality rate. As a general rule, when the diagnosis is made the growth has extended to such a degree that the case is hopeless as to cure. The Röntgen rays have made it possible to discover the disease earlier than was formerly the case, but it is still questionable if, even with this aid, a sufficiently early diagnosis can be made. Every patient at or about middle life presenting symptoms suggestive of a chronic ulcer, or presenting symptoms of indigestion that do not speedily disappear under appropriate treatment, should be carefully studied by an expert röntgenologist, as x ray evidence of carcinoma is obtainable before the disease is detectable by clinical means. The physician who neglects to have these patients so studied, neglects his full duty to the individual. In late cases, the x rays give a good idea of the location and amount of involvement, and in many instances show the presence of metastatic growths. The possession of such information by the clinician obviates, in some instances, the necessity for an exploratory operation which is not the harmless procedure we are led to believe. True, from the purely mechanical surgical standpoint, it causes no harm. There occurs in many cases, however, a variable amount of shock to the nervous system expressed by such distressing symptoms as sleeplessness, mental depression, and loss of emotional control, with secondary disturbance in function of the various organs of the body, thus adding to the gravity of the illness. The importance of these symptoms is more often underestimated than overestimated.

Gastropsis is a very important pathological condition about which much valuable information has been given by the x ray. Without a Röntgen study it is impossible at times to differentiate those cases of true ptosis in which the stomach as a whole has dropped downward as a result of defects in its ligaments and attachments, from those in which the lower pole of the stomach lies near or even in the

pelvis as the result of atony of the gastric wall. In the former peristalsis is usually good and there is little or no disturbance of the secretory glands, but mechanical difficulties may occur to necessitate surgical interference. In the atonic type the peristalsis is feeble and the secretory functions are depressed and sometimes abolished. Food stagnation is common and the patient presents symptoms of marked toxemia. When not properly studied, a diagnosis of neurasthenia is apt to be made and the psychic symptoms so often exhibited are often misconstrued as evidence of a naturally mean disposition. These are the unfortunates who drift from doctor to doctor and are a living reproach to the physicians of the community. When, however, the true nature of the disease is discovered, it is possible by medical measures, intelligently used, to cure many and restore others to a fair degree of health. Surgical interference in these cases is usually baneful.

The x ray is of invaluable aid in determining the value of belts and binders prescribed as part of the treatment of gastropsis. We may no longer feel secure in a blind confidence in the efficacy of the prescribed belt, but must have the x ray evidence to prove that it is doing exactly what was intended. It is necessary to study the stomach and colon after the belt is put on, just as a fracture is studied after the splint is applied.

In conclusion, I wish to emphasize the importance of close cooperation between the röntgenologist and clinician. To send a patient to the x ray laboratory with the bald statement that an x ray examination of an organ is desired is unfair to both patient and röntgenologist. Much valuable information may thus be lost. The röntgenologist should be informed about the medical aspects of the case and, when possible, a consultation should be held to determine how the case is to be studied by the rays in order to bring out the points for diagnosis. By so doing, information of the most important nature may be obtained that would be lost if an examination were made in a routine manner. On the other hand, the röntgenologist should not permit himself to be biased by a snap diagnosis. He must be an impartial observer and reporter of phenomena, the interpretation of which often requires the nicest judgment and a thorough knowledge of the case.

319 SOUTH EIGHTEENTH STREET.

## FOREIGN BODIES IN THE CONJUNCTIVA AND CORNEA.

*How to Treat Them.*

BY AARON BRAY, M. D.,  
Philadelphia,

Ophthalmologist, Jewish Hospital and Lebanon Hospital.

In these days, when every physician is apt to look for big things in the columns of his favorite journal, one has to offer an apology, indeed, for writing upon such a common everyday subject as the treatment of foreign bodies on the cornea. I am, however, not only justified, but impelled to bring this matter before the profession because, as a result of my experience, I am convinced that some general practitioners have not an adequate sys-

tematic way of handling these cases, and very often they cause unnecessary suffering, and may even reduce the visual acuity by their overzealous attempt to do something for the patient. Foreign bodies on the cornea are of daily occurrence. Sufferers usually consult the druggist first, who is always willing to act the good Samaritan. Not infrequently they go to the accident rooms of the various hospitals, when no one but the resident physician is there to give the desired relief. In a large number of cases the family physician is called upon to treat these cases, and not very rarely it happens that the patient consults all these agents in one day, each of whom tries to remove what he thinks to be a foreign body and consequently each adds to the corneal injury enough to cause a larger destruction of epithelial tissue, and increase the suffering, and occasionally, although not very often as a result of a lack of aseptic or antiseptic precaution, an infected corneal ulcer is the ultimate result, which reduces the acuity of vision.

Comparatively speaking, the ophthalmologist rarely sees a simple case of foreign body on the cornea. Those cases that come to our consultation rooms are already either corneal lacerations, abrasions, or ulcers as a result, not of the foreign body—which very often is no longer there—but of trauma produced in the attempt to remove the body. This paper is written for the express purpose of guiding those not skilled in the handling of these cases, and if it helps only one physician to meet the emergency I shall consider myself well compensated.

#### DIAGNOSIS.

It is, of course, necessary first to determine the presence of a foreign body. A patient usually comes with a ready made diagnosis telling us that something got into his eyes and that the eye feels painful. The story may be true, he may have pain, and yet there may and may not be a foreign body in his eye. He might have had a cinder in his eye, but the lacrimal fluid which is usually increased in quantity has carried it off and his pain is merely the subsequent effect which is observed in many cases.

It is well to inquire whether somebody has attempted to remove the foreign body; if so, it is essential to bear in mind the probability that the foreign body has been removed, but the operator has produced a corneal abrasion or laceration which is responsible for the pain. If the pain is very severe, the probability is that we are dealing with an abrasion of the cornea, with an exposure of the superficial filament of the ciliary nerves. The operator has neglected his aftertreatment, and the patient is seeking relief from another physician. In proceeding with your examination, the lower conjunctival sac should first be inspected. This is an easy matter to do by simply pulling down the lower lid, when the entire conjunctival surface can easily be inspected. In order to examine the upper conjunctival sac, it is necessary to evert the upper lid so as to bring the conjunctival surface into view. The ease with which this can be accomplished will depend upon the dexterity and experience of the physician. When no foreign body has been found in either of the conjunctival sacs, we proceed to inspect the cornea. Large foreign bodies on the cornea may

easily be detected, but small ones may readily be overlooked. If no foreign body can be seen with the naked eye in ordinary daylight, it is necessary to employ artificial light. Oblique illumination with a light condenser is necessary for the detection of small foreign bodies. If no foreign body under oblique illumination is discernible, and the cornea is smooth and has its natural lustre, we are sure that we are dealing with a case of simple irritation, due to a foreign body that has been swept away by the lacrimal fluid. If the cornea is not entirely smooth or the general practitioner is in doubt as to its natural lustre, it is best for him to instill a drop of a one per cent. solution of fluorescein:

|    |                          |          |
|----|--------------------------|----------|
| R  | Fluorescein, .....       | grs. ii: |
|    | Liquoris potassae, ..... | ℥ss      |
|    | Aque destillatæ, .....   | i        |
| M. | nat collyrium.           |          |

then cleanse the eye well with a boric acid solution; any abraded surface will be found to be stained green or greenish yellow. This will not only clear the diagnosis, but will also show the extent of the corneal injury. This should always be done when the patient tells us that someone has attempted to remove the foreign body. Whenever a patient complains of severe pain after the removal of a foreign body from the cornea it is almost sure that the corneal epithelium has been injured in the attempt and the surgeon failed to give the proper aftertreatment. Not infrequently there will be seen a colored spot on the cornea resembling a foreign body; the patient will give a history of a foreign body that has been removed. It should be borne in mind that every foreign body that has been imbedded in the cornea will after its removal leave a pigmented spot that closely resembles a foreign body, and the inexperienced and often even the specialist cannot differentiate with any degree of certainty. The general practitioner will do well to remember one more possible mistake in diagnosing foreign bodies on the cornea, namely, a marked dark pigment spot on the iris shining through the cornea, giving the inexperienced observer the picture of a foreign body of the cornea. I have seen several such cases where an attempt has been made to remove what was considered a foreign body on the cornea, when as a matter of fact, on the iris tissue there was a circular small concentrated dark pigment spot. This condition can easily be differentiated by looking at the supposed spot by oblique illumination from different angles and with the eye in different positions, when it will soon convince even the inexperienced that the spot seen is not on the surface, but deeper in the iritic tissue. A mistake in diagnosis will, of course, lead to very annoying consequences and pain.

#### TREATMENT.

Ordinarily these cases are treated by the laymen who get the first chance. Among ignorant women of various countries it is a common practice to remove foreign bodies with the tongue. Here in this country the chief instrument to remove a foreign body from the conjunctiva is the pocket handkerchief. In large industrial establishments it is customary for the workmen to remove them even from the cornea. In fact, in large factories some men are considered as expert removers of foreign bodies;



they have acquired some dexterity and some even have antiseptic lotions with them. Very often, however, they do a great deal of harm to the cornea.

Conjunctival foreign bodies are easily removed by means of an applicator with a piece of cotton over it. In the majority of cases no aftertreatment is required. Neither is it necessary to anesthetize the eye. Occasionally, however, in very sensitive eyes, when the foreign body has been there for several hours under the upper conjunctiva, there is a sufficient amount of irritation felt after the removal of the foreign body, and it is well to instill a drop of a two per cent. solution of cocaine and prescribe some soothing eye lotion:

|                               |           |
|-------------------------------|-----------|
| R. Acidi borici, .....        | grs. xxx; |
| Sodii chloridi, .....         | grs. ii;  |
| Adrenilini sol. 1/1000, ..... | 3ss;      |
| Aque rose, .....              | 3ss;      |
| Aque destillata, q. s., ..... | 3iii.     |

M. Sig.: Bathe eye several times daily.

The removal of foreign bodies from the cornea always necessitates a local anesthetic. Two or three drops of a two per cent. solution of cocaine will anesthetize the cornea sufficiently to remove a foreign body that is not very deeply imbedded. The removal must be accomplished with little pressure upon the cornea, and the general practitioner should always use a blunt instrument. The best is an applicator or a tooth pick wrapped over with a pledget of absorbent cotton, which should first be moistened with some mild antiseptic solution and then gently brushed over the cornea. Foreign bodies not imbedded will usually be removed easily in this way and will practically require no aftertreatment. The patient will be relieved at once. It happens, however, quite often that the foreign body is imbedded in the cornea and cannot be removed by this method, and a sharper instrument must be used. Occasionally the free end of a toothpick may suffice, but not infrequently it is necessary to use a pointed metal instrument. The corneal spud is the most handy instrument. This should always be sterilized first. After a foreign body has been removed with a spud, it is necessary to give some aftertreatment. This will depend upon the amount of destruction of the corneal tissue. If considerable corneal epithelium has been destroyed, the removal of the foreign body alone will not give any relief. In fact, superficial erosions of the cornea give rise to severe pain. The best way to avoid pain is after cocaineization to bandage the eye so as to exclude the air. A protective bandage is absolutely necessary. The patient should be advised to apply hot compresses several times daily. This will help in the speedy reconstruction of the corneal epithelium, which usually requires two to three days. In all cases where the cornea has been injured the eye should be put at rest. This is accomplished by the instillation of a one per cent. solution of atropine sulphate. This is best combined with an analgesic:

|                          |        |
|--------------------------|--------|
| R. Morphini, .....       | gr. i; |
| Aeropon sulphatis, ..... | gr. i; |
| Aque destillata, .....   | 3iii.  |

M. Sig.: One drop in the affected eye every three hours.

This will give comfort, help in the reconstruction of the cornea, and prevent further complications. It is well to guard against too much interference

on the part of the physician. Occasionally patients call upon us for the removal of foreign bodies on account of pain, with a history of a foreign body that has been already removed by one or two laymen or physicians. The man has all the symptoms of a foreign body and on examination you find a black spot on the cornea. This black spot is not always a foreign body, but may be only the pigment spot that so often is seen after the foreign body has been removed. It is best not to attempt any surgical procedure where there is any doubt. The pain the patient suffers is due to surgical trauma, abrasions or lacerations of the cornea, and not to the remnants of pigment, and an additional attempt to remove them will only increase the injury. Instill a drop of cocaine into the eye to relieve the pain, apply a bandage, advise the application of hot compresses, and prescribe for home use a one per cent. solution of atropine and a mild antiseptic eye wash. These cases have to be seen again, for not infrequently corneal abrasions may become infected and give rise to ulcers. If there is any remnant of foreign body after several attempts at removal, it is still advisable to be conservative and let the patient alone. Get rid of the pain first, let the corneal abrasion heal, and then the remnant will come out easier with less injury a few days later. This simple precaution by the general practitioner will save much annoyance and pain to the patient, while the physician will be conscious that he has accomplished a small feat in a great manner.

917 SPRUCE STREET.

## THE HYGIENIC FEATURES OF SCHOOL LUNCHES.

By DONALD B. ARMSTRONG, M. D.,

New York,

Director, Department of Social Welfare, New York Association for Improving the Condition of the Poor.

While the mental attitude of modern health workers presents many points of view in striking contrast to those held by the most advanced hygienists of a decade or two ago, it is safe to say that at least two or three of the more striking planks in the modern health platform may be indicated as follows:

1. In the civilized, more advanced communities, particularly in the urban centres, public health workers will be found to be almost ready to drop the word "public." They are willing to talk primarily about health. Paradoxical as it may be, the keynote of modern sanitation is personal hygiene. In New York city, for instance, from a health point of view, it is more important to teach the school children to wash their hands before eating than it is to solve the problem of sewage disposal.

2. While instruction regarding personal hygiene may, to some extent, be carried on in the home, there is no place that offers so great an opportunity for this work as the class room.

3. The groups that most need the attention of the health worker today are to be found in the adult, middle age, and older life periods, where are observed exceedingly high and increasing death rates

from the constitutional or degenerative diseases. Further, it is recognized that the evils of these periods must be combated by education, and that the time to lay the foundations is during the school period of life. Finally, it is believed that diet, food selection, and habits of eating are of prime importance as etiological factors in the incidence of the so called nonenvironmental diseases. The schools, not only through their domestic science courses, but also through their lunch services, offer a mechanism of unusual importance in the dissemination of knowledge regarding sanitary, dietary, and culinary food values.

The school lunch movement, therefore, takes on increasing importance when consideration is given to its hygienic and sanitary possibilities. While until recently these opportunities have been scarcely realized and by no means utilized to their full value, nevertheless there are definite potential forces here for hygienic education. From a practical standpoint there are, in addition, a number of factors in the lunch service which are to be taken into consideration if the system is to be operated on safe, sanitary principles, and is to serve as a demonstration of the practical application of the principles of hygienic precaution and food protection.

For the sake of preliminary orientation, it may be well to say that the school lunch system as ordinarily established in American cities, aims at the supply of hot, nourishing food at cost to the children who, for some reason, economic or other, fail to get a nourishing meal at home. The school lunch is a factor of importance in the struggle against malnutrition in the schools. From a social point of view it is, to say the least, an interesting experiment and demonstration in group feeding. The menus, which consist of soups, sandwiches, salads, desserts, etc., are arranged so as to avoid religious prejudices and to offer a noninjurious, nutritious, balanced ration. The portions of food are usually sold for one penny and the returns for this service are ordinarily sufficient to cover operating cost, with the exception of administrative supervision.

Undoubtedly, New York city has made the greatest advances in school feeding in the last few years, the work having started in 1907 with nine schools, and grown to include twenty schools served from several central kitchens, by 1914. A special revenue bond issue of \$26,000 passed by the board of estimate on July 1, 1915, makes possible the extension of this service to nearly 100 schools. In view of the fact that by this system thousands of children will be fed daily, it is even more necessary than before that every sanitary precaution be taken by the New York School Lunch Committee, which administers the school lunch service in the boroughs of Manhattan and the Bronx as an associate activity of the Department of Social Welfare of the Association for Improving the Condition of the Poor. It is this committee that has paid particular attention in the past to the hygienic features of the service, and the briefly outlined discussion which is to follow is based, for the most part, on the New York experience.

From the sanitary and hygienic points of view the factors in the lunch service may be discussed under several heads:

#### A. THE FOOD ISSUE.

1. It is necessary that those having charge of the purchasing should take into consideration the source of the manufactured products. This involves, in some instances, an actual inspection of the factory from which purchases are made, in other instances, where circumstances justify it and where cooperation may be obtained, it is possible to request an inspection and statement of conditions from the local health authorities. The kinds of ingredients employed should be looked into, as well as the sanitary features of handling, packing, etc. The medical supervision of employees in food manufacturing plants is of great importance, and an inquiry regarding this feature, even though special circumstances may not permit of insistence on it, cannot but have a good educational effect. Finally, the economic conditions obtaining in the factories from which food is purchased should also be considered, for there is no reason why a school lunch service, or any other business with large purchasing power, should not exert its influence for the elimination of parasitic industries.

2. As a check upon food quality, food adulteration, fraudulent preservatives, etc., occasional chemical analyses may be worth while. These can usually be obtained from the municipal laboratories.

3. Calorific analyses will be necessary on certain products in order that the food supplied may be standardized and the lunch service made a rational one from a dietary point of view.

4. Under unusual conditions, circumstances may arise requiring bacteriological studies, though the necessity for this should be an infrequent one if the municipal food inspection service is to be relied upon and if the food is properly protected in the school building.

5. Adequate means must be taken in the school building to provide efficient refrigeration for perishable products and protection of bulk materials in storage from vermin, rodents, etc.

6. Special efforts must be made by means of screening, glass cases, educational work, etc., to protect the food while it is being served or while exposed on counters, from flies, dust, dirt, and unnecessary handling.

#### B. THE SERVICE.

1. In the first place, care must be taken that healthy individuals are selected to work in connection with the school lunch service. This applies particularly to cooks, the counter people, and the waiters if any are employed. Usually the service is cafeteria and school children assist at the tables. In any case the system of selection should be rigid enough to insure that those engaged are free from communicable disease. This same principle, of course, applies to every kitchen or place where food is handled immediately before consumption, whether it be restaurant, hotel, hospital, public kitchen, or school lunch. Intelligent supervision of this kind is the only sure protection against further Typhoid Mary catastrophes.

2. On general principles, the employees should be required to give assurance of recent smallpox vaccination.

3. In addition to special examinations following

communicable disease, the staff should be examined annually for the detection of carriers or of recently developed transmittable pathological conditions. These examinations should include laboratory tests, such as the Widal, the Wassermann, sputum examination, examination of stools for typhoid carriers, and throat cultures for the Klebs-Loeffler bacillus. Here, also, cooperation can usually be obtained from the health department laboratories.

#### THE BUILDING.

1. Floors should be as nearly dust proof as is possible, otherwise, with the entrance of a large number of children into the lunch room, an excessive amount of dust will be stirred up and will subsequently settle over the food to be eaten.

2. For psychological as well as hygienic reasons the rooms where the food is served should be well ventilated. Recent experiments by the New York State Commission on Ventilation have demonstrated that there is an appreciable decrease in appetite and food consumption when the food is eaten under stagnant, poorly ventilated conditions, 6.8 per cent. less food being consumed under "no air" conditions. An adequate air supply makes more likely an adequate food supply, consequently ventilation may justly be considered a factor in the malnutrition problem.

3. Readily accessible and adequate drinking facilities should be supplied. This means, in most cases, drinking fountains low enough to be reached by the smaller child and of hygienic construction. They should provide for a continuous flow if that is possible, and if not, should be operated by a foot pedal. Good water pressure is desirable, for the stream should rise three or four inches above the bulb, so as to make it uncomfortable for the child to place his mouth over the bulb. The water should fall away on all sides and should not be allowed to accumulate in a small basin out of which one is supposed to drink. This arrangement is only slightly superior to the common drinking cup. Finally, the affluent pipe should be large enough to lead the water away without slopping or otherwise creating a nuisance.

4. Comfortable temperatures, not too warm, and sufficient light, natural if possible, are, of course, desirable.

5. Provision should be made in nearby toilets or elsewhere, where the children can follow out their instructions to wash their hands before eating. This means hot water, individual towels, and soap from a holder.

6. In general, the equipment of the room should be one conducive to rest and relaxation. Seats should be provided and sufficient time allowed so as to insure a leisurely repast.

#### TO THE CHILD

1. The child should have pointed out to him by means of educational bulletins, all of the sanitary precautions that are being observed in connection with the lunch service. He should be told to expect the same in the store where he or his mother does the family purchasing. He will not have to be told to expect the same at home.

2. The children cannot be coerced, but, by educational means, should be encouraged to partake of

the lunch service for many reasons, not the least of which is the opportunity which the service offers to combat the dietary and sanitary dangers of push cart foods, such as the hot waffle, the candied rotten apple, the dill pickle, the miscellaneous fruits and candies which tempt the school child on all sides in nearby streets at the lunch hour.

3. As indicated in the introduction, the lunch service offers tremendous opportunities for education in food selection. Thus far it has been customary in food work by health departments to emphasize the dangers of food infection. The pure food cranks have based their pseudo health propaganda on the fraudulent but noninjurious food adulterants such as glucose, saccharin, gelatin, etc. On the other hand, it is undoubtedly true that badly balanced rations kill more people in a month than succumb to infected, preserved, or adulterated foods in a year. The time to initiate proper food habits is the school period; the lunch service offers a big opportunity. Consequently the menu should present not only the foods for sale with their costs, but also their caloric value; it should indicate how many calories are required at the meal and should demonstrate a number of selections which will give an appetizing and yet balanced adequate ration. This should be supplemented by a series of educational leaflets covering the several phases of food handling, preservation, selection, etc.

3. It should be possible by educational means to influence the order in which food is selected. The New York system at present requires that each child start with a nourishing bowl of soup. It may be possible to influence the child to observe other desirable principles of selection, such as the closing of the meal with fruit, which will assure in the dietary a supply of salts for the metabolic processes—a factor in which most dietaries are grossly deficient—and will insure the preservative action of the fruit acids upon the teeth.

4. In 1913, the medical school inspectors in New York city, after examining one third of the school population, announced that they had found 13,991 cases of malnutrition. On this basis it is estimated that there were in that year about 37,000 cases of malnutrition in the New York city schools. Obviously the school lunch service, in providing at least one nourishing, well balanced meal a day, can do a great deal to combat the evil of undernourishment.

5. Finally, the service, if properly conducted, can serve as an educational demonstration in cleanliness, which will have a far reaching effect, touching not only the home, but indeed all food handling and food distributing agencies with which the child may come in contact.

The school lunch service, while established originally as a relief measure, has in its development in most communities attempted to become a self supporting business. Its growth has been based on sound social and economic principles. It is fundamental to the proper and economic workings of the educational process. It has, as indicated above, decided educational value in itself. From the standpoint of health and school hygiene, it is a constructive force, doing valuable preventive work. It is a creative health measure, in contrast to the disease suppression and defect eliminating school health



work of earlier times. It is an instrument to be utilized by communities which realize that the health of the school child is one of the keenest sociosanitary indices of the community's life. When used with intelligence and vision, the school lunch service is a factor in laying a firmer physical foundation upon which society may hope to see constructed a finer social state.

105 EAST TWENTY-SECOND STREET.

## THE MAINTENANCE DIET FOR ADULTS.

BY ROBERT HUGH ROSE, M. D.,

New York,

Instructor, Post-Graduate Medical School.

The human body is composed of water, sixty per cent.; proteins, eighteen per cent.; fats, fifteen per cent.; carbohydrates, one per cent.; and minerals, six per cent. Calculated for the average weight, which is 150 pounds, the body contains ninety pounds of water, twenty-seven pounds of proteins, 22.5 pounds of carbohydrates, and nine pounds of minerals.

The problem of determining the quantities of these classes of foods necessary to keep the body in health and to supply it with energy sufficient to meet the demands of life, becomes the first requisite in the study of the dietetic needs of the normal adult. To vary the same to meet the needs of the body with functionally deficient organs is a much more complex problem, necessitating a wide knowledge of medical science, especially of diseases of the gastrointestinal tract and diseases of metabolism, but this must be preceded by familiarity with the maintenance diet of the normal individual.

We know that fats and carbohydrates may be used more or less interchangeably to supply energy to the body and to maintain the fat of the tissues at a point sufficient for reserve. We know, however, that only proteins may be used to replace the proteins torn down by the body in its life processes. Therefore, the first matter to determine with regard to the maintenance diet is that sufficient proteins are supplied to keep the intake of nitrogen well up to its output.

Experiments by Professor R. H. Chittenden seem to prove that the required proteins of a maintenance diet can be reduced from 110 grams daily, which was long considered correct, to fifty grams daily. It may still be safer to supply more than this amount to insure against the possibility of a loss of strength when such low values are taken over long periods of time.

These amounts seem to keep the body in nitrogen equilibrium, but it may be that the resources of nature enable one to get along with such small amounts when, with a more generous supply, greater energy would be developed or strength more easily maintained. I believe that a reduction to seventy grams daily may be safely made, especially with patients under observation. The blood should be tested for evidence of decreased hemoglobin. I will refer to this point later.

An important thing for a physician to know is the quantity of proteins in given amounts of foods, so that he can estimate the quantities to which his

patients are accustomed, and the quantities that he is advising when he makes out a diet sheet. The easiest way to become familiar with the subject of caloric feeding and proportions of proteins, carbohydrates, and fats in our different foods, is to use a pair of scales and a caloric diet table such as *Food Values in Household Measures*, and tabulate one's own diet for a period of time. In a very short time a physician will thus be able to prepare maintenance diets by figuring, first, a sufficient amount of proteins, and, second, enough carbohydrates and fats to bring the caloric value of the diet up to requirements for the height as shown by the table, and as proved by later observation of the patient to be all that is required to keep the weight. Patients must return for observation and must be taught to watch their weight as a part of the system of scientific feeding. This is no more than reasonable and no more trouble than an intelligent farmer would take in the feeding of his domestic animals. The farmer feeds his animals with the idea of gaining efficiency. Man should feed himself with health and efficiency in view. It is not my purpose to enter here into a discussion of diet in disease, but it is perfectly apparent that a diet which is neither excessive nor deficient will go a long way toward preventing some of the ills that flesh is heir to. Furthermore, familiarity with the maintenance diet places the physician in a position to treat both obesity and undernutrition.

The following table was drawn up to show the number of grams of protein in convenient portions of some of the more important articles of food. By its use it is very easy to calculate values for a day's diet. It should be supplemented by the table mentioned above, which can be easily obtained. This sample diet provides calories sufficient for one engaged in light work, if the normal body weight is 150 pounds. Consideration of this table will enable one to judge whether the average person is eating 110 grams of proteins daily. This is about as near an average diet such as is eaten in this country as can be chosen. It seems evident to me, both from this and from my tabulation of a number of diets as given to me by patients, and as checked up by observation of the amounts eaten by those with whom I am closely associated, that few consume 110 grams of proteins daily. It is certain that those who eat little or no meat seldom take anything like that quantity. If without meat, they approach these values for proteins, it is by eating cheese and nuts and drinking milk. Again, those who take small to moderate amounts of meat and eggs and no cheese, nuts, or beans will hardly eat as much as 110 grams of proteins.

Opposed to these there is a class of people who take eggs for breakfast and large quantities of meat for lunch and dinner, with perhaps milk and cheese, who continually exceed their allowance of daily proteins.

Another point which is important to note is the large percentage of proteins in milk and how it adds to the daily proteins in the diet of a child. It is difficult to substitute a satisfactory food in the diet of a child one to four years old when milk is not well taken. At this time, owing to rapid growth, there is need of a generous supply of proteins.

I am sure it will be a revelation to physicians if



nosis. The Wassermann reaction itself is a colloidal chemical reaction with lipoidal substances, and its principal objection for the general practitioner, i. e., its complexity and necessary expense, may be soon removed.

Just as diagnosis is being simplified, and must be rendered simple and inexpensive to be of any great service to the general practitioner, so must treatment be simplified to the greatest degree possible. It is an effort in this direction, undoubtedly, that has produced the mercuralized serum for intraspinal injection.

Udo J. Wile and John H. Stokes, of Ann Arbor, have been engaged for the past two years in a study of the spinal fluid in their syphilitic cases in order to determine what percentage of early patients present involvement of the cerebrospinal axis. Coincident with such an investigation, arises the question of whether we may not have to deal with a specific strain of spirochetes with special predilection for the nervous system. This theory, while by no means proved, has found some very decided arguments in its favor, in this study by Wile and Stokes. Only after much more work has been done in the life history of the spirochetes may such a theory be verified, if at all. One thing, however, has been definitely proved; that in a certain percentage of cases much more early damage is done to the cerebrospinal tissue than we have heretofore appreciated. Therefore, we shall find it desirable to give more attention to the spinal fluid and treatment of the nerve structure. Indeed, I think it is not too much to say that in every case of syphilis, there should be a careful examination of the spinal fluid and if, after treatment—with negative Wassermann reaction of the blood—the spinal fluid still retains a positive reaction, or the cell count shows persistent increase, intraspinal medication of some kind should be instituted. It is undoubtedly because such cases in the past have not received this kind of treatment, that insane asylums and homes for incurables are filled with hopeless paretics and other patients with syphilis of the central nervous system.

The most desirable of these treatments at this time is, in my opinion, the intraspinal injection of neosalvarsanized serum. Doubtless we have all had cases of tabes, paresis, or cerebrospinal syphilis in which we have demonstrated the inefficiency of mercury and iodides to our complete satisfaction and to the complete dissatisfaction of the patient and his friends. Moreover, it has been demonstrated that subcutaneous, intramuscular, and intravenous medication with either salvarsan or neosalvarsan fails utterly in these cases. True, sometimes the ataxia may be lessened and the paretic condition improved, even by intravenous medication alone; but many of these cerebrospinal and paretic cases gradually advance to permanent invalidism despite the most intense treatment. These refractory cases offer absolute evidence that the drug does not reach the tissues involved, for the spinal fluid will often yield a positive Wassermann reaction, while blood tests show no evidence of the disease. Just why the cerebral and spinal nervous tissues are able thus to exclude the drug which pervades every other tissue of the body is not definitely explained. Probably the selective action that is found in other organs of the

body may prevail here, based upon a physiological principle that protects the delicate nerve structures from the neosalvarsan.

There have been many interesting studies made within the last two or three years concerning the origin and function of the cerebrospinal fluid. It is pretty definitely established now that it is not merely a transudate, but that the major portion of it at least, is a secretory product of the choroid plexus. Goldman, in experimental research on the function of the choroid plexus and meninges of the brain, found that foreign toxic dyes injected into the circulation failed to penetrate the choroid plexus and so did not enter the spinal and cranial cavities at all. However, if the dyes are injected into the subarachnoid space the brain and cord are at once stained.

Nevertheless, there are some convincing arguments that not all of the cerebrospinal fluid is secreted by the choroid plexus. For instance, Dandy and Blackfan, in 1914, reported the withdrawal of five c. c. of cerebrospinal fluid by lumbar puncture in a case of internal hydrocephalus with complete obstruction of the ventricles. The fluid was reformed in the spinal canal in a short time, thus proving that the spinal fluid may also have an extraventricular source. Granting then, that at least a part of the cerebrospinal fluid arises as an infiltrate or effusion from the perivascular tissue, we can see how repeated doses of neosalvarsan intravenously may sometimes affect favorably the ataxia of tabes. Laboratory methods have been able to find only infinitely small amounts of arsenic in the cerebrospinal fluid after intravenous injection of neosalvarsan. It may be that the walls of the cerebral arteries exercise a selective action, but it is positively certain that, whatever the cause may be, there is some agency at work which prevents spirocheticide chemicals from entering the nerve structure in sufficient quantities to prove effective. Assuredly then, there is sufficient proof that we must seek another route for the introduction of our remedy. The intraspinal method offers an entirely satisfactory route. Contrary to the opinion that seems to prevail among practitioners as well as among the laity, intraspinal injection, if properly done, is not hazardous. The method I have used is as follows:

The patient is first given castor oil in sufficient quantity to produce free catharsis. No food is taken at the usual meal time, or, if anything is allowed, a glass of sweet milk. Next an ordinary intravenous injection of neosalvarsan is given, either dose No. 4, 5, or 6, depending upon the weight and vitality of the patient. After one hour about 250 c. c. of blood is withdrawn by puncture of the median basilic or cephalic vein, and under absolute asepsis is collected into test tubes sterilized by boiling in salt solution. A much more perfect separation of serum and the securing of a larger quantity results from this method than if the test tubes had been sterilized by boiling water or steam. They are then closed by sterile gauze plugs and allowed to remain in a refrigerator over night.

The patient is placed in bed, still without food. The next morning, the serum is withdrawn from the test tubes, and centrifugated if necessary, to separate the red blood corpuscles completely. Next it is inactivated by heating to 56° C. for thirty minutes



which results *presumably* in breaking up the loose chemical combination existing between the neosalvarsan and the serous albuminates. After heating, it is then mixed in proportions of forty to seventy-five per cent. Louis Schmidt, of Chicago, reports the use of pure serum without dilution, but I have not had any experience with this method.

Under absolutely aseptic conditions, the spinal puncture is next made, and ten to twenty c. c. of spinal fluid is very slowly withdrawn. If the spinal fluid comes out rapidly, the ball of the thumb is placed over the end of the needle so that the total time consumed should be five or ten minutes. After the withdrawal of the fluid with the needle still *in situ*, attachment is made to the container holding the neosalvarsanized serum solution, which is allowed to enter the spinal canal slowly under gravity.

The spinal puncture is made with the patient leaning forward in a sitting posture or in Sims's position, and the needle is introduced at a point one or two mm. from the median line and as nearly as possible midway between the spinous processes of the third and fourth lumbar vertebrae. So far, I have experienced no considerable difficulty in puncturing the canal, although the fibrous laminae require considerable pressure. In the case of a comparatively thin woman I find it necessary to puncture for a distance of three and a quarter inches before reaching the canal; in a patient weighing about 250 pounds and very stout, the needle is inserted for a little over five inches.

The needle for this work should be fitted perfectly to its stylet, both as to length and diameter. The sharp end of the needle should be blunt rather than sloping so that it has a comparatively short point. This will insure flow of the spinal fluid immediately after puncture of the canal. Moreover, the needle should be of a material that will bend instead of breaking in case pressure should be applied upon it suddenly by any movement of the spinal vertebrae. It would indeed be an embarrassing position for the surgeon to find that he had about half of the needle penetrating the spinal canal or in the thick part of the back, and the other half of the needle outside. While not anticipating any such accident, it would be comparable to the recently reported case of the doctor who was so unfortunate as to have a glass high frequency electrode break five and a half inches within a male urethra.

Finally, the constant exercise of absolutely flawless asepsis is certainly of first importance, for no structures in the human body are more susceptible to infection than the meninges, and a fatal meningitis following intraspinal medication, would certainly make us cautious about the use of this treatment, even if the patients themselves were willing to take the hazard.

After intraspinal injection the patient is kept in bed for at least twenty-four hours or longer, depending upon the reaction. If cerebral or cervical symptoms are present, the foot of the bed is elevated from ten to eighteen inches during that time, to have gravity aid in the proper distribution of the germicide. It is interesting to note that if the cerebrospinal pressure is left a little higher than at the beginning of the operation, the distribution of the drug throughout the nervous structure is undoubtedly more per-

fect. In most cases the introduction of an excess of twenty c. c. of neosalvarsanized serum over the amount of fluid withdrawn may be made with impunity. The usual symptoms following the introduction of this drug intraspinally are severe lancinating pains in the abdominal region, thighs, legs, and feet. Usually a slight elevation of temperature ensues, rarely higher than 102° or 103° F.

CASE II (tabes dorsalis). Mrs. J. S., aged forty-five years, married, American. Chief complaint, June 3, 1913, tenderness over bladder and involuntary defecation and urination. Patient was married at the age of fourteen years. Had had three children, only one of whom was living. This one, a boy now thirteen years old, had two symptoms, in June, 1913, which were referable to syphilis of hereditary origin. He complained, persistently of catarrh of the throat with constant coughing and spitting, accompanied by considerable enlargement of the cervical lymph glands. As to the other symptoms, the boy complained of constant burning of the eyes and an inability to study in school, particularly to read constantly; letters became blurred and he had to give up school. Both symptoms disappeared after an intravenous injection of neosalvarsan, dose No. 3, followed by intensive treatment with mercury and iodides. Aside from this son the patient's family history was negative, with the exception of one sister who died of tuberculosis.

The patient stated that she had her initial infection for one year and went to several physicians for "sore throat." They all gave her gargles, throat treatments, etc., with little, if any improvement. At the end of twelve months, one man, a country doctor, insisted on a thorough examination. After finding the chance, he placed her on protiodide tablets with prompt and permanent relief of all throat symptoms. This treatment was continued for only six or eight weeks.

About eleven years ago, the muscles of accommodation of the left eye became paralyzed. In 1912, while working in a factory, terrible aching began in the rectum, and patient constantly passed large amounts of mucus but no blood; she lost twenty-five pounds in weight. On June 3, 1913, left eye showed dilated pupil and right reacted slowly to light. Romberg test positive. Urine contained mucus and pus. Absolutely no skin symptoms and no evidence of mucus patches anywhere. Patient was given 0.9 of neosalvarsan on June 4, 1913. She then weighed 118 pounds. Immediately a remarkable improvement in all symptoms took place, and patient gained twenty-two pounds. July 11, 1913, a second injection of neosalvarsan 0.9 gram was given intravenously. This was followed by injections of mercury, hot baths, and potassium and sodium iodide gradually increased in dose until ninety grains were given three times a day. Following this, patient has had good health, until January, 1915. Gradually a partial paralysis of intestinal and rectal muscles came on until involuntary passages from both bowels and bladder was practically the only source of annoyance. Patient tried rubber urinals of different kinds, but found them unsatisfactory.

I saw this patient again in April, 1915, with these symptoms accentuated and with two small ulcers over the shin bones. These had existed for three months with severe pains over the shin. The physician who had charge of her case during my absence, assured her that they had no relation to the syphilitic infection and that further treatment with neosalvarsan or other specific remedies was unnecessary. In April, I gave her 0.9 gram of neosalvarsan intravenously, and the following morning an intraspinal injection of neosalvarsanized serum, thirty-five c. c. of forty per cent. There was immediate relief from several annoying symptoms. First, the ulcers on the legs cleaned up immediately. Likewise the accompanying night pains in legs and all ataxia are gone, and the patient has control of both bowels and bladder. There is also improve-

ment in weight, strength, and appetite. On May 31st, the patient reported as being convinced that she was cured, and that she needed no further treatment. An effort will be made, however, to have her take at least four more treatments.

## REFERENCES

1. JOHN A. KOLMER: Concerning Landau's Color Test for Serodiagnosis of Syphilis, *Journal A. M. A.*, May 6, 1918. 2. EDEL T. WILG. and JOHN THOMAS STOKES: Further Studies on the Spinal Fluid with Reference to the Involvement of the Nervous System in Early Syphilis, *Ibidem*, May 1, 1915. 3. WALTER E. DANDY and KENNETH D. BLACKFAN: Internal Hydrocephalus, *Ann. N. Y. Acad. Sci.*, December, 1914, p. 207.

## THE FORMATION OF URINARY CALCULI.

*Experimental and Clinical Studies Concerning the Role of Ferments and Fermentlike Bodies.*

By B. G. R. WILLIAMS, M. D.,  
Paris, Ill.

Though comprehending full well the fact that deposition of certain salts in the urinary tract is a phenomenon secondary to alterations in the chemical composition of the urine, knowledge as to the precise nature of these changes has been incomplete. Several theories have been proposed, the chief of which are:

1. Theory of overplus salt content, by virtue either of increased elimination of respective salt or high concentration of the urine. While it must be conceded that such conditions may be contributory in the matter of urinary lithiasis, it has been shown by several workers that these conditions may exist without deposition of salts, and that deposition occurs in other cases where there is neither increased elimination of salts nor water paucity.

2. Theory of organic nucleus. Granted that organic matter may be found in these calculi, every bit of organic matter is not incriminated. An organic nucleus may favor the aggregation of crystals into masses, but cannot explain deposition (precipitation).

3. Theory of fermentation. In alkaline cystitis where the process has been carefully studied, the fermentation theory is accepted without question. But it is rarely considered in connection with other deposits where the alterations in the chemical composition of the urine are not so marked.

It is the purpose of this paper to bring forth experimental and clinical data, proving that lithiasis is usually or always secondary to processes of fermentation, the ferments or fermentlike bodies being elaborated more probably by microorganisms than by body cells.

It is necessary at the outset to make clear several definitions. I am defining simple phosphaturia, for example, as that condition where there is an increased daily excretion of phosphates in terms of phosphoric acid. On the other hand, clinical phosphaturia signifies that whether or not such an increase is present, certain phosphates have been precipitated *in vivo*, and remain in the urinary tract as aggregations (calculi), or appear at the meatus urinarius as sediment, or both. And so we speak of simple oxaluria contrasted with clinical oxaluria, of the simple and clinical cystinurias, of the simple and clinical uricacidurias, and so on. I have devised this nomenclature because of the confusion which exists. Inasmuch as this essay is concerned with

the clinical conditions and but indirectly with the simple ones, where no designation is made, it is to be understood that the clinical conditions are meant. Thus for example, when use is made of the term, oxaluria, I have no reference to the total excretion of oxalic acid.

Furthermore, in precluding my record of experiments, I will state that the appearance in the urine of known body ferments (pepsin, lipase, and so on) does not cause deposition of crystals, nor do such ferments, when purposely added in small amounts, have any such action.

## THE CLINICAL OXALURIAS.

Crystals of lime oxalate may be precipitated from solution in the urinary tract and be identified in the freshly voided urine. To the condition I apply the term, clinical oxaluria, whether or not the deposition has been sufficient to bring about symptoms (oxaluria dolorosa). These cases are usually relieved by dietetic and medical measures, and do not reach the surgeon unless the patient has procrastinated until aggregation of crystals into a calculus has occurred. Without entering fully into the treatment of the painful oxalurias, I will briefly state that during the past few years I have been impressed by the beneficial results of hexamethylenamine treatment in a number of cases, one of which is being observed as this is written. Furthermore, I will state that hexamethylenamine was usually prescribed empirically by colleagues, and so far as I am informed, no attempt was made to explain the action. However, the observations served as an incentive to my first experiments. Certain of these urines were collected into sterile receptacles, filtered at once, and set aside in a cool basement. I noted that deposit of the calcium oxalate envelopes continued even before the atmospheric bacteria could contaminate. In fact, when protected with cotton plugs, the urine in the test tubes continued to deposit crystals, and specimens taken several hours later showed the absence of bacteria (smears and cultures).

Another peculiarity which should be mentioned was the fact that not all of these urines showed, by Baldwin's method, a high total oxalic acid, but the impression was gained that other chemical compounds (probably the purin bodies) were being utilized in the manufacture of the oxalate crystals.

I was able by another experiment to show that the precipitation of lime oxalate was not due to overplus oxalic acid content. For heating the urine should increase the velocity of precipitation, since oxalates are not more soluble in hot water, and on the other hand, the concentration by evaporation should cause rapid crystallization. As a matter of fact, increasing the temperature did apparently increase the deposit, but boiling thwarted the deposit. And so the fact was suggested that the rate of deposit was increased by incubation, but deposit was entirely stopped by heat sterilization. And so the freshly voided urine, filtered into sterile tubes and boiled at once, refused to precipitate oxalates (until later contaminated by air bacteria) alongside unboiled controls where deposit proceeded.

Important as these observations were in showing the presence of ferments or fermentlike bodies, they

# THE CANCER PROBLEM.\*

By JOHN WESLEY LONG, M. D., F. A. C. S.,  
Greensboro, N. C.,

Member, Board of Directors, American Society for the Control of Cancer.

did not of course differentiate between the so called organized and unorganized ferments, for we know that the latter are likewise destroyed by boiling. That is to say, the experiments did not discriminate between the action of microorganisms and enzymes elaborated by the cells of the patient by virtue of faulty metabolism and so on. Nor did they rule out the action of enzymes produced in the bowel by resident bacteria, absorbed and eliminated by the urine.

Accordingly, antiseptics were used instead of heat sterilization. Substances such as boric acid and camphor were chosen, for these are less likely to precipitate proteids and carry down combinations with body enzymes. The results of these experiments tallied with those noted above; precipitation was thwarted or retarded by antiseptics.

My experimental work has been confined mainly to the clinical oxalurias. In the acute clinical uricacidurias (urates and so on in the acute fevers), I must of course concede that deposit *in vivo* is due to causes other than fermentation; in certain of the chronic cases, not so. Often I have observed more prompt beneficial results from hexamethylenamine than from colchicum. In the clinical phosphaturias, uricacidurias, and so on, the experiments did not prove as conclusively the role of ferments as in the clinical oxalurias. However, "progressive alterations" of the chemical composition of the urine appeared to play a more important part in some of the cases than did erroneous tissue metabolism. I have partially studied one case of cystinuria where deposit of cystin crystals continues after the urine is voided. I have not been able to secure fresh specimens under sterile conditions in this case.

## THE QUESTION OF MICROORGANISMS.

The simple experiments and observations show that certain fermentations or processes akin must be blamed for the deposit of salts (and especially does this apply to oxalates) in the urinary passages. Furthermore, they go to show that these active bodies are more probably microorganisms or their enzymes than true body ferments. I have been unable to isolate or identify any microorganisms upon which the blame may be placed. Passing the specimens through Berkefeld filters may delay precipitation, but will not thwart it. And so it is possible that we are dealing with ultramicroscopic ferment producers, just as we believe that there exist ultramicroscopic producers of disease. The actual identification of the microorganisms is of less importance, however, contrasted with the fact that we have heretofore overlooked the processes which must be held to account for certain lithiases. A comprehension of these principles will show the fallacy of "solvents" and "mobilizers" and their inefficiency unless they exert an inhibitive action on the ferments or an antiseptic action upon their microbic producers.

## CONCLUSION.

Thus in a series of very simple experiments I have ascertained that deposit of certain salts in the urinary tract may be influenced indirectly by overplus elimination, concentration of the urine, presence of organic matter, and so on, but that deposit *in vivo* is directly accounted for by the action of certain ferments, doubtless of microbic origin.

The cancer problem may profitably be discussed under two heads; first, the strictly professional phase of the question; second, that larger phase of cancer which relates to the public. Under the first head let me say that to the profession cancer is not in any sense a new problem. It is as old as history. We were taught in our college days, as were our fathers, that cancer always begins as a local disease and becomes general only late in its history. We were also told that surgery applied early was the only sure remedy. We were further taught that lumps, moles, chronic fissures, etc., should be looked upon with suspicion; that they were either cancerous from the beginning or had a natural tendency to malignant degeneration. I mention these things simply to call attention to the fact that the intelligent physician has all along been familiar with the most important phases of the cancer problem. The chief difficulty has been to get the public to understand the true significance of these things. Hence this great movement for the education of the public in order that those afflicted with cancer may have the benefit of prompt and efficient treatment.

I said that intelligent physicians have understood the question all along. This is true; but we fell into the grievous error of assuming that what was so clearly understood by thinking members of the profession must be patent to every one. In this we find we are mistaken. There are still those in every community who believe, if we may judge by their actions, that cancer is cured by rubbing the local disease into the system. In this community, which justly boasts of a high order of intelligence, there are people who pay a quack to rub a handkerchief between his hands and lay it on their cancerous sores, believing in its healing powers. All over the country, from time immemorial, the people have been cursed by the so called "cancer doctor," who has a remedy, always a secret formula, possessing such discriminating virtues that it will eat out the cancer and not harm the healthy tissues. Recently I visited a great city noted for its wealth, its learning, its philanthropies. In the midst of this famous centre I attended a meeting in a temple costing millions of dollars. I never saw a better dressed, more intelligent looking audience. They gave every evidence of culture and refinement. I have rarely seen so many limousines standing in front of one building. Now, one of the cardinal doctrines of this marvelous people is that cancer may be cured by the patient believing that he does not have cancer.

We smile at their credulity; but do we always manifest more wisdom than they do in the exercise of their absurd belief? Even those who are nearest to us sometimes surprise us by the ignorance they display upon questions of vital importance to their health. For instance, the daughter of a surgeon, who is reputed to be fairly well up in his profession, married. In due course of time she became a mother. During this trying period of her life her father exercised the most extreme care and

\*Address delivered before the North Carolina Medical Society, June 15, 1915.



solicitude, carefully supervising her diet, habits, seclusions, etc. She passed through the trying ordeal quite as nicely as if she had taken the "twilight sleep." A few days later her father congratulated her on the ease with which she accomplished the supreme function of womanhood. In a burst of gratitude she said: "Yes; mamma had me to use three dollars' worth of Mother's Friend."

Nor is this lack of knowledge confined to the laity. On one occasion a physician, who is a college bred man from a distant city, a man who is deservedly of good repute, who has a large practice and is held in high esteem by his patrons and the profession, referred a patient with carcinoma of the breast to me. She spoke of her physician in the most enthusiastic and grateful terms. Among other things, she said: "My doctor has watched this lump in my breast for two and one half years." I exclaimed: "Gracious! woman, your doctor ought to be a good Democrat." "Why?" she asked. "Because he believes in 'watchful waiting!'" These are the reasons why the profession has inaugurated this campaign, to teach the people the truth touching cancer, and to remind that portion of the profession, which unfortunately is yet quite large, who believe in watching these lumps grow until the cancer is unmistakable and the neighboring glands have become involved, that the aseptic scalpel used early in the game is the only sure cure for malignant growths.

The first one to undertake this educational work was a German surgeon, George Winter, of Königsberg. He inaugurated the plan by writing articles for newspapers. He also wrote pamphlets, especially for women, midwives, and physicians. Understand, please, that in countries like Germany the death rate is studied as carefully as is the science of war. The result of Winter's educational campaign was that the death rate from cancer fell from 139 in 100,000 population in 1907 to 118 in 1912. In the United States 75,000 people die of cancer in the registered area every year. The registered area of the United States or that portion in which births, deaths, and causes of death, etc., are carefully registered, comprises only seventy per cent. of the United States. Granting the same ratio in the unregistered areas, there are probably 100,000 deaths from cancer every year or an average of one every six minutes. The American Society for the Control of Cancer has shown that at ages over forty years, one person in eleven dies of cancer. One woman in every eight and one man in every fourteen are attacked by cancer. Because of ignorance and neglect, cancer proves fatal in over ninety per cent. of the cases. It is generally admitted that cancer is on the increase. Is it not high time that the profession and the people as well arouse themselves touching this question? Cancer is no respecter of persons, race, creed, or social position. It is the common enemy of mankind, attacking poor and rich alike. It is insidious in its onset and usually destroys life at its most useful period. One of the saddest things in my professional work is to have a woman, the mother of several children, brought to me with an inoperable cancer. Think of it! A large family of children made orphans and robbed of a mother's care because of ignorance.

But are the people to be censured for this woeful lack of knowledge? You remember when Philip was traveling across the desert he met a eunuch of high authority who had charge of the treasures of Candace, Queen of Ethiopia. He was sitting in his chariot, reading the book of Isaiah, the prophet. Philip, under the guidance of the spirit, said to him: "Understandest thou what thou readest?" and the eunuch answered: "How can I, except some man guide me?" Then Philip got up in the chariot and sat down by the eunuch and taught him the meaning of what he was reading.

I maintain that the responsibility of the cancer problem rests with the profession and that it is our duty, as guardians of the public health, to educate the laity. When once the people see the truth as it is, they will arise in the power of their knowledge, for knowledge is power, weed out cancer quacks of every description and instinctively turn to the right source for relief.

We have organized a symposium and have invited men of authority within North Carolina and men of national reputation from other States, to present the cancer problem plainly, squarely, fearlessly; to instruct the people.

The American Society for the Control of Cancer was organized two years ago "to disseminate knowledge concerning the symptoms, diagnosis, treatment, and prevention of cancer; to investigate the conditions under which cancer is found, and to compile statistics in regard thereto." This society adopted as its motto, "In the early recognition and treatment of cancer lies the hope of cure." The American Society for the Control of Cancer has received the official approval of the American Medical Association, the American Surgical Association, the American Gynecological Society, the Clinical Congress of Surgeons, the American Congress of Physicians and Surgeons, the Southern Surgical and Gynecological Association, the Southern Medical Association, and indeed every large medical and health society of importance. It cooperates with the health organizations of cities, counties, and States. It organizes societies of physicians and business men, public spirited citizens, and women who are active in the organizations for the upbuilding of every community, etc. "Agitate and educate" is the slogan.

119 CHURCH STREET.

## REFRACTION IN SCHOOL CHILDREN.

*4,800 Refractions Tabulated According to Age, Sex, and Nationality.*

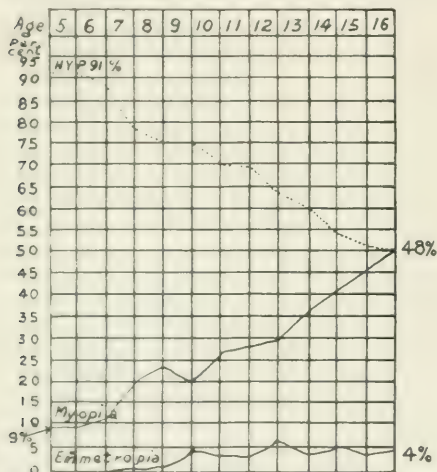
By ARTHUR S. TENNER, M. D.,  
New York.

The subject of the conservation of vision of school children has agitated ophthalmologists for more than a century. As early as 1800, there was published a treatise on Healthy and Weak Eyes, by A. G. Beer, in which hints to teachers are given. In 1813, Ware, of London, published investigations, in which is found probably the first allusion to the relation between the myopic eye and the demands of civilized life. Since then there have been many other investigations, the most important being those

of Cohn, in 1867, including as they did, an examination of the eyes of 10,060 school children in Breslau and the vicinity. Numerous investigations followed, and Risley (1) states that up to the year 1900 more than 200,000 pupils of all grades had been subjected to a more or less critical study of ocular conditions, particularly as to the relative frequency of emmetropia, hypermetropia, and myopia. Although the actual percentages varied, all these investigations showed that the eyes with hypermetropic refraction greatly outnumbered the emmetropic and myopic eyes, particularly in early childhood; that the emmetropic eye was comparatively rare and retained an almost uniform percentage throughout school life; that short sight, extremely rare at the beginning of educational life, was found to advance steadily in percentage with the progress of the pupils in the schools, while the percentage of hypermetropia diminished in approximately the same degree. All these examinations were conducted without the use of a mydriatic and many low errors of refraction

3. The refractions, including retinoscopy, ophthalmoscopy, and trial case tests, were all performed on eyes under the influence of a cycloplegic, atropine being used in nearly all cases. Only in the case of older children, viz., those in the seventh or eighth classes of school life or those in high school was homatropine used. The clinic is equipped with a keratometer, which, however, serves no purpose except as a dust accumulator, both the amount of astigmatism and its axis being determined with accuracy by retinoscopy confirmed at the trial case. In the opinion of the writer, a keratometer, so often inaccurately termed an ophthalmometer, measuring as it does only the corneal astigmatism, is an almost useless instrument when a cycloplegic, followed by careful retinoscopy, is used.

The manner in which these cases come to the clinic is of interest and accounts for the large proportion of errors of refraction found. As is generally known, physical examinations are made in the schools by medical inspectors of the health department daily throughout the school term. This examination includes vision testing with Snellen test cards at twenty feet. Only children past the first year of school life, that is about seven years of age or more, are subjected to this test, partly owing to the fact, that under the unfortunate modern system of education, children are not taught the letters of the alphabet, and as a result, testing with the letter chart is impossible. The testing of these very young children is fraught with difficulty, as they become easily frightened. Of the total number of 4,800 eyes refracted, a small proportion, nevertheless, were under seven years of age, forty-four were five years, and 131 were six years of age, a total of 175 eyes. In these cases, the defective vision is first noticed by the teacher who refers the child to the school inspector. Such cases are marked "defective by observation." Accordingly, it is not surprising to note that of these 175 eyes, not one was found to be emmetropic. If the vision of the children tested is found to be less than 20/20 or if they complain of asthenopic symptoms, or should the presence of blepharitis, follicular conjunctivitis, or hordeolum, give rise to a suspicion of eyestrain, these cases are marked "defective vision" and are referred to the school nurse, whose function it is to advise treatment. Now treatment for defective vision or eye strain means as a rule the procuring and wearing of correcting glasses. Apart from the widespread prejudice on the part of many parents to glasses, there are numerous difficulties in the path of health officials before glasses are obtained. Most of these patients cannot pay an oculist's fee; accordingly, they drift to dispensaries and opticians. On the total incompetency of the latter to give these children proper correcting glasses, it is needless for me to remark. The better class of opticians refrain from attempting to do so, but many a weird and often injurious glass has been placed before children's eyes by unscrupulous, ignorant seekers after gain. The work in the eye departments of public and of special hospitals also merits severe criticism. Refraction is tedious and requires painstaking care and time. The work for this reason is left to young and inexperienced men, while the ophthalmologists who could do good refractions devote their time to more in-



the percentage of eyes which are hypermetropic from 20 to 25 per cent. at seven years, and the percentage of eyes which are myopic from 0 to 2 per cent. at sixteen; the emmetropia, fluctuating between 0 and 7 per cent.

must have been overlooked. It seems, therefore, of interest to publish statistics of the actual errors of refraction and conditions of a large number of children referred to our clinic because their vision was defective, or asthenopic symptoms indicated some remedial defect.

The salient points to be borne in mind in connection with these figures are as follows:

1. They represent complete and careful refractions performed at the Pleasant Avenue Clinic of the New York health department by either Dr. Perry Hough or the writer from April 8, 1912, to December 10, 1913.

2. The cases were all in children attending the public or parochial schools of New York, ranging in age from five to sixteen years, and residing in the crowded foreign quarter. The nationality used in these statistics is that of the parents; where this differs the nationality of the mother is used.

interesting cases. In addition, many of these clinics become overcrowded, the oculist cannot, even if he will, give the proper time. Says Gould (2): "I must confess, that out of hundreds of cases of hospital refraction work, that I have afterward examined in my private office, I have never seen one, my own included, that was correct." The time of the eye surgeons at the clinic for school children of the health department is devoted solely to refraction, and each case receives all the time and care it requires. After glasses are obtained, they are verified and the optician's error, if any, is corrected. That this acts as a check on the optician is evidenced by the fact that, at present, mistakes in filling prescriptions rarely occur, whereas at first, they were not uncommon. In few, if in any other eye clinics, is this procedure, as far as I am aware, carried out. At Moorfield's (3), which contracts with the London County Council to examine as many as 5,000 school children annually, no attempt is made by the oculist to see whether the glasses are correct or properly fitted. This verification is also necessary as a check on the children, who sometimes attempt to deceive the school nurse with glasses borrowed for the occasion—one child even attempting to impose on the clinic physicians a pair of spectacles obtained from her aunt. As they fitted her face well, it was unfortunate that they were minus spheres instead of plus cylinders. A short time ago, a little girl upon whom the writer had performed a successful operation for convergent strabismus, returned to the clinic, complaining that, though previous to the operation her glasses had been satisfactory, she was no longer able to see with them. The atmosphere was cleared by an examination of the glasses she had been patiently trying to wear. Unknowningly, she had exchanged glasses with her brother.

In these tables, hypermetropia means an eye that shows 0.50 diopter or more. If the hypermetropia is less than 0.50 D., the eye is classed as emmetropia.

TABLE I.  
Percentage in School Children.

|                  | Hypermetropia | Myopia | Emmetropia |
|------------------|---------------|--------|------------|
| Hypermetropia    | 2.3           |        |            |
| S. hyperastig.   | 3             |        |            |
| C. hyperastig.   | 37            |        |            |
| S. myopic astig. |               | 3      |            |
| C. myopic astig. |               | 11     |            |
| Myopia           |               | 7      |            |
| Mixed astig.     |               | 9      |            |
| Emmetropia       |               | 4      |            |

In Table I are given the various percentages of defects. In the other tables, under the term hypermetropia are grouped simple hypermetropic astigmatism, compound hypermetropic astigmatism, and hypermetropia. Under the term myopia are grouped simple myopic astigmatism, compound myopic astigmatism, and mixed astigmatism.

TABLE II.  
Hypermetropia, Per cent.

|               | Hypermetropia, Per cent. | Myopia, Per cent. | Emmetropia, Per cent. |
|---------------|--------------------------|-------------------|-----------------------|
| Average       | 2.3                      | 7                 | 4                     |
| Male          | 2.4                      | 3.2               | 4                     |
| Female        | 67                       | 29                | 4                     |
| European      | 61.5                     | 31.8              | 4                     |
| American      | 60                       | 3                 | 1                     |
| English       | 72.7                     | 23.8              | 3.7                   |
| Common        | 3.5                      | 15                | 1.5                   |
| Irish         | 8                        | 17                | 5                     |
| United States | 65                       | 31                | 4                     |
| Miscellaneous | 62.5                     | 11.7              | 6                     |

As to sex, the girls outnumber the boys, 1,711 or thirty-six per cent. of the latter to 3,089 or sixty-four per cent. of the former. The proportion of

emmetropic eyes was the same, four per cent. in each. The percentage of myopic conditions was markedly higher in the boys, thirty-two to twenty-nine. In view of the fact that almost twice as many girls were examined, this greater proportion of myopia is significant. This excess of boys over girls is in accordance with that found by Hirschberg (4), who attributed it to the greater devotion to literary callings of boys and youths.

As to nationality, myopia is prevalent in Germany, and it is interesting to note that the proportionate amount of myopia was greatest among the children of German stock, viz., thirty-five per cent. The Russians, being mainly Jews, came next with 34.5 per cent. The children of American parents showed almost as great a proportion of myopia, thirty-one per cent., the Irish, twenty-seven per cent., and the Italians a comparatively low proportion, 23.8 per cent., with a proportionately high proportion of hypermetropia, 72.7 per cent. The emmetropia remained about four per cent. regardless of nationality, with the exception of the Germans, where it fell as low as 1.5 per cent.

Inasmuch as all these children are subjected to similar conditions as to eye strain, the relatively low proportion of myopia among the Italians must be accounted for on anatomical grounds; the bones of the face being smaller, the orbit therefore smaller, the tendency of the eye to become a long or myopic eye becomes correspondingly less.

TABLE III.

| Age.     | Hypermetropia, Per cent. | Myopia, Per cent. | Emmetropia, Per cent. |
|----------|--------------------------|-------------------|-----------------------|
| Five     | 91                       | 9                 |                       |
| Six      | 88                       | 11                |                       |
| Seven    | 79                       | 20.5              | 0.5                   |
| Eight    | 75                       | 24                | 1                     |
| Nine     | 70                       | 28                | 2                     |
| Ten      | 68                       | 30                | 2                     |
| Eleven   | 63                       | 37                | 3                     |
| Twelve   | 59.5                     | 37                | 3.5                   |
| Thirteen | 54                       | 41                | 5                     |
| Fourteen | 51                       | 4                 |                       |
| Fifteen  | 48                       | 48                | 4                     |

Table III shows the various percentages of hyperopia, myopia, and emmetropia at the different ages, and the chart shows the same thing at a glance.

It is startling to note the difference at the age of five years and the fact that at sixteen years, the percentage of myopia and hypermetropic conditions is the same, that is, forty-eight per cent. The emmetropia varies between zero at five or six years to as high as seven per cent. at twelve years. The chart shows this distinction more graphically.

These results do not differ materially from those of previous investigators such as Erisman and Risley (1).

The percentage of emmetropia is much lower in our investigations, owing undoubtedly to the fact that the eyes in our cases were all under the influence of a cycloplegic and many slight errors of refraction were detected, that with less painstaking methods, would have been overlooked; and also because in our cases most of the children were referred to us because they were defective in vision or had asthenopic symptoms. The general results were similar, viz., a high percentage of hyperopia and low percentage of myopia at the beginning of school life, with a steadily increasing percentage of myopia as the children advanced in years. The



foregoing statements and figures warrant the following conclusions:

1. In accordance with the observations of previous investigators, myopia or short sight is a condition rarely present at the beginning of school life, gradually increases with the age of the child, so that at the age of sixteen years, almost one half of our cases had more or less myopia.

2. Children with hypermetropic conditions became myopic, the percentage of emmetropia or normal eyes remaining about the same.

3. The correction of the hypermetropia and astigmatism with the constant wearing of the correcting glasses will prevent the development of myopia in many instances, is the belief of most ophthalmologists. Myopia in its high degrees becomes more than a mere handicap in life's race, producing degenerative changes, detachment of the retina with ultimate total loss of sight; therefore, apart from the relief and improvement in vision afforded by the wearing of glasses in cases of hypermetropia and astigmatism, the early refraction of children to prevent the development of myopia is most important.

Every child before beginning school life should have its refraction estimated. If correcting glasses are required, they should be worn. (I have frequently ordered glasses for children two years of age.)

If a child has a high degree of hypermetropic astigmatism, mixed astigmatism, or myopia of medium or high degree, with vision after correction of only 20/50 or less, it should be placed in special classes with a curriculum that minimizes the amount of near work. London has already taken such a step, several schools having special classes for myopes. There should be close cooperation between school authorities, school nurse, school doctor on the one hand, and ophthalmologists on the other. Education boards should employ some one interested in the conservation of vision of children, preferably an ophthalmologist, in an advisory capacity. Such an officer could work to improve many existing defects, such as improper desk adjustments and poor lighting. The writer knows of several classrooms in New York schools where artificial light is necessary, and this is of such poor character that it merely lightens the gloom without giving the proper degree of illumination. The regulation of type and paper in school books is another matter to come under such an officer's control.

But above all let the slogan be "refract the children early and compel the wearing of proper correcting glasses."

1. NICHOLS AND FRYER, *Ann. N. Y. Acad. Sci.*, 1913, p. 11.  
2. HIRSCHBERG, *Ann. Ophth.*, 1913, p. 11.  
3. HIRSCHBERG, *Ophthalmic Record*, Oct., 1913. 4. HIRSCHBERG: *Treatment of*

120 WEST EIGHTY-SIXTH STREET.

**Myotonia atrophica.**—H. Aimé, in *Presse médicale* for July 11, 1914, it is stated, described this peculiar affection as a combination of muscular atrophy with tonic spasm of the muscles, perverted nutrition and function of the sarcoplasm, caused by the action of toxic substances through exposure to cold, overwork, and excessive meat diet.

## HYDATIDIFORM MOLE.

### *A Report of Eight Cases.*

BY JAMES F. ROBERTSON, M. D.,

Philadelphia,

Resident Physician, Episcopal Hospital.

Since 1905 there have been only eight cases of hydatidiform mole treated in the Episcopal Hospital. Within five months I have seen three of the cases; the other five were collected from the records of the hospital. For the privilege of reporting them I am indebted to Dr. H. C. Deaver, Dr. Thomas R. Neilson, Dr. William E. Parke, and Dr. Charles H. Frazier.

**CASE I.** A. S., aged twenty-four years, white, admitted April 5, 1910, with the diagnosis of pregnancy. Previous history negative, except that she was the mother of two children, the youngest six months old. She had had irregular menstruation up to one month ago, when she began to have uterine hemorrhage, which continued up to the time of admission. She said that her abdomen had enlarged and her breasts had become fuller. She had had no pain.

Examination showed marked anemia; the fundus of the uterus was two fingers above the umbilicus; cervix soft and slightly dilated; fresh blood in the vagina. Eight days after admission the diagnosis of placenta previa was made.

A rapid dilatation of the cervix was done, and a hydatidiform mole was discovered. The uterus was evacuated and packed with gauze. Recovery was uneventful. I am sorry to report that I have been unable to locate the patient and know nothing of her subsequent history.

**CASE II.** M. P., aged twenty-three years, white, admitted February 22, 1911, with a diagnosis of hydatidiform mole. Previous history unimportant except that she had one living child one year old. There had been no miscarriages. Her last regular menstruation was three months ago. For the past seven weeks she had had slight daily painless uterine hemorrhage. One day before admission she had some abdominal pain and a profuse uterine hemorrhage. On day of admission she expelled a mass of tissue, which proved to be an hydatidiform mole.

On examination there was marked anemia; the uterus was the size of one's fist, and a mass of tissue was protruding from the cervix. Examination of the blood showed red cells 2,830,000, hemoglobin thirty-four per cent., white cells 11,760.

The uterus was evacuated and packed. Recovery was uneventful. Two and one half years later, the patient was operated on at another hospital and an inoperable chorioepithelioma of the uterus was found. She died the following day. Necropsy confirmed the diagnosis made on the operating table.

**CASE III.** L. L., aged forty-one years, white, admitted October 10, 1913, with a diagnosis of endometritis. Mother of eight living children, the youngest three years old. About five months ago, she said she had a miscarriage. Her last regular menstrual period was about five months ago. For the past four months there had been slight painless bleeding every day.

Examination showed considerable anemia; the fundus of the uterus was about one and one half finger below the umbilicus; the cervix was hard and slightly dilated. Three days after admission a hydatidiform mole was expelled from the uterus.

October 29th, a subtotal hysterectomy was performed by Dr. Charles H. Frazier. Pathological examination of the uterus showed interstitial endometritis. On January 6, 1915, the patient reported to me that she felt perfectly well. There has been no bleeding since the operation.

CASE IV. L. B., aged eighteen years, white, admitted August 16, 1914, with the diagnosis of premature labor. The ward diagnosis was changed to placenta praevia. History of having had a baby six and one half months ago. No miscarriages. The last regular menstrual period began July 4, 1914, since when there had been slight painless uterine hemorrhage daily. At times there had been abdominal cramps. On the day before admission the pains were of a bearing down character and she said she felt "quickening."

Examination showed marked anemia; enlarged and pigmented breasts; the fundus of the uterus two fingers above the umbilicus; firm and slightly dilated; fresh blood in the vagina. The blood showed red cells, 1,940,000; white, 12,750; hemoglobin, thirty-six per cent.

Two days later the contents of the uterus were expelled. The uterus was further cleaned out with placental forceps and packed. Convalescence was uneventful except for a slight septic temperature for several days.

I saw the patient, January 15, 1915, and she says that since her illness she has never had any regular menstruation, but that there has been irregular, scanty, uterine bleeding every three or four weeks. Previous to the illness the periods were always very regular and profuse, lasting several days as a rule. She was readmitted to the hospital January 15, 1915, for curettage. Examination under ether showed the uterus to be of normal size. The uterine scrapings showed no trace of malignancy.

CASE V. F. K., aged twenty-six years, white, admitted September 8, 1914, with the diagnosis of placenta praevia. She gave the history of having two living children, the younger being three years old. There were no miscarriages. Her last regular menstrual period was three and one half months ago. Five weeks ago she had slight uterine hemorrhage, lasting two days; three weeks ago she had another hemorrhage, lasting three days; two days ago she had a profuse hemorrhage, which continued up until the present time. There had been no pain. Intense anemia was evident. The fundus of the uterus was two fingers above the umbilicus; the cervix was fairly firm and slightly dilated; there was fresh blood in the vagina. On palpation through the cervix something could be felt, which I took to be the edge of the placenta. The blood in this case showed reds, 1,190,000; hemoglobin, twenty per cent.; whites, 28,800.

The next day the contents of the uterus were partially expelled. No fetus was seen. The uterus was evacuated and packed. Recovery was uneventful. On January 12, 1915, this patient reported to me. She seemed in splendid health. She has menstruated only twice since her illness; both times the period lasted five days and was profuse. Previous to her illness her menstrual periods had lasted only three days and the flow was scanty. She has had no metrorrhagia or leucorrhea. Examination showed the uterus to be of normal size and consistency and freely movable. She was advised to come to the hospital for a curettage and examination of the scrapings, but refused.

CASE VI. S. K., aged twenty-two years, white, admitted December 14, 1914, with the diagnosis of threatened abortion. She had one child about a year ago; no miscarriages. Her last menstrual period was about four months ago, since which time she had had slight irregular uterine hemorrhage. Sometimes there were mild abdominal cramps. During the past three days the bleeding had been profuse. Considerable anemia is found. The breasts were large and contained a milky fluid; the fundus of the uterus was two fingers above the umbilicus; the cervix was hypertrophied, very soft, and partially dilated; there was fresh blood in the vagina. No placenta or presenting part could be felt. The blood showed reds, 2,410,000; hemoglobin, thirty per cent.; whites, 33,760.

The following day the contents of the uterus were expelled. No fetus was found. The uterus was evacuated and packed. After removal of the packing in twenty-four hours the uterus was still enlarged to the size of two fists and the fundus was at the level of the umbilicus. Hysterectomy was advised, but refused.

On January 4, 1915, the patient reported that she felt perfectly well, and she has had no bleeding or menstrual period since leaving the hospital.

CASE VII. E. P., aged fifty-three years, white, admitted February 3, 1913, with the diagnosis of neoplasm of the uterus. Mother of nine living children, the youngest five years old, and had had two miscarriages. Her last menstrual period was nine months ago; six months ago she "menstruated," since when there had been daily painless uterine bleeding, sometimes profuse.

Examination showed slight anemia; fundus three fingers below the umbilicus; cervix firm and hypertrophied; uterus nodular.

Three days after admission a mass of tissue was expelled from the uterus, which proved to be a hydatidiform mole. The womb was curetted and packed and recovery uneventful. The patient was discharged twelve days later as cured. There was no fever, and the hemoglobin was sixty-five per cent.

This patient returned to the hospital January 25, 1915, saying she had been in poor health. Previous to her illness her menstruation had always been regular, had lasted six to seven days, and was painless; since she left the hospital the periods have been irregular, very painful, lasting only three or four days, and, about twice a week, she has noticed a slight metrorrhagia.

Examination shows the uterus to be enlarged uniformly to the size of one's fist; it is firm and somewhat fixed in good position. The uterus is tender, and the cervix enlarged and hard. Dilatation and curettage were done, but only a small amount of endometrium was obtained, which showed no evidence of malignancy.

CASE VIII. M. G., aged twenty years, white, admitted July 24, 1911, with the diagnosis of incomplete abortion. She stated that there had been a small amount of daily uterine hemorrhage for the past two months. Three days ago the hemorrhage became very profuse, and the day before admission a cystlike object was expelled from the vagina. Examination showed the cervix to be soft and slightly dilated; the uterus was enlarged.

Three days after admission a mass of tissue the size of a lemon was expelled from the vagina. The womb was curetted and packed and recovery was uneventful. Pathological examination showed the tissue to be hydatidiform mole.

This is another one of this series of patients whom I was unable to locate. It occurs to me that a feasible plan would be to notify the Social Service Department upon the discharge of any such patient, and request them to visit her every few months and report to the hospital any untoward symptoms.

The important points as illustrated by these cases are:

1. The comparative youth of the patients and the plurality of multipare.
2. The history of having missed only three or four menstrual periods.
3. The enlargement of the uterus.

4. The absence of severe, and sometimes of any pain.
5. The continuous hemorrhage and severe anemia.
6. The inability to palpate placenta or presenting part through the partially dilated cervix.
7. The absence of a fetus.
8. No history of having expelled vesicles.
9. The presence in two of the cases of a high leucocytosis.

The dangers are:

1. Retention of a portion of the mass within the uterus.
2. Subsequent development of chorioepithelioma. Findley collected 250 cases in which he found that sixteen per cent. developed chorioepithelioma.

Hydatidiform mole is most often mistaken for placenta previa or threatened abortion; sometimes for echinococcus disease of the uterus. The differential diagnosis is not easy and cannot positively be made unless there is an escape of vesicles from the uterus. Histologically, these moles are myomas of the chorion. There is obliteration of the bloodvessels with hypertrophy and cystic degeneration of the chorionic villi. There is a tendency for the syncytial layer of cells to penetrate the uterine tissue.

The frequency of the disease is variously stated as from one in 10,000 to one in 600 pregnancies. Dorland and Gerson collected 100 cases from which they compiled the following figures: Sixty-eight per cent. occurred between the ages of twenty and forty years; sixty-seven per cent. were in multiparæ; thirty-eight showed marked abdominal pain; sixty-three expelled the mass between the third and fifth month. In practically all there was uterine hemorrhage.

The mortality was ten per cent.

#### TREATMENT.

If a positive diagnosis is made, evacuate the uterus immediately. Usually a tampon in the vagina will stimulate contractions of the uterus sufficiently to cause expulsion of the mass. The uterus is then cleaned out gently with placental forceps and packed with sterile gauze for twenty-four hours.

The patient should be kept under observation for years, looking especially for menorrhagia or any irregularities in the menstrual flow. If menorrhagia is present, the uterus should be curetted and the scrapings examined microscopically. In case of doubt a hysterectomy is the wisest procedure.

### THE INDICATIONS FOR SURGICAL TREATMENT OF HYPERTHYROIDISM.

BY THOMAS JAMESON, M. D.,  
Rochester, N. Y.

Before discussing the surgical treatment of hyperthyroidism, it is well to consider what the term really means. In this synopsis of the indications for surgical treatment, the term is meant to cover that syndrome which is usually supposed to arise either from an excess of thyroid secretion, or from the production and absorption of an altered and poisonous secretion produced in the thyroid gland.

Successfully to treat thyroid diseases surgically, we must have a clear conception of what is actually happening in the gland. There are two main types of cases which frequently come to the surgeon with symptoms of thyroid poisoning. The recognition of the two types is of great clinical importance, not only for the welfare of the patient, but for the reputation of the surgeon. The advice that the surgeon ought to give depends on the type of disease under consideration, the stage of the disease, and the probable future of the lesion.

First consider for a moment true exophthalmic goitre. This is a pathological entity in itself, with such definite changes that a trained observer can tell from the microscopical section that the case is one of Graves's disease. The main fact in the pathology is that it is always accompanied by hyperplasia of the gland substance.

How can one recognize a case of true exophthalmic goitre clinically? In taking the case history, we shall note the sudden onset; the getting rather rapidly worse, until the real crisis of symptoms occurs. The patient then usually experiences a remission, all the symptoms markedly subsiding, but without entire recovery. The patient may now be compared to a thoroughbred horse, inclined to be over stimulated, easily excited, quick to take offense, and with a hypersensitiveness to an infection, especially infection about the mouth and throat. Such infections are apt to bring on an acute attack with exacerbation of all the symptoms.

Physical examination will reveal the protruding eye, tachycardia, tremor, and other well known symptoms that make up the syndrome. One sign of great diagnostic importance is the presence of a bruit and thrill, radiating down from the apex of the gland all over the goitre. This bruit is well marked, but must be distinguished from the bruit of aortic disease which may be transmitted through the gland itself.

The second type of case is one of chronic thyroid poisoning resulting from the production and absorption of an altered and poisonous thyroid secretion. These cases are usually adenomata, often resulting in cystic degeneration of the entire gland. This type presents symptoms, in the later stages of the disease, strongly resembling the exophthalmic variety, but differing in that there may be a peculiar stare to the eye, but no true exophthalmos. There is no bruit or thrill. There may be tremor, perhaps, and rapid irregular heart action resulting from myocardial degeneration. These cases also are apt to have a high blood pressure, with more or less albumin in the urine.

Another distinguishing test is that these patients are always made worse by taking iodine and thyroid extract. A distinct improvement is often noted under this treatment in true exophthalmic goitre.

On inspection and palpation of the gland, the adenomatous case is apt to be irregular in outline and nodular in feel. Both sides of the gland are frequently affected. In true exophthalmic goitre, on the other hand, the gland is usually symmetrically enlarged and has a firmer consistence on palpation.

Before passing to the actual surgical technic which is now so generally understood, let us con-



sider for a moment the prophylactic surgical treatment of hyperthyroidism. In the early stages of true exophthalmic goitre, examination of the blood will show varying degrees of leucocytosis. This strongly points to some form of infection. Infections from the streptococcus group seem especially prone to produce hyperthyroidism. It is now generally conceded that the first acute attack of hyperthyroidism often follows some septic infection, more especially about the nose, throat, and teeth. Bearing this in mind, the surgeon should look for diseased tonsils, inflamed antra and sinuses connected with the nose and throat, and especially for the presence of pyorrhea and alveolar disease.

It is probable also that infection in remote parts of the body, such as chronic gallbladder disease, appendicitis, and various forms of tuberculosis have a stimulating effect on the thyroid secretion. In this way there may be hyperplasia of the thyroid gland, ultimately causing hyperthyroidism. Thus, we are once more impressed with the danger to the whole body of any infected focus.

Another important prophylactic measure consists in attention to adenomatous cases before they become actively poisonous, and so simulate cases of true hyperthyroidism. A patient with adenomatous goitre in the early stage will frequently consult a surgeon merely for cosmetic relief from deformity. A careful examination will often show that these patients are slowly breaking down in health, often taking fifteen years to complete the disaster. Indeed, the onset is so insidious that the patient is entirely unaware of the real cause of the circulatory symptoms, the loss of the old time vigor, the slight, hardly to be noticed dyspnea, digestive disturbances, mental irritability, etc. These patients indignantly reject the suggestion that goitre is the cause of their ill health. They will reply, that they have had the goitre for years and it has never caused them the slightest trouble.

The writer believes that as a prophylactic measure, these adenomatous goitres ought to be removed before they become actively poisonous and induce degeneration of the heart muscle. Another reason for removal is that they always interfere, more or less, with normal breathing.

In the early stages, an adenomatous goitre may be very safely and easily enucleated and then save normal functioning thyroid tissue for the individual. In the later stages of this type, these cases are bad surgical risks, owing to the degenerative changes before mentioned. The surgeon unfortunately is not consulted usually, until these cases present the syndrome of hyperthyroidism.

What is the wisest and safest method of procedure? The writer has set down the following rules for his own guidance, as a result of observations at various clinics, study of the literature, and his own clinical experience. A true exophthalmic goitre ought never to be operated on during the height of the attack, if it is possible to postpone operation until the subsidence of the acute symptoms. This will take in the average case, dating from the first initial acute attack, about six months, during which time the patient ought to rest and be under careful medical treatment. Which ought to be done, a ligation or a thyroidectomy? In the

average case of short duration and of moderate severity, a thyroidectomy will probably be quite safe. In the severer forms it is safer to ligate one superior artery, being careful to take in the entire upper pole, so as to include the anastomosing branches. If this procedure does not bring on severe reaction, partial thyroidectomy may safely be performed in about ten days. If, however, a severe reaction does occur, be content to tie the other superior thyroid artery in ten days' time, and wait two or three months until the patient has gained in weight and strength before attempting further operative measures. Then partial thyroidectomy may be safely performed.

In the adenomatous type, nothing will be gained by doing a preliminary ligation. In the early stages these patients are good surgical risks, but in the late stages, as before mentioned, they are not so. We often find them with a rapid irregular pulse, edema of the extremities, ascites, and evidence of a failing heart. In the extreme stages of the adenomatous type, the severe symptoms may be caused to subside temporarily by careful medical treatment, thus permitting operation. The operation should be thorough and completed at one time; all the diseased tissue should be taken out at once, as there is much greater risk in disturbing than in removing an adenomatous goitre.

The effect of complicating disease in hyperthyroidism frequently has to be considered. What ought to be done when hyperthyroidism is complicated by active tuberculosis, by an active exanthem, or in pregnancy? In the first two conditions the writer believes operation would be highly dangerous. In the later condition it is contraindicated, for if the patient can go through a pregnancy successfully, it will often cure the hyperthyroidism.

The actual technic of an operation for partial removal of the thyroid gland is so well known that it would be superfluous to mention it in detail, but there are one or two minor precautions that should be mentioned. Make a big incision; it is very much safer for the patient. Cut the platysma with the skin and retract both together. Tie the superficial vessels of the skin carefully and rapidly, for hemostasis is of the utmost importance. Then turn the flaps up and down, and make a vertical incision between the right and left sternothyroid muscles. Raise them, with the neighboring sternothyroid muscle, from the true capsule of the gland, and clamp muscle, fascia, and external jugular veins between two clamps, as high up as possible, and cut between. This is to save the nerve supply. The clamping will also save time in ligating vessels in the fascia of these structures.

When the gland itself comes in view, locate the upper pole and tie the superior thyroid artery with linen or silk. Using this as a tractor have an assistant make slight traction, and the whole artery will come more clearly into view, where it can be safely and securely tied. Take care not to include any fibres of the omohyoid muscle, as the act of swallowing is apt to loosen the ligature if any muscle is included. The artery and both ligatures are now cut, and the upper pole of the gland is clamped. The veins are now in plain view and ought to be clamped close to the capsule of the gland. The

glands may now be incised, care being taken to preserve a strip of gland substance on the posterior surface, so as to avoid the parathyroids and the recurrent laryngeal nerve, which structures lie close to the posterior surface of the gland. These are the main precautions to be taken in any operation on the thyroid.

Extreme gentleness in handling thyroid tissue, rapidity without undue haste, and thorough knowledge of the anatomy of the neck are essential to a successful outcome.

714 MAIN STREET WEST.

### Therapeutic Notes.

**Salvarsan in the Treatment of Gangrenous Wounds.**—P. Ravaut, in *Presse médicale* for December 3, 1914, calls attention to the prompt beneficial effects which may be obtained from the local or intravenous use of salvarsan in infective gangrenous wounds. Such wounds are usually the result of the bursting of shells in close proximity, and the gangrenous process has been shown by Vincent to be due, not to arterial rupture and ischemia, but to a combined infection with fusiform bacilli and spirochetes, analogous to that of Vincent's angina. Remembering the pronounced value of salvarsan in the latter disorder, Ravaut deduced its probable utility in gangrenous wounds and in the case of a soldier suffering from a superficial wound of the left thigh which became gangrenous in twenty-four hours, he applied dressings of a solution of twenty grains (1.2 gram) of salvarsan in a quart (litre) of boiled water, with excellent results. Whereas previous application of tincture of iodine had had no effect in controlling the gangrenous infection, the salvarsan solution led to disappearance of the characteristic odor in twenty-four hours and subsequent prompt healing of the wound. In a second, more pronounced case, with a deep and extensive lacerated wound of the right thigh, the cavity of which was of the size of a child's head, equally striking results were obtained. In this patient, the general and local conditions thirty hours after the wound had been sustained were such, that life, from previous experience in similar cases, was practically despaired of. An intravenous injection of 0.6 gram of salvarsan, with a wet dressing of a solution six grains (0.4 gram) of salvarsan in a quart (litre) of water, brought about improvement both generally and locally. Three days later, however, induration and marked edema were noted on the right calf. A second intravenous injection of salvarsan was given, and on the succeeding days the swelling in the calf subsided and the condition of the thigh continued to improve. A third injection of salvarsan was given six days after the second, and after this recovery rapidly took place. In view of the results obtained, the author advises routine use of salvarsan in gangrenous wounds.

**Treatment of Chronic Gastritis.**—C. D. Aaron, in his recently issued work on *Diseases of the Digestive System*, states that of all drugs used in chronic gastritis, the most important is dilute hydrochloric acid, which should be given in large doses,

forty to sixty drops, three times a day, in all instances in which the physiological acid secretion is diminished or absent. The acid is best administered in three portions at one quarter to one half hour intervals, beginning one half hour after each meal. Loss of appetite is an indication for the following combination:

R Tinctura nucis vomice, ..... 5iii (12 c. c.);  
Tinctura cinchone composite, ..... aa 5ss (10 c. c.);  
Acidi hydrochlorici diluti, ..... aa 5ss (10 c. c.);  
Aque destillata, q. s. ad, ..... 5iv (120 c. c.).

M. Sig.: One to two teaspoonfuls in water one quarter hour before meals.

Resorcinol, shown by clinical experience to have a stimulating effect on the appetite, may be given as follows:

R Resorcinolis, ..... 5i (4 grams);  
Fluidextracti condurango, ..... 5ss (16 c. c.).

M. Sig.: Thirty drops four times a day.

In the gastritis of tuberculosis, creosote is especially useful for stomacheic purposes:

R Creosoti, ..... 5iii (12 c. c.);  
Tinctura gentiane, ..... 5v (20 c. c.);  
Alcoholis, ..... 5vii (200 c. c.);  
Vini xerici, ..... Oiss (800 c. c.).

M. Sig.: One teaspoonful before meals.

Where abnormal fermentation exists, and hydrochloric acid alone is insufficient to check it, antiseptic and carminative combinations such as the following, preferably given before meals, are indicated:

I.  
R Phenylis salicylatis, ..... aa 5ss (2 grams);  
Acidi acetylsalicylici, ..... aa 5ss (2 grams);  
Resorcinolis, ..... 5i (4 grams);  
Bismuthi subsalicylatis, ..... 5v (20 grams).

M. et ft. pulv.

Sig.: One third teaspoonful three times daily.

II.  
R Thymolis, ..... aa gr. xii (0.75 gram).  
Resorcinolis, ..... aa gr. xii (0.75 gram).  
M. et ft. capsulae No. xx.  
Sig.: One to two capsules before meals.

III.  
R Mentholis, ..... gr. xv (1 gram);  
Alcoholis, ..... 5v (20 c. c.);  
Syrupi, ..... 5i (30 c. c.).  
M. Sig.: One teaspoonful every hour until relieved.

**Treatment of Otorrhea.**—G. Laurens, in a recent issue of *Paris médical*, recommends that in simple otorrhea, the external meatus be filled with hydrogen dioxide solution, which is to be allowed to remain two minutes. This procedure should be repeated two or three times, both morning and evening. The meatus should then be well dried with cotton on an applicator and the following solution instilled:

R Acidi picrici, ..... gr. xv (1 gram);  
Aque, ..... 5vi (25 grams).  
Ft. solutio.

**Treatment of Malaria.**—C. Brodbent, in the *Journal of Tropical Medicine and Hygiene* for January 1, 1915, is credited with a report of a series of cases in which an attempt was made to ascertain the exact dose of quinine bihydrochloride required for intravenous use in severe malarial infections. Illustration was at the same time afforded of the marked advantage of intravenous over oral or intramuscular administration in these cases, the latter modes of treatment apparently not affecting the number of parasites in the blood nor reducing the temperature, while intravenous administration

of seven grains (0.45 gram) of the quinine salt in a pint (500 c. c.) of normal saline solution caused a swift drop in the temperature and disappearance of the parasites. A five grain (0.3 gram) dose of quinine was found insufficient. In future the author proposes to give in severe malarial cases, three doses of seven grains each at six day intervals, as the most efficient treatment available.

**Treatment of Tympanites.**—W. J. Macdonald, in the *Canada Lancet* for July, 1914, discusses the treatment of abdominal distention due to atony of the bowel following abdominal operations. The application to the abdomen of hot turpentine stupes, according to Macdonald, is not productive of the good results that might be anticipated. Turpentine enemata, however, are exceedingly beneficial, and when given high in the bowel will usually relieve the patient of large quantities of gas. A rectal tube should be passed in at least twelve to fourteen inches, and either of the following fluids allowed to pass through it from the nozzle of a fountain syringe suspended some feet above the bed:

- I.  
R Olei terebinthinæ, .....3ii (8 c. c.);  
Vitelli ovi, .....i;  
Aque ferventis, q. s. ad.....Oj (500 c. c.).  
M. et ft. enema.
- II.  
R Olei terebinthinæ, .....3ii (8 c. c.);  
Aque saponis, q. s. ad.....Oj (500 c. c.).  
M. et ft. enema.

In minor flatulence small doses of turpentine by mouth will occasionally assist the expulsion of gas. Doses of five to ten drops on a little white sugar usually suffice, though more may be given if necessary.

Where possible a copious dose of magnesium sulphate should be administered, e. g., one half ounce (15 grams) in two ounces (60 c. c.) of hot water, to be repeated in three hours if not effective.

When both the turpentine by bowel and magnesium salt by mouth are unsuccessful, the following combination, introduced hot into the rectum as high as the rectal tube can be passed, is very efficient:

- R Magnesii sulphatis, .....3i (30 grams);  
Glycerini, .....3ii (60 c. c.);  
Aque, .....3iii (90 c. c.).  
M. et ft. enema.

The forefinger should always be well oiled and passed into the rectum to guide the extremity of the tube.

The administration of oxgall in a high enema has often given excellent results in the author's experience. He recommends the following formula:

- R Fellis bovis purificati, .....3ii (8 grams);  
Glycerini, .....3ii (8 c. c.);  
Olei terebinthinæ, .....3ss (15 c. c.);  
Aque, q. s. ad.....Oj (500 c. c.).  
M. et ft. enema.

**Local Measures in Syphilis.**—W. Knowsley Sibley, in the *Urologic and Cutaneous Review* for August, 1914, advises the use of a gargle of one in 800 to 1,600 mercury bichloride in distilled water in the treatment of the throat and mouth lesions of the secondary stage of syphilis. An alternative measure is to blow some calomel powder directly on the ulcerations by means of an insufflator.

For condylomata the use of calomel, or mixture of calomel with boric acid and starch or with

powdered sulphur, is recommended. The parts should be washed twice daily with a one in 1,000 mercury bichloride solution and the adjacent parts separated with absorbent cotton or iodoform cotton. Ulcerations are to be treated with local calomel vapor fumigations or by dusting with calomel powder, with iodoform, or with a mixture of sulphur and iodoform.

In the treatment of skin infiltrations, at whatever stage, blue ointment, diluted if there is much congestion, otherwise pure, may be gently rubbed in. The oleate of mercury, diluted so as to contain but two to eight per cent. of the mercurial compound, may be used instead with advantage. Ionization with mercurial salts is considered by Sibley very satisfactory for more rapid removal of some long standing lesions of specific origin. Troublesome skin conditions may be painted with a five to ten per cent. solution of silver nitrate from time to time.

For eruptions on the forehead and face, mercurial preparations such as a one or two per cent. oleate of mercury ointment, or a diluted ointment of ammoniated mercury, with perhaps, at bedtime, the use of blue ointment itself or of a diluted mercuric nitrate ointment, is recommended. Ammoniated mercury may be used as follows:

- R Unguenti hydrargyri ammoniati, .....3iv (16 grams);  
Petrolati, .....3vi (24 grams).  
M. et ft. unguentum.

If the lesions are hyperemic a local sedative application is often better used at first, e. g., the following calamine lotion:

- R Calamini, .....3ss (2 grams);  
Zinci oxidi, }  
Liquoris calcis, .....3ii (60 c. c.);  
Misce et adde:  
Mucilaginis tragacanthæ, .....3ii (8 c. c.);  
Tincturæ benzoini, .....mii (0.12 c. c.);  
Olei rosæ, .....mss (0.03 c. c.);  
Aque, q. s. ad.....3i (30 c. c.).  
Sig. For local use.

Later, when the hyperemia has subsided, mercurial preparations may be given.

Syphilitic fissures about the angles of the mouth or the nostrils should be treated with one of the following preparations:

- I.  
R Unguenti hydrargyri oxidi flavi, .....3ii (8 grams);  
Adipis lane hydrosi, .....3iv (16 grams).  
Petrolati, .....3iv (16 grams).  
M. et ft. unguentum.
- II.  
R Hydrargyri chloridi mitis, .....3ii (8 grams);  
Olei olivæ vel petrolati liquidi, .....3iv (16 c. c.).  
Misce.

**Treatment of Rheumatic Fever.**—Thiroleix, at a meeting of the Société de thérapeutique, Paris, (*Presse médicale*, July 4, 1914), reported his experiences with magnesium sulphate in the treatment of acute articular rheumatism. Injections of the following solution were administered in these cases:

- R Magnesii sulphatis, .....3ii (8 grams);  
Aque sterilisatæ, .....3i (30 c. c.).  
S. Sig.: One dram (4 c. c.) to be injected at a dose.

Used alone, these injections had little or no effect, but when they were given in conjunction with sodium salicylate, highly satisfactory results were obtained, the disease being arrested in four or five days at the most.



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CHARLES E. DE M. SAJOURS, M. D., LL. D., Sc. D.

CLAUDE C. WIDENER, A. B., M. D.

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THE POLLUTION OF THE CROTON  
WATER SUPPLY.

It is greatly to be regretted that the State Commissioner of Health of New York has granted permission for the discharge of sewage from the two State institutions on Mohansic Lake, the State Hospital for the Insane and the Yorktown Training School for Boys, into the lake which is a part of the New York water supply. The conditions under which this is permitted are: 1. The approval extends only for a period of one year and is revocable at any time; it is subject to change whenever, in the judgment of the commissioner, a modification or change may be necessary; 2, the sand filter shall have an area of one acre to 500 population; and, 3, the sewage shall be properly disinfected by chlorination, using not less than five parts of available chlorine to one million parts of sewage. Under the conditions specified and under strict surveillance, the effluent may be entirely harmless and not pollute the city water supply, but permission should not have been granted for many reasons.

It is known that so called "purified" effluvia may become sources of dangerous pollution under insufficient control. The action of the commissioner furthermore establishes an undesirable precedent, and adds to the number of possible sources of pollution of the Croton water shed. If permission is granted

to one institution it cannot well be refused to others, and why set aside special streams?

It is averred by the Commissioner of Water Supply of the City of New York, who objects to the action of the State Commissioner of Health, that the cost of a sewer from the Mohansic Lake institutions to the Hudson River would not amount to more than \$120,000. This seems to be a small sum to pay for an absolutely safe method of sewage disposal. Moreover, the institution of filtration plants does not preclude the possibility of building such a sewer in the future, if, in the opinion of the next commissioner, the old method is inadequate. The matter of the water supply of a city like New York is so important and vital and is already subject to so many natural harmful influences, that no extra hazard should be taken. We have no assurance that under another health administration the conditions may not be of a lower grade than those specified by the present commissioner. It is to be hoped that the opposition of the city departments of health and water supply and other bodies will prevail upon Doctor Biggs to withdraw the permission he has given.

## OVERCROWDING AMONG CHILDREN.

As usual at this season, there appear in the daily newspapers of most large cities such headings as Schools Overcrowded, Two Sessions Necessary, etc. Considering the fact that the growth in population and the needed space for the children in the public schools can be readily gauged, or at least anticipated a year in advance without financial loss, there can be no adequate excuse for this unpreparedness. This want of forethought and preparation is the more inexcusable if we consider the results of overcrowding, for herding together is the very root of all bad sanitary conditions in schools or elsewhere, whether we consider physical, mental, or moral effects.

We make a great fuss and spend large sums of money on ventilation, and, if some of our educators are to be trusted, the whole success of pedagogical efforts depends on the purity and temperature of the air; but it is crowding that has brought about the need for ventilation, and under average conditions in many of our schoolrooms, adequate ventilation is simply out of the question on account of the numbers huddled together. No ventilating contrivance can work properly under these conditions, and it is little wonder that, in some instances, windows and walls have been taken out. Adults would not tolerate such conditions; they would feel stifled. Even in factories the workers cannot reach out and without effort touch four persons on as many sides of them, nor are they usually bombarded by the breath-

ing from such an intimate cluster of living furnaces. Among school children the overcrowding is more serious than among adults, for children have more active metabolic fires and are far more susceptible to depressing conditions.

Overcrowding means also more pupils in a class, attenuation of personal interest and intimacy on the part of the teacher, more difficulty in arousing a desire for knowledge, slower progress, and greater waste of time. There is also more opportunity and reason for rebellion of pupils against discipline, more strain upon the teacher, and a resulting general depression and joylessness.

One or two States have already limited by law the number of pupils to a room, and thus, if the laws are enforced, put an end to the indifference and shiftlessness of boards of education. Recognizing that for the sake of "economy" rooms might be made smaller hereafter, the size of the room also has been fixed by law in at least one State. So far, so good; but it is time that such limitations of sanitary indifference should be enforced everywhere. Moreover, it is to be hoped that some "foundation" or other compelling power will reduce the numbers to such an extent that the maximum of effective teaching will be approximated. We need not only a few open air schools, but also many good air schools.

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#### PARALYSIS DURING ANTIRABIC TREATMENT.

In our issue for January 17, 1914, we commented editorially on Hasseltine's study, in the *Public Health Reports* for October 24, 1913, of the occurrence of paralysis in two cases undergoing the Pasteur treatment. In the same *Reports* for July 30, 1915, Hasseltine discusses two more cases, one of which ended fatally. The symptoms of this distressing complication of the Pasteur treatment, he says, seem to vary from a transient local paralysis of one or more nerves to an acute, rapidly ascending paralysis which is fatal in a comparatively large percentage of cases. In the two cases now reported, one manifested on the twenty-first day of the treatment a facial paralysis, which later involved both sides, but terminated in complete recovery in about three weeks. The other case displayed, on the eleventh day of the treatment, an ascending paralysis which terminated fatally in six days. No autopsy was done.

The pathology of this condition is involved in doubt. There seems to be a growing suspicion that such cases may be simply paralytic rabies or atypical and abortive forms of rabies rather than so called treatment paralysis. Direct evidence of this is as yet wanting; and indeed there exists some

good evidence to the contrary. It is a matter of practical importance to know that alcoholism, syphilis, and neurasthenia are factors favorable for the development of these paralytic phenomena, and that exposure to cold, either by cold bathing or by weather conditions, and fatigue are predisposing causes.

The exact incidence of this paralysis among treated cases cannot at present be definitely determined. The latest figures obtainable give 100 cases in 217,774 persons treated, with nineteen deaths. Hasseltine thinks the real incidence greater than these figures indicate, since many cases go unreported. The comparison of these figures with other statistics is interesting. It is stated that among persons bitten by rabid animals and who receive no treatment, about fifteen per cent. acquire hydrophobia; further that among those bitten and who do receive treatment about 0.5 per cent. have the disease. Practically all developed cases of rabies end fatally. It is plainly evident therefore, as Hasseltine says, that taking the antirabic treatment is choosing the lesser of two ills. The prevention of both evils lies obviously in the adoption of proper muzzling and other means for the eradication of rabies among animals, as has been successfully accomplished in more than one country. In the meantime it is the right of the patient to know of this danger in taking the Pasteur treatment, and it is the duty of the physician to inform him of it.

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#### THE EFFECT OF ADOLESCENT INSTABILITY UPON CONDUCT.

It is regrettable that the physical, mental, and moral changes which take place at the period of adolescence, and which have been so well described by Hall, Clouston, and Marro, are not as widely appreciated by physicians as they should be. This is not merely a purely academic problem, but one which is of the utmost practical importance; the changes at adolescence may most decidedly affect the behavior of the individual in various and diverse ways. It is to be particularly noted that adolescent instability has been found to be the fundamental cause of delinquency in subjects who were undergoing this stressful period of their lives. This delinquency or abnormal behavior may be of varying degree. In some cases it is so extreme that the boy or girl is brought into court and unless there is at hand a broad minded examining physician who has had his attention directed to this aspect of the growing child's life, the basic causative factor may be entirely overlooked and the delinquent unjustly and unsympathetically dealt with. This whole question is well taken up in Dr. William Healy's

excellent work, *The Individual Delinquent*. A recent paper by Dr. Augusta F. Bronner of the Juvenile Psychopathic Institute of Chicago (*Psychological Clinic*, viii, 9) is illuminating on this point.

Some of the evidences of misconduct dependent upon adolescent instability may here be mentioned: Instability of mood and affections, hereditary tendencies, more apt to exhibit themselves at this time than heretofore, changes of character, and a weakening of self control. Some persons are not at all affected by the changes incident to adolescence; others are considerably disturbed by them. In some offenders adolescence is largely or alone responsible for the delinquency. If this period of life brings with it such pronounced disturbance as definite delinquency of such a nature and degree as to lead to court proceedings, we can well imagine what a host of similar phenomena of a medical nature may be brought on and frequently overlooked by the examining physician. Here the history of the case and a profound understanding of the individual patient are most apt to put one on the right trail.

In most cases with the passing of adolescence, greater stability is acquired, and, as self control develops and social adjustments are made, the subject gradually finds himself. Premature physical development, early puberty, mental and nervous disorders of one kind or another may complicate and increase the problem. The indication is plain that at no period of life are constructive measures more urgently needed than at puberty. Those who wish to enter into the problem at greater length are advised to read the references which have been mentioned above. The relationship of adolescent instability to disorders of the ductless glands, the autonomic nervous system, and the emotions are fields of thought and work which are holding the attention of many workers in medicine.

#### THE IMPORTANCE OF AFTERTREATMENT.

Those who have followed the medical history of the war, if sufficiently observant, must have been struck with the importance attached to the after-treatment of the injured, especially of those with damaged joints following fractures. Heat, massage, and passive movements carried out with Zander or other apparatus, have been made use of as early and as thoroughly as possible, to assure and hasten the most complete recovery. The importance of such a procedure is not a new discovery abroad, and not only the profession but the insurance companies have made it a point to spare no pains in this direction.

In this country we are considerably behind in our practice in this respect, especially in our charitable institutions. We are in the habit of discharging a case of fracture as "cured" when the bones are firmly united and the patient can get about, although the adjacent joints may be stiff and the muscles weak. The patient must finish his recovery as best he can, even though meanwhile he is a dead weight upon society. When the man finally returns to his task he is often not so efficient a workman as he would have been with careful aftertreatment. Our own accident insurance companies are just awaking to the realization of the economic saving made by an early return of the policy holder to selfsupport, and they are now glad to pay for such treatment as will hasten this end.

Even medical cases are released too early from medical care, with resulting relapse, or with a falling into a state of chronic invalidism, due partly, as in cases of damaged joints, to fearfulness of bodily use and return to routine existence. It is only a matter of time when our public institutions will become more alive to the importance of aftertreatment, or rather adequate care of all patients for the sake of social economy, if for no other reason. A man who labors in a trench made for draining or irrigating a piece of ground is of more value to society than one who digs trenches for war purposes.

#### STOCK VACCINES IN GONORRHEA.

W. G. Brett, R. A. M. C., contributes to the *British Medical Journal* for August 28, 1915, his experience with vaccines in the treatment of gonorrhea. Of thirty-three cases admitted into hospital, he writes, with acute gonorrhea, all were treated with gonococcus vaccine, and were discharged cured after an average detention of thirteen and a half days. No case was marked cured until there had been an interval of sometimes four and in other cases of five consecutive days since the appearance of the last sign of discharge, including gleet. This gives an average of about nine days during which alone there were manifestations of active gonorrhea. The method of treatment adopted was the following: On the morning after admission a dose of *mistura alba* was given, the patient placed on a milk diet, and rest in bed enjoined. An injection into the buttock of one c. c. of stock gonococcus vaccine, 200 million strength, was given, and the man directed to wash out the urethra three or four times daily with a weak solution of potassium permanganate. There was generally a slight rise of temperature in the evening (never higher than 99.0° F.) with slight headache. On the following morning the discharge was usually said to be heavier, lessening, however, during the day and being less again the next morning. Forty-eight hours after the first injection of vaccine a second dose was given, this time of 1,000 million strength, the same routine followed, and unless the discharge showed signs of marked



diminution and of approximation to gleet, two or three days afterward a third injection of 1,000 million was given, a fourth being rarely necessary. When the discharge had become clear the patient was allowed to be up in the ward; all exercise, however, was forbidden.

#### THE LATE DR. CHARLES P. BECKER.

Dr. Charles P. Becker, who died at his home in Brooklyn on September 7th, at the age of seventy-one years, was for many years the chief medical proofreader for D. Appleton & Co., former publishers of the *NEW YORK MEDICAL JOURNAL*, and his name appears as one of the associate editors in volume LXX, printed in 1899. Doctor Becker was a graduate in medicine, familiar with medical terminology, had an extensive acquaintance with classical and modern languages and a very wide range of general knowledge which made him invaluable as a proofreader. He was stricken with blindness about fifteen years ago, which naturally brought his career in this field to a close.

We chronicle with regret the passing of a man who represented a type of competent, highly trained proofreaders of whom but few are left, a fact clearly disclosed by a not very critical survey of much current medical literature.

#### News Items.

**French Medical Losses.**—Professor Landouzy, in addressing the graduating class at the University of Paris, stated that sixty auxiliary officers and nearly 1,000 French military surgeons had lost their lives in the present war.

**Anthrax in Human Subjects.**—Dr. T. B. Beatty, secretary of the Utah State Board of Health, reported on August 27th that two cases of anthrax in human subjects had been discovered recently in that State, one in a child seven years old and the other in a man. The latter case resulted in death five days after inoculation.

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Month.**—Annual meeting of the Medical Society of the State of Pennsylvania; Monday, September 20th, Philadelphia Clinical Association; Tuesday, September 21st, Philadelphia Laryngological Society; Friday, September 24th, Medical Club (directors).

**Typhoid Fever Reports.**—State reports for July, 1915, received at Washington, D. C., by the United States Public Health Service, show that during the month 125 cases of typhoid fever were reported in California, 149 in Indiana, 129 in Kansas, 22 in Montana, 402 in New York, 6 in North Dakota, 168 in Texas, and 620 in Virginia.

**Civil Service Medical Tests.**—On Thursday, September 23d, the Civil Service Commission of the City of Philadelphia will hold an examination for the office of assistant chief medical inspector, salary, \$2,400, and on Friday, September 24th, an examination for the office of chief of the Division of Child Hygiene, salary \$3,000. Application blanks for either of these positions may be had by calling at Room 875, City Hall.

**Medical Society of the Missouri Valley.**—As previously announced the annual meeting of this society will be held in Des Moines, Iowa, September 23d and 24th, under the presidency of Dr. Granville N. Ryan, of Des Moines. Dr. John B. Murphy, of Chicago, will deliver the oration in surgery, and Dr. J. A. Witherspoon, of Nashville, Tenn., the oration in medicine. Dr. George W. Crile, of Cleveland, and Dr. Howard Van Rensselaer, of Albany, N. Y., will also deliver addresses. Dr. Charles Wood Fassett, of St. Joseph, Mo., is secretary of the association.

**New Members of the Philadelphia County Medical Society.**—At the last meeting of the board of directors the following physicians were elected to active membership in the society: Dr. D. Austin Kebo, Dr. David J. Moylan, Dr. Louis Seligman, Dr. Joseph J. Toland, Dr. August Carl Valentine, Dr. David Miller Barr, Dr. John P. Gallagher, Dr. Nicholas F. Hoffman, Dr. Ferdinand T. Stires, and Dr. William F. Moore.

**Examination of Candidates for Admission into the United States Public Health Service.**—Boards will be convened at the Bureau of Public Health Service, Washington, D. C., and at the Marine Hospitals of Boston, New York, Chicago, St. Louis, Louisville, New Orleans, and San Francisco on Monday November 1st, for the purpose of examining candidates for admission to the grade of assistant surgeon in the United States Public Health Service. For full information regarding requirements, address the Surgeon General, Public Health Service, Washington, D. C.

**Physicians' Study Tour.**—The American Society for Physicians' Study Travels started from Philadelphia on Saturday, September 11th. They intend to visit Baltimore, Old Point Comfort, Richmond, White Sulphur Springs, Virginia Hot Springs, returning directly to Philadelphia in time to attend the forthcoming meeting of the Medical Society of the State of Pennsylvania, which is to be held in Philadelphia during the week of September 20th. Interesting demonstrations and lectures were given at various points during their trip, notably at Johns Hopkins University, Virginia Hot Springs, White Sulphur Springs, and at the Hotel Chamberlain, by Dr. Lewellys F. Barker, Dr. J. M. Anders, Dr. Guy M. Hinsdale, and others.

**Columbia University.**—The opening exercises of the academic year 1915-1916 of the College of Physicians and Surgeons, medical department of Columbia University, will be held on Wednesday morning, September 20th. After a brief address of welcome by the president of the university, Dr. Nicholas Murray Butler, an address will be delivered by Dr. Francis Carter Wood, director of cancer research at the college, his subject being Magic and Medicine. The opening exercises of the 162d academic year of the university will be held on Wednesday afternoon, September 29th. The annual academic address will be delivered by Edmund B. Wilson, Sc.D., Da Costa professor of zoology, his subject being Science and Education.

**American Public Health Association Endorses Patent Medicine Regulations of the New York Department of Health.**—Following a general discussion of the patent medicine evil provoked by Dr. Oscar M. Leiser's talk on the subject at a joint meeting of the New York State Sanitary Officers' Association and the American Public Health Association, in Rochester, N. Y., last week, a series of resolutions endorsing the attitude of the Department of Health of the City of New York regarding the sale of patent medicines was unanimously adopted by the American Public Health Association. The resolutions were presented by Dr. Charles F. Bolduan, director of Public Health Education of the Department of Health of the City of New York.

**New Officers of the American Public Health Association.**—The forty-third annual meeting of this association was held in Rochester, N. Y., September 6th to 10th, under the presidency of Professor William T. Sedgwick, of the Massachusetts Institute of Technology. The following officers were elected: President, Dr. John F. Anderson, director of the hygienic laboratory of the United States Public Health Service, Washington, D. C.; first vice-president, Dr. George W. Goler, health officer of Rochester, N. Y.; second vice-president, Dr. Charles J. Hastings, medical officer of health, Toronto, Canada; third vice-president, Dr. Omar Gillette, of Colorado Springs, Colo.; treasurer, Dr. Lee K. Frankel, of New York (re-elected); secretary, Professor Selskar M. Gunn, of Boston (re-elected). The following were elected to honorary membership in the association: Surgeon General William C. Gorgas, United States Army; Dr. Stephen Smith, of New York, a member of the State Board of Charities; Dr. Frederick Montizambert, of Ottawa, director general of public health of the Dominion of Canada; and Dr. Henry D. Holton, of Brattleboro, Vt.

**Cholera and Typhus Fever in Austria-Hungary.**—According to a report received in Washington, D. C., by the United States Public Health Service, during the period from June 14th to July 14th, there were 2,000 cases of typhus reported in Austria-Hungary, including four cases of fatal cases. In Austria, from June 14th to July 14th, there were 1,000 cases of typhus, with 200 deaths; in Hungary, from June 14th to July 14th, 416 cases and

**A Higher Death Rate in New York Last Week.**—According to the weekly report of the Health Department of the City of New York, for the week ending September 14, there were 1,305 deaths reported to the Health Department of the City of New York, compared with 1,266 deaths and a rate of 11.27 for the corresponding week of last year. While there were 149 more deaths during the past week, the increase in population accounted for forty-nine. The other 100 were due to increased mortality from certain diseases, particularly measles, scarlet fever, diphtheria, whooping cough, lobar pneumonia, bronchopneumonia, and pulmonary tuberculosis.

In spite of last week's jump in the death rate, the rate for the first thirty-seven weeks of 1915 is only 13.54, compared with 13.07 for the corresponding period of last year.

**New Hospital in the Borough Park Section of Brooklyn.**—The new hospital, situated at 1550 Fifty-second Street, Brooklyn, was opened for inspection. The event was marked by appropriate exercises, and about two hundred persons visited the institution. The new hospital contains twenty beds and is intended merely to provide for the needs of the section until a more commodious building can be erected. It is equipped with every modern appliance, and provision has been made for hydrotherapy and massage treatment, under the supervision of Dr. I. C. Goldstein, of Sharon Springs, N. Y. The physicians connected with the institution are: Dr. Henry M. Kalvin, Doctor Goldstein, Dr. J. M. Bernstein, Dr. S. Herman, Dr. L. Berlin, Dr. I. Weitzman, and Dr. Leon Lesser.

**Legal Liability of Water Company.**—The Supreme Court of the State of New Jersey, according to *Public Health Reports*, has decided that a water company supplying water for domestic purposes is bound to exercise reasonable care to see that the water is wholesome and safe. In *Jones versus Mount Holly Water Company* the plaintiff was a customer of the water company. Three of his children became ill, and he sued the company for damages, alleging that the illness was caused by contamination of the water with fecal matter. He secured a verdict for \$750 in the lower court, and the supreme court sustained the verdict.

The court held that the evidence was sufficient to justify the jury in finding that the illness of the children resulted from the contamination of the water and that the company had been guilty of negligence in supplying water which was unsafe for drinking purposes.

**Gifts and Bequests to Hospitals.**—The will of the late Mary Meredith contained a bequest of \$250 to the Children's Homeopathic Hospital, Philadelphia.

The late Samuel Dickson bequeathed \$50,000 to the William Pepper Clinical Laboratory of Medicine of the University of Pennsylvania.

The Orthopedic Hospital, Philadelphia, will receive \$6,000 under the will of Clementina Furness.

Among the bequests to charitable institutions contained in the will of the late Colonel R. Woodward, who died on September 2d, are the following: \$5,000 each to the Brooklyn Bureau of Charities, the Brooklyn Children's Aid Society, and the Brooklyn Eye and Ear Hospital; \$2,500 each to the Brooklyn Society for the Prevention of Cruelty to Children, the Brooklyn Hospital, the Brooklyn Home for Consumptives, and the Brooklyn Home for Aged Men and Aged Couples.

By the will of J. Howard Wright, who died last November, the New York Society for the Prevention of Cruelty to Children and the Child's Hospital will each receive \$1,500.

On her eighty-seventh birthday anniversary Mrs. Russell Sage sent \$10,000 each to six institutions in Syracuse, her native city. Included in these were the Good Shepherd Hospital, Onondaga Orphan Asylum, and Syracuse Uni-

**Personal.**—Dr. Samuel Clary has been elected assistant professor of surgery at the Medico-Chirurgical College, Philadelphia.

Dr. James K. Young has resigned as clinical professor of orthopedic surgery in the Woman's Medical College, Philadelphia, and has been appointed visiting chief of the orthopedic staff of the Philadelphia General Hospital.

Dr. William H. Devine, of South Boston, Mass., has been appointed director of school physicians of Boston, a new office created since the resignation of Doctor Harrington as director of school hygiene and made necessary because of the increase in the staff of school physicians.

**Tuberculosis Week.**—Plans for a national Medical Examination Day, a Children's Health Crusade Day, and a Tuberculosis Sunday, all to be held in Tuberculosis Week, December 6th to 12th, have been announced by the National Association for the Study and Prevention of Tuberculosis. Medical examination day is set for Wednesday, December 8th, and will be the first effort on a national scale to urge annual physical examinations. Plans for the day include an appeal to induce everyone, sick and well, to see a doctor. The plans include also the inauguration on the part of factories, stores, and offices of an annual physical examination for all employees. Thousands of antituberculosis associations, other societies, and dispensaries all over the country are expected to cooperate in furnishing free examinations for those not able to pay a physician.

Children's Health Crusade Day, on Friday, December 10th, is expected to interest and instruct school children in healthful living. Special exercises will be held at which lectures, essays, and playlets will be given on the subject of health. This will also be the occasion for launching the Red Cross Christmas Seal sale in the schools.

The culmination of the campaign will be the sixth annual celebration of Tuberculosis Sunday. Last year on Tuberculosis Day over 100,000 churches gave attention to the subject of tuberculosis by sermons, talks, and announcements. The governors of all of the States will be asked to issue proclamations calling attention to the importance of increasing the knowledge of the public on how to avoid consumption. Clubs, lodges, and societies will also be asked to consider the subject at a meeting either on Tuberculosis Sunday or some other day of Tuberculosis Week.

**Postgraduate Teaching of Medicine in Philadelphia.**—For the purpose of endeavoring to correlate the medical teaching facilities of Philadelphia for postgraduate study purposes about one hundred of the leading physicians of the city have formed themselves into an association with the temporary title of the Cooperative Association for Postgraduate Teaching of Medicine in Philadelphia. The organization committee is representative of the hospitals and undergraduate medical schools of the city. The chairman is Dr. David Riesman, and Dr. George P. Müller is temporary secretary. The executive committee, in addition, consists of Dr. W. M. L. Coplin, Dr. F. X. Dercum, Dr. P. B. Hawke, Dr. Edward Martin, Dr. Charles K. Mills, Dr. George P. Müller, Dr. R. M. Pearce, Dr. David Riesman, Dr. W. L. Rodman, and Dr. George E. de Schweinitz. The subcommittee on roster includes Dr. Ward Brinton, Dr. R. Max Goepf, Dr. F. C. Hammond, Dr. John A. Kolmer, Dr. R. V. Patterson, Dr. C. M. Purnell, Dr. W. J. Taylor, Dr. T. H. Weisenburg, Dr. A. D. Whiting, Dr. Samuel Woods, and Dr. J. M. Anders chairman.

This cooperative association will investigate and ascertain the resources for postgraduate teaching that exist in Philadelphia. The courses offered by each hospital and college are then to be so arranged in hours as to enable the graduate student to spend each day in constant clinical study or laboratory work in a number of institutions. To accomplish this there is to be established a central office, in charge of a permanent secretary, where rosters of courses would be made, all information listed, so that a prospective student would find everything prepared in advance for him. The bureau would be arranged by a committee representing all the teaching interests of the city. This central office, therefore, will virtually be a municipal bureau, placing at the disposal of all who wish to specialize in medicine or surgery the facilities of the city for such study. It would have nothing to do with undergraduate courses and would not interfere with the instruction and rosters of the undergraduate colleges.

## HEMADENOLOGY:\* A NEW SPECIALTY.

## THE INTERNAL SECRETIONS—THEIR FUNCTIONS AND BEARING ON DISEASE AND THERAPEUTICS.

By CHARLES E. DE M. SAVOUS, M. D., LL. D., SC. D.,  
Philadelphia.

(Continued from page 623.)

## THE THYMUS (Continued).

That sensorial defects occupy a prominent position, and afford a sound foundation for the recognition of mental inadequacy in infants and young children—provided that the examination is conducted with due patience and care—is evident. Again, in the light of the evidence submitted, deficiency of the various ductless glands and particularly of the *thymus*, is the underlying cause of the defective development (excluding cases in which the sensory organs *per se* are diseased) of the various senses owing to defective nutrition of their nervous mechanisms. Since the development of the mind is due to the impressions the brain receives from the various senses, we have in these two general facts the key to the line of treatment required to *arrest the development of all grades of mental deficiency*, not only, as previously stated, by the use of organotherapy when the initial symptoms of the disease appear, but also by *cultivation of the various senses*. Physiological nutrition and functional stimuli thus work hand in hand to improve each sense organ; the aggregate of these in turn by stimulating the organ of mind gradually insures its development.

In our preceding article (NEW YORK MEDICAL JOURNAL, September 4, 1915) we reviewed the main morbid phenomena shown by the special senses in infants, when, from any cause, the mental development of the latter was more or less in abeyance. Emphasis was laid also on the fact that such early recognition of mental deficiency made it possible, better than later, to obtain satisfactory therapeutic results. Especially is this the case since the functions of the ductless glands and organotherapy have become features of the problem.

A regrettable result of the introduction of animal glands into the treatment of this class of disorders, however, has been the tendency, in general practice, to depend solely or mainly upon them. That but little progress is noted in a large proportion of cases is readily explained by the fact that increased functional power of the brain cells requires, beside this inherent power to function, the stimulus which use supplies. We may, for instance, administer agents which will nourish muscular fibre, but to increase its strength, physical exercise is necessary. In the development of the brain cells, the potential is furnished when we administer thymus, thyroid, adrenal, etc., along with adequate food, but they require physical exercise as well as the muscle fibres to become efficient as psychic cells. This is afforded through the special senses in the infant as well as in older subjects, most of the senses, as we have seen, being practically developed at birth. We shall review some of the measures resorted to in in-

fants and very young children, not only "to awaken the dormant senses," as is generally taught, but to enhance, through repeated stimulation, the functional efficiency of the cells, cellular aggregates, centres, etc., to which external impressions are conveyed through the senses.

*Stimulation of the auditory apparatus.* Even in the infant, the auditory apparatus and the word hearing centre which constitute the main cerebral mechanism of language, are highly receptive. If we couple this with the facts that words often repeated are understood long before a child can speak, and that imitation is the main source of ideas in infants, we have in the apparently meaningless terms of endearment and praise, the prattle of other children, the cradle songs and other forms of music, especially instrumental music, which seem almost a specific in all grades of defectives, frequently repeated simple words, particularly if connected with some craving which the child's instinct will inspire, such as that for food, including the breast or bottle, etc., many sources of stimulation which cooperate efficiently with the organotherapeutic measures adopted for the development, not only of the auditory mechanism, but also of that of speech and other cerebral activities. With patience and perseverance and much repetition—virtues extolled in this class of cases by the late Edouard Séguin—unexpected results are sometimes attained. To leave such children to themselves, attended by an indifferent nursery maid, as is occasionally seen in wealthy families, means the child's doom. A devoted mother, well trained by the physician, will, better than any one, obtain what progress is attainable. The initial step is to arouse *attention*; the sense of hearing is one of our main levers for this purpose.

We should expect a normal infant of nine or ten weeks to listen with some degree of attention to music, the tick of a clock or even of a watch, to the extent sometimes of turning its head toward the sound, and showing pleasure and astonishment (the latter expressed by opening its mouth and eyes widely) when new sounds, imitations of animal cries, music with some instrument not previously used, are heard. This applies also to attempts to speak—such sounds as *ama, babba, pappu*, etc.—at about nine months. With this standard as guide, we should aim in a defective infant to raise its hearing power to the level it should normally have reached at its age.

*Stimulation of the visual apparatus.* A careful examination by an ophthalmologist having shown that no organic disease of the visual apparatus exists to account for the apparent blindness, or at least of the defective vision, and appropriate medication having been instituted, resort should be had to out-of-door life, and to various glittering objects to excite the retina and through it the visual appa-

\*Hemadenology, from the Greek, *haima*, blood, and *adeno*, gland, denotes, therefore, stimulating the various types of endo-adenology, thymus, thyroid, and other organs supplied to the organism, thus strengthening the same by stimulation on the ductless or blood glands.



ratus. Just as vision is weakened by bandages over the eyes or the dark room, so can it be stimulated by daylight. The baby coach is of great aid in this connection, its hood serving to shade the eyes, without interfering with the penetration of bright light through the retina. The retinal muscles and those of accommodation and motion are likewise stimulated, owing to the availability, out-of-doors, of the many factors, distance, variegated coloring, moving objects, etc., which a nursery does not supply. In the case of the infant, of course, we have not at our disposal the many resources which the kindergarten affords for older children, but some of them are more or less adaptable. A glittering call bell, several bright teaspoons tied together in such a way as to cause them to tingle when shaken, a shining baby rattle, etc., will enlist the help of the sense of hearing, and afford the mother a clue to the progress made as regards vision. The distressing vagueness so characteristic of these little patients when they attempt to see anything, will at first breed discouragement in the attendant, but patience, aided by appropriate treatment—direct or transmaternal—and the knowledge that the want of attention peculiar to them will steadily disappear when the central nervous system becomes more responsive to external stimuli, will be rewarded in cases at all capable of improvement. This point once attained, progress is rapid, and the usual means adopted to improve vision, highly colored toys, blocks, mirrors, etc., may be resorted to.

It should be remembered that amblyopia, even in the absence of the characteristic lesions of true amaurotic idiocy, denotes the presence of a severe case. Our standard of comparison affirms this when the vivacity of the dawning intelligence illustrated through the infant's visual powers is taken into account. Indeed, some normal infants show pleasure on the twelfth day on seeing a bright light, cry out with joy on beholding their parents at the end of the second month, grasp for objects on the third, show joy on seeing themselves in a mirror on the fourth, etc. Conversely, what have been taken as defects are not such. Thus strabismus may normally occur during the first two months; accommodation is perfect only at the end of three months, while the eye movements are performed normally only during the fourth month—all of which features should be borne in mind in establishing a diagnosis.

*Stimulation of the senses of smell and taste.* While stimulation of these senses is useful for the development of their respective mechanisms, peripheral and central, in older children, the various devices resorted to for the purpose are hardly applicable in the infant. Indeed, one of the important features of the recognition of any degree of mental deficiency early in the child's life is that, where organic lesions do not exist, the nervous system which normally would be in process of rapid development, responds with greater activity than later to the influence of remedies, especially organic preparations, which actually nourish the nerve cell and sustain its metabolism. The olfactory apparatus and gustatory apparatus thus develop more rapidly than in the older child, in whom the morbid process is more firmly established and therefore more resistant.

Important in this connection is the fact that where any or all the special senses show any marked degree of deficiency, the thymic nucleus should be supplemented by some preparation of phosphorus. Of special value is the official syrup of hypophosphites, also a small dose of strychnine.

*Stimulation of cutaneous sensibility and general metabolism.* Even though this feature of the treatment of infantile defectives has not, as far as I am able to ascertain, been introduced, it merits a leading place among our therapeutic resources. Education of the sense of touch by means of stuffs or boards varying in smoothness and roughness, soft or hard materials, buttoning and unbuttoning, etc., or of the temperature sense by touching warm and cold surfaces alternately, dipping the hands in cold and warm water, etc., are familiar devices, but they are of little value in very young children. At best also, they are extremely restricted in their effects. To attain the best results in infants, measures which excite the entire surface are necessary. This, however, introduces lines of thought which require a brief preliminary explanation.

In the preceding article, it was stated that in some mental defectives the temperature sense was so obtunded that a hot object which normally caused rapid withdrawal of the hand in contact with it, failed even to attract their attention. And yet these same children, who will appear dull, sleepy, and torpid in cold weather, will during warm weather or under the influence of a mild febrile process, become unusually bright and active. Why is this? It is due, from my viewpoint, to a physical phenomenon the far reaching importance of which I have long urged, viz., that *while ferments carry on metabolism in all tissues, the temperature to which these ferments are subjected in the tissue cells governs the rate of metabolism in those cells.* Warmth applied to the surface thus enhances metabolism and, therefore, the vital activities of the entire organism.

Morat, professor of physiology in the University of Lyons (11), in his study of the elementary reactions which sustain life (1905), remarks: "We are reduced to the realization that such a degree of heat is useful: that another is bearable and that another is harmful, but we cannot give the reasons for this." He touches the keynote of the true process, as I view it, however, when he adds: "It seems, however, that we can connect this factor with the conception still so vague, of fermentation. Fermentation is the paramount chemical process of the living being; fermentation characterizes life; *life is a fermentation*." The obscurity surrounding this vast and all important question is in a measure dissipated when the ductless glands, including the pancreas, are introduced as factors of the process. What then is the life process under these conditions?

In 1903, I urged that certain leucocytes—in keeping with the familiar function of trophocytes in *Spongilla*—transferred nutrient substances directly to the tissue cells, depositing them therein in the form of granulations—the familiar stainable granulations. I pointed out also that these leucocytes completed the digestion of the nutrient substances, peptones, collected by them in the intestinal canal, precisely as is done by phagocytes (which are but a

specialized form of these digestive leucocytes) with the bacteria they ingest. That they contain digestive and other ferments has been shown by numerous investigators. Thus, Labbé, after referring to the oxidase fibrin ferment (which I subsequently identified as the adrenal active principle, adrenoxidase) also found in leucocytes, says of these cells: "They contain, moreover, a fibrinolytic ferment (Leber, Achalmé), a casein ferment, a ferment analogous to trypsin, a glycolytic ferment (Rossbach, Zabolotny, Tarchetti), a lipasic ferment which, as shown by Poulain, plays an important role in the assimilation of fats"—briefly, all the hydrolytic ferments of the pancreatic juice. \*The kinship between these nutritive leucocytes and phagocytes is well shown by the fact that the digestive activity of the latter was also found by Metchnikoff to be due to "a trypsinlike ferment" which he termed cytase. That trypsin is a bactericidal agent even in the intestinal tract, has been demonstrated by the labors of Charin and Levaditi, Zaremba, and others.

The more recent labors of Abderhalden (2) fully sustain the view that ferments play a leading role in all cellular functions—a role which it is necessary to comprehend, at least to the limited extent of our knowledge, if the therapeutic measures I am about to indicate are to be given their full value. "Everything points," writes Abderhalden, "to the fact that the cell has agents at its disposal which render it capable of splitting up into their simplest units all the complicated substances which are brought to it or which it itself builds up." He urges further that "each separate cell, with very few exceptions, disposes of the same or similar ferments as those secreted by the digestive glands in the intestinal canal." As these agents include lipase, amyllopsin, and trypsin, all pancreatic ferments, we are again brought to the pancreas as the source of the cellular ferments in the body at large.

As to the manner in which these ferments are conveyed to the tissue cells, Abderhalden writes: "It is an open question from what source these ferments, which we are going to call defensive ferments, take their origin. Many facts accord with the suggestion that the leucocytes play a part in this connection. They probably give off these ferments to the circulation." He gives as examples the demonstrable ferments in the pulmonary alveoli, which ferments "take their origin from leucocytes"; the migration of multitudes of leucocytes to oppose an invasion of microorganisms, etc.

While very dissimilar cells of the body may thus contain various ferments, the purpose of the latter, according to Abderhalden, is to decompose albumin into peptones. It can "be easily shown," he writes, "that the cells of the body are able to decompose into their structural units the so called polypeptides, that is aminoacids linked in the manner of acid amides. These ferments have acquired the name of peptolytic ferments. Their presence has been demonstrated in animals and plants in the most varied kinds of cells." It is further asserted that "each separate cell of the body is capable of digestion," this applying only to ingested foods of a structure harmonious with the structure of the cell. We thus have digestive ferments as active participants in the metabolism of tissue cells.

While Abderhalden's conception differs from

mine in that he regards the leucocytes as carriers of ferments to the tissue cells where they carry on their peptolytic actions, whereas, for many reasons which I cannot discuss here, I hold that this action is carried on within the digestive vacuole of the leucocyte (as clearly shown in the phagocyte), the granulations of the leucocytes being secretory products which build up and perpetuate the tissue cell, the fact remains that enough evidence is available today to impose upon us the duty, if we would interpret intelligently aberrations of functional activity in any part of the organism, to *consider ferments as the inciters and perpetuators of the vital process in all tissue cells.* From my viewpoint (this is specified merely because Abderhalden has not so far scrutinized closely the field of the ductless glands, which tends greatly to elucidate the whole process) *all these ferments are supplied by the ductless glands.* Thus, while nucleoproteids are furnished to the tissue cells by leucocytes (reinforced during infancy, childhood, and adolescence by the lymphocytes of the thymus) as tissue pabula, various ferments—the thyroid ferment thyroiodase as sensitizer, the adrenal ferment *adrenoxidase* as oxidizer, and the *pancreatic ferments*, glycolytic, lipasic, and trypsin—are also supplied to carry on as their names imply, the metabolism of glycogen, fats, and proteins. *These ferments, first used, or used in part, by the leucocytes in building up the cellular pabula, thus constituting the building up or anabolic phase of metabolism, then carry on the breaking down or catabolic phase of that process, the whole in turn constituting the vital whirlpool.*

The bearing of this process upon the treatment of the various degrees of idioey is readily surmised. Since, as stated, heat, warm weather, a febrile process, active exercise—anything which activates oxidation in these patients, enhances noticeably, though temporarily (without treatment), what mental activity they possess, we have in *hot baths*, twice daily, or *heliotherapy*, exposing the nude body to solar heat during prolonged periods, even in winter, as is now successfully done in the treatment of osseous and glandular tuberculosis, a potent aid in the treatment of these cases. These excellent results are obtained in virtue of the familiar chemical law that the activity of ferments is increased by heat up to certain limits. Indeed, by supplying to the tissues the various glandular substances which carry on their functions, and, simultaneously, heat to raise their activity to its highest potential, we antagonize precisely that which, in infants (in those at least in whom organic lesions are not present, although these also are improved), the deficient vital metabolism in all tissues—including the cerebrospinal system—to which even the hereditary forms of idioey and mental backwardness in the child are due. Especially is heat efficient in the backward infant, in whose interest these lines are especially written.

In our next communication a summary of the functions of the various ductless glands and their stigmata will be given, preparatory to a study of the relations of these organs to the various forms of insanity.

#### REFERENCES:

1. MORAT: In Morat and Doucet, *Tratado de Neumologia*, Paris, 1899.
2. ABDERHALDEN: *Digestive Ferments*, 3rd Edition, New York, 1924.

(To be continued.)

## Pith of Current Literature.

## ZENTRALBLATT FÜR GYNAKOLOGIE.

**Symptomatology of Corpus luteum Cysts, by Halban.**—The general teaching is that menstruation is not disturbed by cystic formations of the ovary. On the other hand, Halban has noticed that in many cases there is a sudden cessation of a menstruation, heretofore regular. Not infrequently the condition has been mistaken for a tubal gestation on account of the presence of a tumor in the region of the annexa. According to the author's experience, this menstrual disturbance has occurred, almost without exception, in cases of corpus luteum cysts. He believes that as a result of the cyst formation the lutein tissue persists longer than is normal and is probably present in greater amount than is usual. Brief reports are given of nine cases in which such cysts were removed.

**Pregnancy Following Conservative Ovariectomy, by Freund.**—On opening the abdomen the author found extensive cyst formation of both ovaries with normal tubes. The left ovary was removed completely. In the mass on the right side, there was a piece of apparently normal ovarian tissue three fourths by one half inch in size. This with a portion of the cyst wall was removed and then sewed into the operation wound. Ten months after the operation, the patient became pregnant and went to term.

## BULLETIN DE L'ACADÉMIE DE MEDECINE.

June 6, 1915.

**Serum Therapy in Cerebrospinal Meningitis, by F. Menetrier and A. Pascano.**—There is need to adapt carefully the serum used to the variety of causal pathogenic organism in each case. That such adaptation can be effected even without differentiation of the organism present by bacteriological methods—often unavailable—was shown in a case reported by the authors. The patient was a child of fifteen months, in whom symptoms of cerebrospinal meningitis appeared and whose cerebrospinal fluid, obtained by lumbar puncture, contained numerous cocci presenting the morphological features and staining reactions of meningococci. An intraspinal injection of twenty c. c. of a mixture in equal parts of antimeningococcic serum and antiparameningococcic serum was given, with slight benefit. After a second injection of the same mixed serum, two injections of antimeningococcic serum alone were given, with resulting distinct aggravation, the benefit from the preceding injections being lost. Three injections of twenty c. c. of antiparameningococcic serum alone were then administered, with the result that on the day succeeding the first treatment, the temperature dropped to normal. The fluid withdrawn at the second and third injections was found clear, free from diplococci, and with the cells for the most part lymphocytes. The child forthwith recovered. It is held, therefore, that a proper treatment of meningitis may be applied even in the absence of a polyvalent serum. The use of large doses is also deemed important.

**Treatment of Small Cranial Wounds Caused by Shell Fragments, by Qui.**—Attention is called to the advantages of exploratory incision of the scalp, even in small wounds, at first sight apparently not involving the skull. The case is reported of an infantryman who sustained a slight wound in the right parietal region, and was treated conservatively for three weeks, in spite of signs suggestive of cranial fracture, such as paresis of the upper and lower extremities on the side opposite the lesion, inequality of the pupils, convulsive movements (attributed at the time to tetanus and treated as such), and finally hemiplegia. A brain abscess later developing, the case was at length treated radically, the operation revealing a comminuted fracture of the external table and the presence of a minute shell fragment measuring one cm. by four mm. by two mm. imbedded in and protruding into the cranial cavity through the internal table. Removal and drainage were followed by immediate improvement and ultimate recovery. In this instance, the shell causing the injury had exploded no less than fifty metres from the patient. Careful exploration of even slight scalp wounds by shells for fractured bone is rendered advisable by this observation.

## PRESSE MÉDICALE.

June 24, 1915.

**Surgical Tréatment in Wounds of the Abdomen in Military Practice, by René Leriche.**—After six months' active service in an ambulance at the front in France, Leriche is convinced of the advisability of routine operative intervention in abdominal wounds. Of 117 cases treated conservatively, but twelve ended in recovery. Radical treatment would surely have yielded better results, and should be recommended even in wounds of the colon, though they sometimes recover spontaneously through the formation of a sinus.

## ROUSSKY VRATCH.

May 3, 1915.

**Bacteriology of Typhoidal Infections with Eruptions, by B. I. Klein, A. A. Kroutovsky, and A. M. Marjasheva.**—The authors investigated fifty-two cases of an infection which attracted attention during the Russo-Japanese war and has been designated as Manchurian typhus. The disease runs a variable course, resembling typhoid in some cases and typhus in others. Botkin and Zimmitsky isolated a bacillus which they regarded as the specific organism, which they named *Bacillus febris exanthematici*. This bacillus resembles the typhoid, but differs in the formation of indol and in being agglutinated with the serum of patients suffering from Manchurian typhus. In the cases investigated by the authors no such organism was found, and the etiology of these cases, with the exception of a few which proved to be typhoid or paratyphoid, remains obscure.

**Isolation of School Children with Contagious Diseases, by P. Ia. Korolkow.**—The author has elaborated certain principles dealing with contagious diseases among school children, which he has applied successfully for the last ten years in the primary schools of Petrograd. In cases of scarlet fever and diphtheria, the classroom or school is disinfected and closed for one to two days and the throats of the



pupils are inspected daily for a week. If cases recur, the school is closed for a week, during which time it is carefully disinfected and cleaned. If the affected child is sent to the hospital the other school children in the household may return to school after a week and following a bath, or, in a case of diphtheria, they may return in three days if given prophylactic injections of diphtheria antitoxin. In measles, the incubation period is placed at eleven days. If a case is discovered in the school, the school work is not interrupted, but the pupils are requested to bring statements from their parents as to their having had the disease. In eight to ten days all children who have not had measles in the past are sent home for a week. All those who do not manifest the disease are permitted to return to school. The same method is applied to the children who never had measles and at whose homes the case occurred, except that the incubation period is placed at fourteen days. If the children had measles they are permitted to return to school as soon as the patient is removed to a hospital. In smallpox, the incubation period may be disregarded, if all the children are vaccinated or re-vaccinated. In the case of other contagious diseases, it is not necessary to close the school, but a careful inspection of the pupils should be made during the incubation period, as follows: Chicken pox, two weeks; roseola, one week; whooping cough, two weeks; mumps, three weeks, and follicular tonsillitis, one week. Where the affected child is treated at home and imperfectly isolated, the school children in the household are kept from school. In measles, they are permitted to return to school in two weeks. If any of these children have had measles, they need not interrupt their attendance, if they do not come in direct contact with the sick and if they change their outer clothing. With regard to quarantine of the sick, the following periods may be adopted: Scarlet fever, five weeks, if desquamation is complete; diphtheria, when the culture is negative, or four weeks; measles, three weeks; roseola, one week; mumps, two weeks, particularly in the warm season. The author also recommends the use of formaldehyde, a teaspoonful to a dessertspoonful to a glass of water, to wipe off the furniture and spray the school room once a week, and during an epidemic, once daily.

June 6, 1915.

**Functional Relation of Organs: Changes in the Thyroid after Removal of the Adrenals**, by E. E. Malovitchko. In an attempt to establish the relation between the adrenals and the thyroid, the author experimented on fifty dogs from which by various operative methods the adrenals were removed or their secretion prevented from entering the circulation. In making sections of the thyroid after the removal of the adrenals, a striking change was observed. Microscopically, many of the alveoli were filled with desquamated cells, taking the place of the colloidal substance. The nuclei were found constricted, the chromatin gathering in lumps. Here and there the nuclei failed to take the nuclear stain. The protoplasm was in places swollen, the cells resembling hyaline balls. In some of the alveoli dissolution of the protoplasm and complete destruction of the cells was observed. The author believes he has estab-

lished the fact that there is an intimate relation between the adrenals and the thyroid, removal of the former leading to a widespread degeneration of the latter. While the removal of the thyroid does not produce marked changes in the adrenals, certain changes are nevertheless observed in the finer structure of the epithelial cells.

#### REVISTA DE MEDICINA Y CIRUGIA PRACTICAS

August 4, 1915.

**Vomiting Sickness**, by J. G. Gonzales del Valle.—This disease, which has recently appeared in Jamaica, takes the epidemic form with a high mortality each winter, attacking especially children. It is distinctly contagious and may be carried by objects and human beings to a considerable distance, thus arousing the fear that it may be imported into Europe. Turon in 1904 described a disease with vomiting and convulsions causing death in a few hours in children of the poorer class where post mortem there was found very intense gastrointestinal congestion. Ker in 1905 confirmed these observations, but was unable to clear up its identity, while in 1912 Potter and Scott devoted careful study to the disease. Potter stated that the disease was identical with yellow fever; while Scott considered that it was a form of cerebrospinal meningitis and asserted that he found the meningococcus in the spinal fluid. Seidelin in 1912 and 1913 observed sixty-two cases with forty-two deaths and proved that it was a true specific entity, confined to Jamaica and distinct from both yellow fever and meningitis. He isolated an organism which he called *Micrococcus jamaicensis*.

#### BRITISH JOURNAL OF CHILDREN'S DISEASES.

August, 1915.

**Hernia of the Stomach through the Diaphragm**, by W. J. S. Bythell.—The patient, a boy nine years old, gave the history of persistent vomiting associated with little abdominal pain. Examination showed dullness on the right side of the abdomen from the costal margin downward. The right rectus muscle was prominent. The vomiting persisted after admission and a diagnosis of pyloric obstruction was made. A bismuth meal showed the stomach to the right of the median line. This suggested transposition of the stomach, but the heart was found to be in the proper place. At the time of operation the epigastrium was seen to be filled by the colon, a small piece of the stomach being seen very far back under the diaphragm. The major portion of the stomach was herniated through the esophageal opening of the diaphragm. The hernia recurred and a second operation was necessary, at which time a gastrotomy was performed permanently to fix the stomach in the proper position.

**Localizing Brain Symptoms as Early Events in Tuberculous Meningitis**, by C. O. Hawthorne.—The early diagnosis of this condition is difficult. Gradually increasing coma and paralysis are frequent symptoms. Squint is very often observed. Occasionally it has an abrupt onset showing itself in the form of localized convulsions or palsies. Two cases of this kind are reported, in one of which the first symptoms noticed were a peculiarity of speech and a drawn appearance of the face. These disap-

paralysis lasted two days and on the third day convulsions set in without coma or unconsciousness. The paralysis subsequently disappeared, but headache, persistent vomiting, febrile temperature, and abundant cellular elements in the cerebrospinal fluid left no doubt as to the diagnosis. The other case showed convulsions limited to the right side as the initial symptom. Later distinct signs of tuberculous meningitis developed and the diagnosis was confirmed at autopsy. In both these cases the development of tuberculous meningitis was secondary to some primary tuberculous focus, the brain being reached in all probability by means of an embolus or emboli conveyed through the blood stream. In this way the convulsions and the paralysis could be brought about.

**Tuberculoma of the Pons varolii**, by Leonard Guthrie.—The patient, a boy three and a half years old, was admitted to the hospital because of paralysis of the sixth and seventh cranial nerves on the left side, weakness of the legs and signs of consolidation of the apex of the left lung. Two months before, he had pneumonia and bronchitis; on getting up his legs were weak. Ten days before admission a squint of the left eye was noticed. His appetite was poor and he had been losing weight. On admission, examination showed complete paralysis of the sixth nerve of the left side with marked convergent squint; also complete paralysis of the left side of the face. The chest showed a dull percussion note at the left apex as far as the third rib. The von Pirquet test was markedly positive. Three weeks after admission, vertical nystagmus developed, and after being in the hospital about seven weeks, he was seized with convulsions one evening and died within five hours. The post mortem examination showed a broadening of the pons varolii, which on section showed a tuberculous mass about one inch in diameter in its centre. The lungs showed the presence of many miliary tubercles with fibrosis and dilatation of the bronchioles at the left apex. A few of the bronchial glands were caseating, though not distinctly tuberculous. The spleen showed a few tubercles on its surface, the remainder of the organs being normal.

#### JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

**Salvarsanized Serum in Syphilitic Nervous Disease.** by Eugene Riggs.—There is no uniformity of opinion as to the best method of treating nervous syphilis; two methods—intraspinal and systemic—seem to be worthy of serious consideration. In the author's cases there were no ill effects of the treatment. Three out of eight paretics had remissions but a negative spinal fluid was not secured in any case of paresis. Twenty cases of tabes were benefited clinically, of a total of twenty-two, and in seventy-five per cent. of the cases the spinal fluid became negative to the Wassermann test. All cases of cerebrospinal syphilis except one, improved clinically under the treatment. The method seems to be without danger in the hands of competent men.

**Casein Milk Feeding in Infancy and Childhood**, by Walter Gellhorn.—This form of feeding was found of value when it was necessary to wean a very young infant abruptly. While doing no ap-

parent harm, it seemed not to have sufficient advantage to warrant its continued use. In some of the severest cases, it cannot take the place of breast milk, but it has been of great help in the majority of cases of nutritional disturbance. It is specially indicated in cases of fermentative digestive disorders and can be given in rapidly increasing doses so long as no alimentary intoxication develops. Prolonged or repeated therapeutic hunger periods can be avoided through its use. A cheap and satisfactory form of casein milk can be prepared from four per cent. milk according to the following formula: Seventeen ounces of skimmed milk, one ounce and a half of top cream, seventeen ounces of water and three level teaspoonfuls of sodium caseinate. The whole should be boiled, and should be pasteurized if for prolonged administration.

**Comparative Results of the Wassermann Test**, by Alexander A. Uhle and William A. Mackinney.—Three hundred and twenty-five specimens taken from 292 individuals were examined by not fewer than four competent serologists, all of whom were ignorant of the origin of the samples. Not fewer than five serologists reported on twenty-seven specimens from twenty-five normal persons and all agreed in negative findings in twenty-one. There was disagreement in the remaining, and in two instances in which the same serum was submitted twice, two serologists reversed their own previous findings. Seventy-four tests were similarly made of material from seventy patients who denied syphilis and had no clinical evidences of the disease, but who were otherwise ill. In four of these patients the reports showed considerable variation, even with repeated examination by the same serologist. In the remaining sixty-six cases, the reports agreed in negative findings in fifty-six, in each of the other ten one laboratory disagreed with all the others. Forty tests were made on specimens from thirty-six cases of primary, secondary, or tertiary syphilis. There was agreement on a positive reaction in twenty-five and disagreement in the others. Twenty-eight disagreements were reported in forty-one series of tests of serum from cases with eye or nervous syphilis. One hundred and eight tests were made on eighty-eight serums, from patients who at one time had syphilis, but who were without clinical manifestations. Repeated examinations were made in sixteen of this group and they were so hopelessly discordant, even from the same laboratory that they could not be analyzed. Positive tests were reported in from two to eighteen per cent. of normal individuals and some laboratories found positive reactions in only fifty per cent. of proved cases of syphilis. In spite of these great discrepancies, the authors believe that the Wassermann test is of great value as one of the links in the chain of evidence and they suggest that some standard method of performing the test should be adopted in order to reduce the proportion of discordant results.

**Convalescent and Normal Blood in Scarlet Fever**, by Abraham Zinger.—Strikingly favorable results were obtained from the intramuscular injection of several doses of one or two ounces of blood obtained from second or third week scarlet fever patients in cases with the malignant form of the disease. Later septic patients showed only

slightly less favorable results from the similar injection of normal blood.

#### MEDICAL RECORD

September 1, 1915.

**Röntgen Ray Treatment of Exophthalmic Goitre.** by C. Augustus Simpson. The recent literature from France and Germany shows wonderful results in the treatment of exophthalmic goitre. Ladin concludes that roentgenotherapy is the method of the future. Simpson reports seven cases of completed treatment by means of the x ray with uniform improvement as to tachycardia, tremors, nervousness, sleeplessness, temperature and size of the tumor. The exophthalmos is sometimes resistant to this treatment as it often is to surgical operation. Great stress is laid upon the technic in order that the patient may get large doses of ray without receiving either irritation or burns. The entire area is covered with a chamois skin to protect from the secondary rays given out by the filters. Over this a heavy lead protector three mm. thick is placed with a hole cut in it large enough to allow the tumor to be palpated and located. Brass discs two and a half inches thick surmounted by an aluminum filter one mm. thick are placed upon this plate and as the filter is one inch below the wall of a seven inch tube there is a distance of five inches from the wall and eight and a half inches from the anode to the patient. Between three and four points on Hampson's radiometer are given with a moderately soft tube to avoid too great penetration. From four to six exposures are usually required to show marked improvement. This treatment is of special value in cases complicated by thymus enlargement in which operation is difficult.

**Cerebellar Symptomatology,** by Malcolm S. Woodbury.—The chief and more characteristic symptoms may be divided into four groups: 1. Ataxia or incoordination, 2, hypotonia, 3, ataxia or tremulousness, 4, asthenia. The ataxia is not affected by closing the eyes and is brought on by the more complicated movements. The typical cerebellar gait is the drunken stagger. The vertigo is practically identical with labyrinthine vertigo, it is rotary, giving rise to sensations of rotation of objects. The nystagmus is slow, strong, of wide range and most marked toward the side of the lesion and increased by eye movements toward that side. The explanation of the eye symptoms is furnished by the connection between the cerebellum and the oculomotor nuclei by way of the posterior longitudinal bundle. Finally several symptoms common to intracranial lesions are found as persistent headache, sensitiveness to pressure, or to percussion over the affected area, persistent nausea and vomiting, and choked disc.

#### LANCET-CLINIC.

September 4, 1915.

**Can Skin Diseases Be Driven into the System by Local Treatment?** by M. Scholtz.—A skin disease can have but one effect on the excretory function of the skin—that of impairing it, and not increasing it. That the healing up of skin lesions may lead to retention of toxic material and aggravation of a systemic condition is therefore considered a mistaken view. Skin lesions, while they may

be induced by a systemic disturbance, are on the part controlled by the systemic factors, for they often persist after painstaking constitutional treatment and yield only after local measures are added. Skin lesions, once started, develop their own pathology according to the local, topographical, functional, and structural features. To deduce from the partial causative relationship of systemic to local disorder that the latter retroacts on the former and operates as an outlet for toxic material is thus held to be unwarranted.

#### AMERICAN JOURNAL OF THE MEDICAL SCIENCES

**Paralytic and Other Persistent Sequelæ of Migraine.** by J. Ramsay Hunt. In most cases, migraine entails no more serious consequences than the recurrence of periodical headaches of varying degrees of severity, though they may be associated with transitory focal symptoms, such as scotoma, hemianopsia, hemiparesis, hemiparæsthesia, aphasia, and mental disturbances. Rarely, permanent consequences ensue. The writer reports a number of these conditions that have come under his observation, including cases in which the migraine was associated with ophthalmoplegia, permanent hemianopsia, hemiplegia, and optic nerve lesions. He assumes that there is a periodical recurrence of an autointoxication, the chief effects of which are experienced by the sympathetic and vascular systems, as a result of which there is induced a condition of more or less localized vasomotor spasm or vasomotor dilatation of the cerebral circulation. It is evident that in the presence of cerebral arteriosclerosis crises of hemicrania are more likely to be the cause of vascular accidents, like thrombosis or hemorrhage than would be the case with perfectly normal vessels. Arterial anomalies in the blood supply of the brain and cranial nerves might render a certain arterial distribution especially vulnerable in the event of sudden vascular spasm. In the recognition of migraine paralysis, the essential points are: The establishment of a definite clinical history of genuine or idiopathic migraine, and the direct relationship of the paralysis or other complication to the migraine. Many attacks of the latter begin during the day and terminate in a heavy sleep, so the presence of paralysis on awakening would be a strong presumptive evidence of an etiological relationship. Special emphasis should be placed on warning symptoms, such as recurrence of transient ptosis, diplopia, hemianopsia, hemiparesis, aphasia, and Jacksonian seizures, when they appear in middle life after a paroxysm of migraine, and particularly when they appear as new complications. Ophthalmoplegia is the most common of these rare effects.

**Röntgen Ray in Gastrointestinal Affections,** by Charles D. Aaron.—The writer believes that the x ray is of increasing value as a diagnostic aid in gastroenterology; he urges the following recommendations: The röntgenologist should be a trained and experienced anatomist and pathologist. There should be standardization of methods and technic. The physician should acquire the ability to estimate properly the diagnostic value of an x ray report. The patient should not be subjected to operation without a confirmation of the original findings by



A second examination after an interval of two or three days. The clinician must not attach too much significance to the x ray findings unless they are absolutely decisive. The lesion discovered by the x rays must be constant, regardless of position or slight variations in technic. Great care must be exercised to differentiate physiological and spastic conditions from those that are essentially pathological. The x ray report should be considered on the same basis as any laboratory report and the physician must correlate the findings carefully with the clinical and laboratory findings.

**Removal by Caffeine of Some Digitalis Arrhythmias**, by Wilfred M. Barton. All the irregularities of the heart beat which are brought about by digitalis tend to be removed by caffeine. Although digitalis arrhythmia will disappear spontaneously in many cases when the drug is stopped, there are others in which the conductive system is so depressed that serious results may arise, and under these circumstances caffeine will be of service and is strongly indicated. The action seems to be due to the increase in the irritability of the conduction system produced by the caffeine, which antagonizes and finally overcomes the depressing effects exerted by digitalis upon the auriculoventricular bundle.

**Prurigo nodularis and Lichenification with Tumor Formation**, by Charles M. Williams.—The essential features of the two cases reported are: 1. An eruption of firm, round, or oval tumors, beginning as scarcely perceptible papules, and reaching the size of half an inch in diameter. They form rounded elevations, later becoming flat topped, or slightly depressed in the centre. The early lesions are smooth, the older ones rough and warty. The color may be that of the normal skin, pinkish, brown, yellowish, or gray. 2. A lesion once well developed seldom if ever disappears entirely. 3. Itching is intense, always accompanies or follows the development of a papule, and does not precede it. 4. The skin between the lesions is approximately normal.

**Gastric Sediments and Their Interpretation**, by E. B. Vincent. The statement is made that the routine study of gastric sediments will give information of both diagnostic and prognostic importance. When fragments of the mucosa that show pathological changes are recovered, the clinical diagnosis may be checked up or supported as in no other way short of surgical exploration; this is notably so in cancer of the stomach involving the glandularis, and in comparatively early cases. A single pathologically negative sediment means nothing, but repeated negative sediments argue strongly in favor of functional rather than organic disease.

**Administration of Glucose Solutions as a Prophylactic against Postoperative Shock**, by A. C. Burnham.—The writer believes glucose solution should be given as a routine after every operation in which we have reason to fear more than the ordinary amount of postanesthetic shock; in every case where postoperative oral feeding may be difficult or insufficient for a considerable period after operation; it should be an emergency measure either before or after operation for the relief of an existing or threatened acidosis.

## AMERICAN JOURNAL OF OBSTETRICS AND DISEASES OF WOMEN AND CHILDREN

August 1915.

**Pelvic Varicocele**, by Pinkham.—Although enlargement of the veins of the left pampiniform plexus is a well known condition, its importance has not been recognized. The author believes that this condition is frequently the cause of the persistent, dull aching pain in the left iliac region. In many women no demonstrable lesion accounting for the pain can be discovered and many practitioners think that the condition is purely neurotic. The curative treatment is operative; medical methods do not give permanent relief. The most satisfactory operation is either excision or division. Double ligation may be sufficient, but there is always the possibility of a reestablishment of the circulation. Pinkham reports eight cases of operation with relief and apparent cure of the disease.

**Psychoses and Neuroses of Pregnancy and the Puerperium**, by McCarthy. The mental states met with in pregnancy do not differ essentially from mental disorders due to other causes. Heredity is still an important factor in insanity during pregnancy and lactation. In a group of 159 cases, about thirty-five per cent. gave a history of hereditary mental disturbances. If the collateral branches were examined, the percentage would be even greater. Prognosis, the author thinks, in this type of mental disease, is perhaps better than in almost any other class. The favorable results, however, are in direct proportion to the time elapsing before the patient is received into an institution and placed under treatment. By institution, an insane asylum is not meant; the influence of such is particularly harmful.

**X Ray Diagnosis of Pregnancy**.—As a rule, x ray findings in pregnancy have not been satisfactory. Judd reports a case in which the suspicion of a twin pregnancy was verified.

## ANNALS OF OPHTHALMOLOGY.

July, 1915.

**Face Powder Conjunctivitis**, by Nelson M. Black.—The patients, invariably women, complain that vision is frequently blurred, of inability to use the eyes long for near work, and of severe itching of the lids which frequently is intolerable. The slightest rubbing of the lids produces redness of the eyeball and aggravates the itching. In severe cases the lids may appear quite edematous from constant hard rubbing. There is a mucilaginous secretion in varying amounts, which pulls out into long strings and is quite elastic. Microorganisms are absent. The trouble was traced to the use of face powder. Probably in applying powder to the face with a puff, a portion of the fine dust is driven upward and lodges in the moist conjunctiva. Rice flour with the tears becomes mucilaginous in character and is not washed from the cul-de-sac, the woody cells of the hard exterior of the rice grain, swell; and the angular corners produce an irritation that is aggravated by rubbing. The condition is quickly relieved by flushing the cul-de-sac with a boric or normal salt solution and the use of an ointment made up of equal parts of lanolin and petrolatum, which seems

to cause an agglutination of the cells and allows them to be easily washed out. The irritation subsides quickly under a sedative collyrium.

#### ARCHIVES OF INTERNAL MEDICINE

January, 1915.

**Diagnostic Value of Uric Acid Determinations in the Blood**, by Otto Folin and W. Denis.—Clinical experiments showed that neither qualitative tests for uric acid in the blood nor quantitative determinations of the uric acid alone can be depended on in the diagnosis of gout and other joint diseases. For differentiation in doubtful cases of gout or arthritis through blood analyses the patient must be placed on a purin free diet and supplementary determinations of the nonprotein nitrogen or urea must be made.

**Complement Fixation in Pertussis**, by M. Olmstead and P. Luttinger.—A report is made of the results of complement fixation tests on serum in 111 cases of whooping cough or suspected whooping cough. The view that the Bordet-Gengou bacillus is the etiological factor of the disease was supported. The best method of obtaining antigen for complement fixation tests in whooping cough is described. About forty per cent. of the cases tested gave a positive reaction with this antigen when inactive serum was used. Strongly positive reactions are considered diagnostic of the disease, and the test may therefore be of value in the diagnosis of doubtful cases. The highest percentage of positive results was given by convalescent vaccinated cases.

#### ARCHIVES OF RADIOLOGY AND ELECTROTHERAPY,

August, 1915.

**Radiological Types of Pulmonary Tuberculosis**, by Hugh Walsham and Walker Overend.—The radiographical types of pulmonary tuberculosis are tuberculosis of the bronchial glands, peribronchial phthisis, bronchopneumonic phthisis, pneumonic phthisis, pleuritic phthisis, apical phthisis and miliary phthisis. Swollen tracheobronchial glands give a fine shadow outside the sternum in the neighborhood of the vertebral ends of the third, fourth and fifth ribs. If the dim area is just below the level of the vertebral end of the sixth rib, it denotes an enlargement of the bifurcation glands. Peribronchitis tuberculosa simplex is seen within the subclavicular triangles, the apices, between the spine of the scapula and the vertebrae, about the angle of the scapula and along the bronchi leading to the diaphragm. The tubercles unite to form small bodies like seeds. In peribronchitis tuberculosa exsudativa, the production of fibrous tissue is deficient while in peribronchitis tuberculosa disseminata there is an extensive distribution of small peribronchial tubercles. In peribronchitis tuberculosa fibrosa, the proliferation of connective tissue is exuberant. Areas of diffuse cloudiness attended with striation and containing small dense shadows are seen, particularly in the upper lobes. The heart and trachea may be displaced toward the diseased side. Bronchiectasis may occur in any of the chronic forms. It is found chiefly in the lower lobes between the hilum and the diaphragm. Pneumonic phthisis is merely an extension of bronchopneumonic phthisis and the chief factor in these two forms is consolidation. There may be interlobular or interlobar thick-

enings of the pleura. Pleuritic phthisis is commoner on the left than on the right side. It is usually secondary to a glandular infection. Apical phthisis may be of the peribronchial, bronchopneumonic, miliary or pleuritic type. The bronchopneumonic type shows a great tendency to cavity formation. Miliary tuberculosis may be at first peribronchial and perivascular. It may also be general when coming from an extrapulmonary situation such as tuberculous meningitis. The latter is divided into two types, the subacute, in which the foci form circular opacities rather above pinhead size, surrounded by clear areas with no fibrosis, and the acute, in which the maculae are minute, but on account of their great number the plate is uniformly dull.

**Minor Points in X Ray Manipulation**, by Nelson K. Cherrill.—In moving the tube it has been recommended that the first record be made with the vertical ray and the second after a movement to the right or left as the case may be. The larger the displacement of the tube the more accurate will be the ultimate measure of its depth and it has been suggested to move the tube about half the proposed displacement in one direction and then, accurately, the whole distance to the other side. A set of scales has been devised, the main scale being constructed for a displacement of the tube of six inches, and it gives, with all distances from tube to plate from sixteen to twenty-eight inches, the depth of the object, by simple reading, accurately, to the second place of decimals, in inches. This is supplemented by another scale which, in case the tube is moved any distance other than six inches, gives the corresponding displacement of the image. A revolving diaphragm has been made, consisting of a wooden ring screwed to the top of the tube box; a second ring which just fits over this is fixed to the plate of the diaphragm so that the latter when in place will turn freely in any direction. A wooden handle serves to regulate the position with speed and accuracy. Linen bags half filled with sand are also used to cut off the superfluous rays. A plate can be dried quickly by plunging it into a saturated solution of potassium carbonate, and washing under the tap for a minute. The surface water may then be removed by a "squeegee" and the back wiped with a cloth. It is then placed in a dish and the saturated solution of potassium carbonate poured over it. In four minutes the plate may be removed, the back and front wiped, when the film will be found to be hard and dry.

#### Proceedings of Societies.

##### THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Meeting of Wednesday, January 6, 1915, at 8.30 a.m.

Dr. RICHARD H. HARTE in the Chair.

**Gastric Ulcer**.—Dr. JOHN B. DEEVER said that the experience of the last few years of activity in gastric surgery had shown both brilliant successes and dismal failures; that no one operation would fit all cases; and that by the slow evolution of clinical experience and observation, it was possible to draw some conclusions regarding principles which should underlie the surgical treatment of gastric ulcer. He

...ered that the appendix was responsible for liberating the infection, which caused gastric as well as duodenal ulcer and other forms of upper abdominal disease in an overwhelming majority of instances. In his clinics at the Jefferson Hospital he had observed the almost constant association of chronic appendicitis and gallbladder disease with duodenal and gastric ulcer. The focus of infection need not necessarily be the abdomen, although it was there, apparently, most marked. Infection from the mouth he thought might be the exciting cause of gastric ulcer in a small percentage of cases. The common association of chronic disease of the appendix with gastric and duodenal ulceration was significant as a causal relation between the two, through toxic products liberated from the appendix. Equal concern attached to factors preventing the healing of the ulcer, among which might be mentioned the condition of the general health, the continuance of exciting causes in the muscular activity of the stomach, the action of the gastric juice upon an eroded surface, and infection implanted upon the bed of the ulcer. Well directed medical treatment would succeed in healing most acute ulcers and a fair percentage of those on their way to chronicity. In the absence of severe complications, medical treatment should be given a fair trial before resorting to surgery. In the chronic type of gastric ulcer medical treatment should be radical, demanding from four to eight weeks' rest in bed and most careful feeding, for in the quiescent stage of chronic gastric ulcer, many patients had been "placed asleep in the eternal rest of the grave." The marked tendency of the development of cancer upon a chronic ulcer basis was emphasized. Such cases of cancer were to be rated as the most disastrous medical failures. The clinical indications for operation were seen in cases complicated by perforation, recurrent hemorrhage causing material drain upon health, and persistent indigestion which did not yield to a fair trial of medical treatment. By a fair trial of medical treatment, however, he did not mean indefinite temporizing. In the surgical treatment of perforation he believed that a primary gastroenterostomy was far more likely to be followed by immediate recovery and that the prospect of future relief was much improved. The mortality of combined gastroenterostomy and closure of the ulcer was much lower than that of closure only. To thirty cases already reported of acute perforation of gastric and duodenal ulcer in which gastroenterostomy was done as a primary procedure, with one death, another case with recovery was added. In the presence of hemorrhage Doctor Deaver regarded the question of the time of operation one of nice surgical judgment. He had regretted decision in both directions and could advise only in the most general terms. Since it was too hazardous to wait days and weeks for the reformation of blood, it seemed wise to wait only for the subsidence of shock, the refilling of the bloodvessels by the body fluids and by water administered, and the restoration of the blood pressure to approximately normal level. Direct transfusion of blood would occasionally have a field. The proper surgical treatment of gastric ulcer could be determined upon only after the opening and thorough exploration of the abdomen. This often meant

the wide opening of the stomach. While complete excision of the ulcer might be ideal, it was seldom possible of accomplishment. Best adapted to excision were the localized saddle ulcers on the lesser curvature, ulcers limited strictly to the pylorus, or small punched out ulcers elsewhere in the wall. The so called exclusion method should be ideal in bleeding ulcers, but in many situations it could not be employed. Ulcers high up in the fundus of the stomach might be best tested in an indirect manner by jejunosomy.

A most important point to be noted was that the patient with gastric ulcer belonged, exclusively, to neither the surgeon nor the physician. A common cause of failure in treatment was lack of medical supervision subsequent to operation. In view of the fact that prevention was better than cure, and cure difficult, if not impossible, it was urged that in all digestive disorders diligent search be made for evidence of chronic disease of the appendix, which should be treated to a drumhead court martial at the first sign of insubordination.

Dr. JOHN H. GIBBON had operated in twenty cases of perforation with a mortality much higher than that of Doctor Deaver and much nearer the usual percentage. He had, however, lost only one patient operated upon within the first twenty-four hours after operation. He assumed from Doctor Deaver's remarks that his cases were almost entirely early ones. He thought some perforations were overlooked and the cases regarded as those of general peritonitis and not operated in because of the advanced stage. He did not agree with Doctor Deaver's view of the value of the x rays, and placed his reliance on diagnosis in the order of history, x ray study, especially with the fluoroscope, and gastric analysis. W. J. Mayo's order of value was, 1, x ray study; 2, history; 3, gastric analysis. While disagreeing with Doctor Deaver upon doing gastroenterostomy in the presence of perforation, he would do this operation in the presence of marked obstruction of the pylorus from the infolding of the ulcer in cases in which early operation was impossible. To his mind there was no objection to the ideal operation, except in those cases in which much time had elapsed between the time of perforation and operation.

Dr. JOHN B. ROBERTS, in connection with Doctor Deaver's reference to the etiology of gastric and duodenal ulcers, cited a case he had lost years ago in which he had done suprapubic cystostomy for stone with sudden collapse ten days after operation. Autopsy showed a large perforated gastric ulcer of which he had had no knowledge and which was probably the result of the cystostomy. A few years ago, he had had a case of ulcer in the duodenum following traumatic rupture of the bladder. A review of the literature had shown records of at least a dozen cases of ulcer of the stomach and duodenum, the result either of disease of the abdomen or of operative attacks upon it. He thought Doctor Deaver was right in respect to the probable causative relation between suppurative disease of the appendix or gallbladder and gastroduodenal ulcers, and regarded his paper as a very important contribution to what he would call clinical pathology.

Dr. JAMES TYSON said that in his experience the



diagnosis of gastric ulcer, when not checked off either by operation or autopsy, had not been very satisfactory. On the other hand, ulcers were sometimes found in the stomach at autopsy when no symptoms had been present before death. Only a few of the digestive symptoms had a distinctive value; possibly the most valuable one was copious hemorrhage. While the presence of a palpable tumor was good evidence of gastric cancer, the possibility of mistake was illustrated in the case of a man seen several years ago with a history of recurring hemorrhage and with evident tumor in the right hypochondrium, but in which autopsy showed gastric ulcer.

Dr. WILLIAM E. HUGHES referred to a case of duodenal or gastric ulcer which he and Doctor Jopson had seen and in which the only symptom was profuse hemorrhage. The man died during operation as the result of a peculiar hernia through the diaphragm because of which practically all of the abdominal contents were in the chest. A point of diagnostic interest to him was that in almost all cases of perforating ulcer of the duodenum and stomach that he had seen, there had been free gas in the peritoneal cavity within a few hours of perforation.

Dr. JOHN H. JOPSON said that the case had been referred to him by Doctor Hughes after he had seen the patient in consultation with the physician, Doctor Ellis, and an immediate operation had been advised. The patient was in good condition before operation, but took the anesthetic very badly. He became cyanotic, and there was persistent rigidity of the abdominal muscles. When the abdomen was opened, the stomach was found enormously distended and there was a hard, circumscribed, stenosing ulcer of the first portion of the duodenum. It was proposed to do nothing but gastroenterostomy. The small intestine was not found in its usual site; the cecum and appendix were found high up under the mesocolon, near the median line, just below the stomach. Examination of the peritoneal cavity showed an entire absence of the jejunum and ileum, except the terminal portion of the latter, which could be traced for a few inches from the ileocecal valve where it blended with the posterior peritoneum. Thinking of thoracic hernia he had passed his hand above the stomach and liver and around the diaphragm on both sides, but had felt no opening. He then opened the lesser peritoneal cavity through the transverse mesocolon and passed his hand into it, behind the stomach. This was followed by profuse hemorrhage. The patient succumbed. A more thorough examination after the stomach had been lifted out of the abdomen revealed a hernia of the entire small intestine except its beginning and termination, through an opening in the left side of the diaphragm, posterior to the stomach, into the thoracic cavity. Some of the coils of the intestine were adherent so that they could not be pulled down into the abdomen. The condition was evidently congenital, as the edges of the opening were thick and rounded, and in combination with the obstructing bleeding perforating ulcer, rendered the patient's condition incurable.

Dr. JOHN B. ROBERTS, in connection with the case cited by Doctor Jopson, mentioned one of congenital

thoracic hernia seen at the Mayo clinic. The case was that of a young boy upon whom Dr. W. J. Mayo had operated for curious vomiting attacks. To the surprise of Doctor Mayo and of all present, the stomach was found to be up in the left chest.

Dr. JOHN B. DEAEVER did not agree with Doctor Gibbon that the early observation of cases explained the low mortality. Some of his cases had been operated in within twenty-four hours, one as late as thirty-six hours. The chief object of the gastroenterostomy was to get the patients well promptly and in the second place to keep them well. He would urge the crossroads surgeon not to do gastroenterostomy, the small country hospitals not being an ideal place for the operation. He was not a strong advocate of the x ray in diagnosis, but preferred to open up the abdomen. When the ulcer had produced pyloric stenosis, diagnosis, of course, was possible, but at that time, according to Mayo, it was too late—ninety per cent. plus of gastric ulcer undergoing carcinomatous change! While he and Doctor Gibbon did not always agree, they seemed to be in accord upon etiology. He thought Doctor Tyson rather hit the bull's eye in saying that, exclusive of the post mortem slab and the operating table, he thought the diagnosis of gastric ulcer unsatisfactory. While the case mentioned by Doctor Hughes and Doctor Jopson was interesting, he believed that had the man had his abdomen opened a few years before, there would have been no such pathological condition to report.

#### AMERICAN PROCTOLOGIC SOCIETY.

*Seventieth Annual Meeting, Held at San Francisco, Cal., June 21 and 22, 1915.*

The President, LOUIS J. KROUSE, M. D., of Cincinnati, Ohio, in the Chair.

#### President's Address, Retrospect and Prospect.

—Dr. LOUIS J. KROUSE, M. D., of Cincinnati, stated that nearly two decades had now elapsed since the organization of the society, and that he recalled distinctly the great enthusiasm manifested by the members at their first meeting. He called attention to the fact that there was now a fair enrollment of Fellows from widely scattered parts of the United States. He believed that the medical fraternity had still need of a society like the American Proctologic Society, whose field of activity was limited to ailments located in the anus, rectum, and colon. This was evidenced by how the general practitioner generally handled such cases, and by his later referring them to the proctologist. He deplored the fact that the medical schools were so slow in establishing a chair of proctology, such as had been done in all the postgraduate schools of the country, where this important branch of surgery could be taught. He thought and advocated that there should be a ward set aside in all the teaching hospitals where the student would be able to acquire a better knowledge of this specialty, and be better prepared to treat such cases intelligently. He pointed with much pride to the fact that with one or two exceptions all the best textbooks by American authors on the subject of diseases of the anus, rectum, and colon, had been written by Fellows of the American Proctologic Society.

**Rectal Prolapse and Its Mechanics.**—Dr. WILLIAM M. BEARD, of Pittsburgh, remarked that the terms prolapse and procidentia were interchangeable as applied to a dislocated rectum downward on account of defective anchorage. He felt assured that many of the victims of dyschezia could give a history of prolapsus in childhood. They were coming to think of prolapsus in terms of hernia, the severity of which must be determined from a consideration of the pelvic fascia and intraabdominal pressure. He gave in detail the anatomical reasons for the causation of rectal prolapse. Under the head of treatment he stated that a number of surgical procedures had been devised and advocated for the restoration of the dislocated rectum; that they had seemed to succeed for a time, only to prove a failure later on. He mentioned several of the procedures and gave his reasons for and against their employment.

**Cause of Dissatisfaction with Hemorrhoidal Operations.**—Dr. ROLLIN H. BARNES, of St. Louis, said that the reason for dissatisfaction with the textbook methods in the operative treatment of hemorrhoids was that they were based upon the fear of hemorrhage, and that pace had not been kept with modern surgical knowledge in regard to the control of this hemorrhage. It was easier to take care of primary hemorrhage than of secondary bleeding such as might occur from a slough following the ligature or the clamp and cautery operation, because the surgeon was not always at hand when the latter occurred. In the methods of Dr. J. Rowson Pennington (*A. P. A. Trans.*, 1914), and the author (*ibidem*, 1912), a clean excision of the hemorrhoid was done, so that it required only controlling the primary hemorrhage, for there was no slough. The tissues were injured as little as possible so that they retained the greatest amount of resistance against infection. There was less pain in these open methods, for they did not have the "confined infection" which was especially caused by the use of sutures and by injuries to the deeper tissues.

For the control of hemorrhage the speaker advocated the use of pressure. Also care should be taken of the bleeding vessel itself rather than that a ligature should be tied around a mass of bleeding tissues, or that they should be cauterized. He also advocated that advantage be taken of that muscular contraction which could be secured to the greatest extent by minimizing trauma. The rectal plug acted against this muscular contraction. He opposed the customary purgation in the preparation of the patient before operation. He preferred the cold enema as a means to clean out the lower bowel. He contended that the daily enema in the after-treatment did not result in constipating the patient, but rather aided in securing regularity of bowel action.

**Carcinoma of the Sigmoid.**—Dr. WALTER I. LEFEVRE, of Cleveland, presented a patient, male, aged fifty-five years, who had suffered with abdominal pain in the left iliac fossa for one and a half year; complained of constipation, becoming gradually worse until a natural passage was impossible; use of enemas resorted to, but difficult to retain. A stereoröntgenogram was made by injecting barium sulphate emulsion (consisting of barium sul-

phate six ounces, pulverized gum tragacanth two drams, water forty ounces). This would start to be expelled when about ten ounces was injected, but by repeated efforts thirty ounces was finally injected and retained long enough to get the pictures. Some of the emulsion passed to the upper end of the ascending colon; the transverse colon was filled; the descending partially filled; the sigmoid and rectum entirely filled. The pictures showed the sigmoid loop bound down in the pelvis and almost occluded. Operation confirmed the findings. The condition was hopeless and the patient died.

**Emetine Hydrochloride in the Treatment of Amebic Dysentery.**—Dr. GEORGE B. EVANS, of Dayton, Ohio, recalled that amebic dysentery was epidemic in tropical regions. It might become endemic by importation. Although various authors had contributed to comprehensive knowledge of the disease, there still existed considerable confusion in the interpretation of those symptoms and signs which made for accurate diagnosis and prognosis. Dysentery might persist for months or years after the amebic ulcerations had been healed, without amebiasis being present. It might exist in a mild or severe form. A positive diagnosis could be made only by the aid of the microscope. The smears should be taken preferably from the ulcerations on the free border of the rectal valves. The speaker believed that treatment by irrigation was a thing of the past. It had been supplanted by emetine hydrochloride hypodermically. Diet and rest were very important in treatment. The conclusions were that what quinine was to malaria, and mercury to syphilis, emetine hydrochloride, hypodermically, was to amebiasis.

**Present Status of Local Anesthesia in the Surgery of the Lower Bowel.**—Dr. LOUIS J. HIRSCHMAN, of Detroit, affirmed that nowhere had the real value of local anesthesia been demonstrated more conclusively than in enteroproctological surgery. He employed local anesthesia in the surgical treatment of the majority of his cases of anal and rectal diseases, as well as in a small proportion of cases involving surgery of the colon. The results in both classes of surgical operations had been so satisfactory to both the patient and the surgeon that the author advocated with great earnestness the further employment of local anesthesia, not only in the field of intestinal surgery, but also in every branch of surgical activity where absolute unconsciousness of the patient was not a strict necessity.

**Which Is the Best Anesthetic in Anal and Rectal Surgery?**—Dr. WILLIAM H. KIGER, of Los Angeles, was prompted to write this paper on seeing a statement in a recently published book, *Diseases of the Rectum and Colon* which read, "Spinal anesthesia has a very limited field of usefulness. Indeed one is hardly ever justified in using it in rectal work." After a personal experience in over 500 rectal operations without a single unpleasant result, the speaker was constrained to differ from the textbook author, and was forced to the opinion that the latter had not given spinal anesthesia a fair trial, or did not use the proper agents. The speaker called attention to the case of administration of spinal anesthesia; that it might be given without the assistance of an expert anesthetist; that it saved

time by doing away with the delay incident to operation under a general anesthetic; that by its use the dangers of chloroform and ether were eliminated, also their aftereffects; that when it was employed there was no need to dilate the sphincters, as all the operator had to do was to ask the patient to strain and the gut would easily protrude through the relaxed sphincters; and finally that it avoided shock. He used novocaine or tropacocaine.

**Further Observations on the Treatment of Pruritus ani by Autogenous Vaccines.**—Dr. DWIGHT H. MURRAY, of SYRACUSE, in making the fifth report of his original research work on pruritus ani and pruritus vulvæ, gave the results of the examinations concerning the etiology of twenty-one additional cases together with their treatment, complications, and present condition. He also reported further on the cases previously examined and treated. He hoped that no reader of his papers on this subject imagined for a moment that he believed that all of these cases made prompt and complete recovery with no relapses. He believed that he was still justified in emphasizing that most cases of pruritus ani and vulvæ were due to a local infection which might be benefited by treatment with autogenous vaccines. Where he was unable to find streptococcus infection at the first bacteriological examination, this year, when the patient had a slight relapse, *Streptococcus fecalis* was found. This gave additional evidence that infection might be present and yet the bacteriological report did not show it. Even when they had the knowledge that it was a skin infection; that the phagocytic power of the blood was below normal for the infecting bacteria; and that the vaccine injections gave the best and most lasting relief; yet they were still unable to give patients a definite statement as to the number of treatments or length of time necessary before improvement would begin; nor were they able to assure that no relapse would occur.

Six cases confirmed the statements made in the fifth conclusion of his third report, namely, the presence of skin infection with a local lesion begot an unfavorable prognosis for the cure of pruritus ani by an operative procedure. Three cases confirm the statement made in the sixth conclusion of his paper in 1913, namely, the absence of a demonstrable skin infection with pruritus ani together with the presence of a local lesion would justify a favorable prognosis for the cure of the pruritus ani by an operative procedure. Acute cases did not seem to obtain the benefit from the vaccine treatment that chronic local infections received. The speaker had noticed that three of his very severe cases received little benefit during their course of treatment. He advised suspension of treatment, and within a short time marked improvement occurred in the severity of the pruritus, and later the patients reported that the itching had practically ceased. He could account for this only upon the hypothesis that they were in a continuous negative phase while the vaccine was being administered, and that after discontinuing it they came into a positive phase. This might be taken as evidence that vaccine might be continued too long or the doses given too frequently. In all the patients that he had examined and treated during the past year, it was remarkable that the

cases of fistula, hemorrhoids, ulcer, cancer, diseased crypts, hypertrophied papillæ, constipation, and stricture gave no history of pruritus ani; yet authors still gave these as causes. This confirmed his statement in the second conclusion of the second report, namely, even when there was a discharge of pus or other moisture on the perianal skin, it was not the actual cause of pruritus ani unless there was a streptococcal or other infection of the skin. They might coexist, but if so it was a coincidence. This proof should satisfy the most skeptical, and was an investigation that all could make without trouble.

The relapsed patients who returned for treatment had responded more readily to the vaccine treatment than when they first came, and some who had not returned reported that the itching was easily controlled. Results of treatment by autogenous vaccine still continued to be the most satisfactory of any Doctor Murray had yet used. Patience and perseverance were necessary on the part of both the patient and the physician.

**Peritoneal Adhesions and Intestinal Stasis.**—Dr. JAMES A. MACMILLAN, of Detroit, stated that the interest of the medical profession in this subject was awakened by the work of Mr. Arbuthnot Lane, of London, England; that there was a demand for operative interference in many cases of intestinal stasis, but for an operation less radical than that of extirpation of the colon; that although in the majority of instances they were not causative factors, peritoneal adhesions in some instances produced intestinal stasis. He stated further that there were two points in diagnosis which the paper was intended to emphasize: 1. The importance of pain and tenderness; 2. the offending adhesion would be found to belong to a few definite types.

**Constipation, with Special Reference to Treatment.**—Dr. LEWIS H. ADLER, Jr., of Philadelphia, called attention to the fact that the intestinal tract was the chief sewer way of the body, and as such required as much attention as the plumbing in one's dwelling; that the term constipation was a relative one, and the line of demarcation between what was physiological and that which was pathological, in a given case, could be drawn only by a thorough study and knowledge of the individual; that the standard of health in one person, whose bowels moved only on alternate days might be as perfect as in the individual who had two normal bowel actions per diem; that one of the chief etiological factors in producing or inducing this malady, was the frequent neglect to respond promptly to the calls of nature; and to the pernicious practice which Americans, at least, had fallen into, of resorting to purgative medication. He would call attention to the contradiction between obstipation and constipation. In constipation they had to deal with functional diseases of some portion of the intestinal tract; while in obstipation there was normal functional activity, but there was some deformity, growth, constriction, flexion, or foreign body in the intestinal canal which offered mechanical obstruction to the passage of the fecal current. He stated that these distinctions must be borne in mind, for while they might present similar symptoms, the treatment was entirely different.

The chief object of the paper was to lay stress



in the treatment of constipation by other than medicinal means. The speaker advised that all conditions, general or local, which interfered with the health of the individual, should be removed; and that diet and hygiene should be given careful consideration. He also advised that where massage was given it should be carried out by the physician himself and not by a masseur.

#### Ultimate Nervous Results of Acute Angulation of the Sigmoid, and the Consequent Fecal Stasis.

Dr. WILLIAM H. AXTELL, of Bellingham, Wash., divided the nervous end results into three general types: *a*, Severe type, including acute mania; *b*, moderately severe type: Including melancholia; chronic sciatica; chronic lumbago; trophic corneal ulcers; *c*, mild type, including eczema; the apathetic; the neurasthenic. He was not prepared to say whether the angulations found were the cause of the fecal stasis, or the stasis the cause of the acute angulation. These conditions, however, were found in all of those cases, and the nervous conditions which were produced disappeared upon correction of the angulation and stasis.

The speaker's conclusions were: 1. Many cases treated as typhoid fever were simply cases of constitutional and systemic infection from putrefactive toxins of the alimentary canal. 2. If the true condition was recognized at the outset, and if the colon was thoroughly cleansed of the soil for the growth of typhoid bacteria, there would be fewer cases of typhoid fever. 3. Physicians did not as a rule examine the rectum and colon with the same degree of precision that they did other parts; they did not have a true appreciation of its importance; nor did they comprehend what persistence was required to empty the colon. 4. They were all too much inclined to cling to precedent, rather than to act according to the conditions found.

**Rectal Fistula.**—Dr. J. RAWSON PENNINGTON, of Chicago, remarked that the etiology, conformation, and classification of fistula as presented in their textbooks was not satisfactory. The rectum extended from the termination of the sigmoid, at a point opposite the middle of the third sacral vertebra, to the pectinate line. The anal canal extended from this line to the anus. A fistula, then, with the external opening in the anal canal should be classified as an anal fistula, or fistula in ano. A fistula with the internal opening in the pectinate line, or junction between the rectum and the anal canal, partook of both of these structures, the rectum and anal canal, and should be known as an anorectal fistula, while cases with the internal opening in the rectum should be known as rectal fistula. Complex, compound, horseshoe, and other varieties of fistula were simply expressions of complexity, position, or shape, of one or the other of the foregoing divisions, or a combination of them.

Many methods had been proposed for the treatment of fistula. The author desired to submit here-with another which he believed to be far more important than any yet presented—the preventive treatment. All methods might be classified under three general heads, viz., the preventive, palliative, and curative. Under the former might be considered the prophylactic and the abortive treatment; under the latter the injection and the operative

treatment. It was said that an ounce of prevention was worth a pound of cure. This injunction was apropos in the treatment of fistula as in the treatment of any other malady. A complete history and careful examination usually elicited the fact that practically every individual who had fistula, had or had had hemorrhoids, cryptitis, fissure, pruritus ani, proctitis, or some other form of curable rectal disease. These conditions favored the invasion of the perirectal tissues with pyogenic organisms, which was usually followed by abscess and fistula. Hence, if people were educated to keep their rectums in a healthy state, and did so, fistula would become less frequent. Since the number of cases might be reduced by education, it became their duty as proctologists to launch a campaign for the prevention of fistula.

The time to abort fistula was during the infection or abscess stage. If the abscess was opened early and the pus allowed to escape, and the abscess wall was not interfered with in any way with instruments or drugs, but the cavity drained freely and gently filled with subnitrate of bismuth ointment, and this treatment was repeated every two, three, or four days according to the indications, fistula would, as a rule, be aborted.

(To be continued.)

### Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*An Index of Prognosis and End Results of Treatment.* By Various Writers. Edited by A. RENDLE SHORT, M.D., B.S., B.Sc. (Lond.), F.R.C.S. (Eng.), Hunterian Professor, Royal College of Surgeons, Examiner in Physiology for the F.R.C.S., etc. New York: William Wood & Co., 1915. Pp. viii-570. (Price, \$7.)

The preface of this volume states that the chief aims of the work are to set forth the end results of various methods of treatment in a form that will enable the practitioner to obtain a fair, unbiased, reasoned opinion as to the prospects of securing for his patient permanent relief, and the risks of such treatment. It also seeks to furnish the data by which, aside from the question of treatment, one may seek to reach an accurate forecast of what will happen to the individual patient. Both of these aims seem to have been fulfilled in a most creditable manner by the several contributors to the volume. There is a minimum of statistical matter, and most of the subjects are treated in a thorough and simple manner. The discussions for the most part, include the various phases of the problem in the case of any given disease and provide all of the data which must be taken into consideration in the formation of a prognosis. Where figures are cited careful consideration has been given to their source and to their probable accuracy, but it is to be remembered that they all have to be weighed in the light of their relative value. Statistics alone are often misleading, even when accurate, and they are utilized merely to supplement the text in certain instances. As in the *Index of Treatment* and the *Index of Differential Diagnosis* the arrangement of the subject matter is strictly alphabetical according to the diseases considered. It forms a companion volume to those just named and is truly an original and unique work which should prove of considerable value to the practitioner—particularly to him who has not yet had the experience of years of observation to guide him. The highest praise is due to the editor for his share in the compilation of the great wealth of information here

assembled as well as for his success in making a homogeneous and well balanced volume from the work of many authorities.

### Interclinical Notes.

*Leslie's* for September 11th would make an admirable supplement for our JOURNAL for the 11th, illustrating, as it does, several features of the conditions among the soldiery in Serbia, which Dr. J. Rudis-Jicinsky describes so graphically. A truly ironical phase of the war is manifest in the statement in *Leslie's* that 60,000 Serbian soldiers wear Austrian uniforms. Among many striking portraits in this issue is one of Mrs. Howard Payne, of Georgia, who has obtained State legislation for child welfare, birth registration, medical inspection of school children, etc., and one of Mrs. John Spencer Brunton, treasurer of the Australian Red Cross, who is said to have raised in one day over \$2,500,000, establishing a record.

The *Nurse* for September opens with a description of Heliotherapy at Perysburg; this is followed by a characteristic article by Dr. William Brady, of Elmira, What Do We Know about Breathing? Other medical contributors are Dr. Frederick C. Warnshuis and Dr. Douglas C. McMurtrie. As we have remarked before, the articles by nurses are not beneath the notice of physicians, who may get a most useful hint here and there from this thoroughly excellent magazine. Any physician who feels a Christmas story along professional lines struggling for release from his interior, may dispose of it to good advantage to the editor of the *Nurse* if it meets with the approval of that exacting person.

This year the Fourth of July fell on Sunday. By common consent Monday was observed also; and so automatically without any special thought of why or wherefore, most of us had that greatest boon of the calendar, a Sunday-Monday holiday. The *Survey* for September 4, 1915, considers that we are in debt to unionism for the double festival which, in most of our industrial centres, enriches September year after year. There is a reason—a great, human, practical reason why Labor Day comes always on Monday instead of on a given date which would fall on a different week day each year. The workers who set it so knew that it would thus always mean a sixty hour respite—and for many, a seventy-two; freedom for city people to get out in the country and hunt for hyacinths, or their summer successors, while the bread earning takes care of itself; freedom for kinks to get out of the back, for the whirr of machinery to dim down in overwrought ears, for necks to be blistered on the beaches, and young limbs to kick loose from monotony and feel the pulsings of love and irresponsibility and conquest.

An article to be grateful for, from many points of view, is Making Art a Neighbor, by Herbert Francis Sherwood, in the *Outlook* for August 25th; it is a description of the art museum at Southampton, Long Island, built by Samuel L. Parrish, a retired New York lawyer; a museum, as the writer says, which will go far to dissipate the slurs of foreigners on the American attitude toward art. Fortunately Southampton is a fashionable suburb, which will cause the museum to be brought to the attention of numerous people who might otherwise never have heard of it.

Few journals failed to point out the menace of the dismissal of Professor Scott Nearing from the University of Pennsylvania; but *Pearson's* for September goes more deeply into the matter than most and shows the curious conditions among the trustees that led to the professor's becoming *persona non grata* among the least academic body, probably, that ever directed the affairs of a university.

There is an impartial discussion of Commissioner Davis and her management of the New York City Penitentiary in the *Outlook* for September 8th. Tannenbaum said that the lady commissioner found the institution 400 years behind the times and that it is now still 350 years behind;

the editorial correspondent of the *Outlook* argues that fifty years' advance in two is a creditable performance. Don Marquis, the "column conductor," is a new contributor to the *Outlook*. We shall find a professed humorist on the *North American Review* next, or a little humbler enough?

In the *American Review of Reviews* for September is an article by Winthrop L. Marvin, entitled The First Year at Panama. American physicians may well read this article with pride, as without the remarkable discoveries of medical science, no canal could have been built. The character of the traffic through the canal during its first year has been full of surprises, owing mainly to the war and the unexpectedly large coastwise trade.

One of the most interesting articles in the September *American Review of Reviews* is the description of how the Belgians are fed; they receive over \$10,000,000 worth of money and food every month from the United States alone; the article is summarized from the *New Republic*. A special department looks after the needs of children under three years of age: Each child is examined by a communal doctor and receives one of five kinds of tickets, depending on the age and the health of the child. The portions are mostly milk, cocoa, or a nourishing, easily digested soup. At the very first the commission gathered into the dairies all the cows it could secure. These cows are fed with corn from Argentina and bran from American wheat, which has been milled in Belgian mills. As their milk is not sufficient, condensed milk is used as well.

It is enough to state that Rudyard Kipling has a story in the September *Century*, Mary Postgate, to attract all readers of fiction. It is a tale, gruesome or not as the reader interprets it, which reminds one somewhat of The Lady or the Tiger. What, precisely, did Mary do while she was waiting by the "destructor"?

Of special interest to the physician in the *Popular Science Monthly* for September, 1915, we note Four Points in the Indictment of the Smoke Nuisance by John O'Connor, Jr.; Biological Effects of Race Movements, by Chancellor David Starr Jordan, and especially Natural Science in the Middle Ages, by Professor Lynn Thorndike. For readers who have always believed that there was no such thing as science in the middle ages, this will prove to be profitable matter, while its interest and value are undeniable. As the author states, magic still lingered, but the march of modern science had begun.

The Young Doctor in Sir Gilbert Parker's Wild Youth continues in the September *Red Book* to win the love and admiration of all the scant population of Askatoon. The situations in this tale are becoming such that we should characterize them as melodramatic were they written by any author less dignified than the titled Canadian, Philo Bates, the correspondence school detective, Ellis Parker Butler's cleverest creation, has an amazing adventure in this issue and continues to blunder upon solutions of the mysteries brought to his notice in his customary happy fashion.

### Meetings of Local Medical Societies.

MONDAY, September 20th.—Elmira Clinical Society.

TUESDAY, September 21st.—Tompkins County Medical Society; Tri-Professional Medical Society of New York (annual); Binghamton Academy of Medicine (annual); Syracuse Academy of Medicine; Ogdensburg Medical Association (annual); Oswego Academy of Medicine; Medical Society of the County of Westchester.

THURSDAY, September 23d.—Ex-Intern Society of Seney Hospital, Brooklyn; Medical Union, Buffalo.

FRIDAY, September 24th.—Society of New York German Physicians; Manhattan Medical Society; Italian Medical Society of New York.

SATURDAY, September 25th.—Lenox Medical and Surgical Society.

## Official News.

## United States Public Health Service:

**Burkhalter**, John T., Surgeon. Granted two weeks' leave from duty at Fort Totten, N. Y., from August 11 to August 25, 1915. **Cox**, J. D., Assistant Surgeon. Granted seven days' leave from duty at Fort Totten, N. Y., from September 5 to September 12, 1915. **Cumming**, Hugh S., Surgeon. Leave of absence for fifteen days from September 1, 1915, amended to read fifteen days' leave of absence from September 4, 1915. **Draper**, W. F., Passed Assistant Surgeon. Directed to assist Surgeon H. S. Cumming in investigations of the typhoid fever epidemic in New Jersey and adjoining States. **Foster**, A. D., Surgeon. Granted three days' leave of absence from September 2, 1915. **Frost**, W. H., Passed Assistant Surgeon. Directed to proceed to Harrisburg, Pa., for conference with the commissioner of health, and to arrange for securing such data as may be practicable relating to the Ohio River and the Delaware River watersheds. **Glover**, M. W., Surgeon. Detailed, on request of the Secretary of Agriculture, to cooperate with the Bureau of Chemistry of that department in investigations under the amendment of August 23, 1912, of Section 8 of the food and drugs act. **Lavinder**, C. H., Surgeon. Granted fourteen days' leave of absence to be taken when convenient during the month of September. **Leake**, J. P., Passed Assistant Surgeon. Bureau letter dated August 12, 1915, granting fourteen days' leave of absence from August 18th, revoked. **Mathewson**, H. S., Surgeon. Granted ten days' leave of absence to be taken when convenient during the month of September. **Perry**, J. C., Senior Surgeon. Granted five days' leave of absence from September 3, 1915. **Wayson**, W. F., Passed Assistant Surgeon. Relieved from duty at San Francisco, Cal., and directed, on request of the President of the State Board of Health, to proceed immediately to Reno, Nevada, for duty in the State Board Laboratory; thence to proceed to Washington, D. C., for duty in the Hygienic Laboratory. **Wertebaker**, C. P., Surgeon. Granted one month's leave of absence on account of sickness from September 1 to October 1, 1915.

## United States Army Intelligence:

Official list of changes in the stations and duties of officers of the United States Army for the week ending September 11, 1915:

**Coffin**, Jacob, Captain, Medical Corps. Relieved from further duty at Fort Riley, Kansas; now on temporary duty at Fort Yellowstone, Wyoming, is assigned to permanent duty and station at that post, and will report to the commanding officer thereof accordingly. **Davis**, Henry L., First Lieutenant, Medical Reserve Corps. Ordered to active duty and will proceed to Fort Terry, New York, and report to the commanding officer for assignment to duty. **Dowdle**, Edward, First Lieutenant, Medical Reserve Corps. Ordered to active duty and will proceed to Fort Ontario, New York, and report to the commanding officer for duty. **Ferenbaugh**, Thomas L., Captain, Medical Corps. Upon the expiration of his present leave of absence is ordered to proceed to Fort McIntosh, Texas, and report in person to the commanding officer of that post for duty. **Fruitnight**, Henry S., First Lieutenant, Medical Reserve Corps. Relieved from duty at Fort Michie, New York, and will proceed without delay to his home, and upon arrival report by telegraph to the Adjutant General of the Army; will stand relieved from active duty in the Medical Reserve Corps upon arrival at his home. **Gregory**, Junius C., Captain, Medical Corps. Relieved from duty as attending Surgeon, Philadelphia, to take effect upon the completion of his examination for promotion, and will then proceed to Fort Slocum, New York, and report to the commanding officer of that post for duty. **Harris**, Jesse R., Captain, Medical Corps. Upon being relieved,

will proceed to Boston, Mass., for duty as attending Surgeon in that city, reporting by letter to the commanding general, Eastern Department, relieving Captain F. Morse. **Huntington**, Philip W., Captain, Medical Corps. Upon his return to Fort Totten, New York, from temporary duty at West Point, N. Y., will stand relieved from duty at Fort Totten, and will then proceed to New York for duty as attending surgeon in that city, reporting by letter to the commanding general. **McEnery**, Douglas W., Captain, Medical Corps. Relieved from duty with the Panama Canal, to take effect on or about January 1, 1916, and will then report in person to the commanding general of the United States troops, Canal Zone, for assignment to duty with station at Corozal. **Morse**, Charles F., Captain, Medical Corps. Upon being relieved from duty as attending surgeon in Boston, Mass., will proceed to Columbus Barracks, Ohio, and report to the commanding officer of that post for duty. **Phillips**, Hiram A., Captain, Medical Corps. Relieved from duty at Fort McIntosh, Texas; will proceed to Fort Sam Houston, Texas, and report in person to the commanding officer of the latter post for duty, and by letter to the commanding general, Southern Department. **Pyles**, Will L., Captain, Medical Corps. Upon being relieved from duty as attending surgeon in Chicago, Ill., will proceed to Jefferson Barracks, Missouri, and report to the commanding officer of that post for duty. **Register**, Edward C., Captain, Medical Corps. Upon the expiration of his leave of absence is ordered to proceed to Fortress Monroe, Virginia, and report in person to the commanding officer thereof for duty, relieving Captain William M. Smart. **Ruffner**, Ernest L., Major, Medical Corps. Granted twenty-one days' leave of absence. **Smart**, William M., Captain, Medical Corps. Upon being relieved from duty at Fort Monroe, Virginia, will proceed to Chicago, Ill., for duty as attending surgeon in that city, reporting by letter to the commanding officer, Central Department, relieving Captain Will L. Pyles. **Tefft**, Lloyd E., First Lieutenant, Medical Corps. Upon being relieved from temporary duty at the Walter Reed General Hospital, Washington, D. C., ordered to proceed to Fort Ethan Allen, Vermont, and report to the commanding officer of Ambulance Company No. 6 for duty. **Waring**, John B. H., Captain, Medical Corps. Ordered to proceed to the Walter Reed General Hospital, Washington, D. C., and report in person to the commanding officer of that hospital for observation and treatment. **White**, J. William, First Lieutenant, Medical Reserve Corps. Resignation of his commission in that corps has been accepted by the President, to take effect September 1, 1915.

## Births, Marriages, and Deaths.

## Died.

**Becker**.—In New York, on Tuesday, September 7th, Dr. Charles P. Becker, aged seventy-one years. **Blackman**.—In Buffalo, N. Y., on Friday, September 3d, Dr. Marion E. Blackman, aged thirty-seven years. **Bosworth**.—In Winchester, Ind., on Tuesday, August 31st, Dr. Richard Bosworth, aged eighty-three years. **Duval**.—In France, on Friday, August 26th, Dr. Joseph Duval, formerly of St. John, N. B. **Kerr**.—In Lavalette, N. J., on Friday, August 12th, Dr. George Kerr, aged seventy-four years. **Mullen**.—In Hazlehurst, Miss., on Tuesday, August 24th, Dr. H. J. Mullen, aged sixty years. **Nichols**.—In Boston, Mass., on Friday, September 3d, Dr. Charles E. Nichols, aged seventy-three years. **Parkhurst**.—In Danvers, Ill., on Saturday, September 4th, Dr. F. J. Parkhurst, aged sixty years. **Putnam**.—In Gardiner, Me., on Wednesday, September 1st, Dr. Frank M. Putnam, aged sixty-two years. **Reiff**.—In Freemont, Ohio, on Thursday, September 2d, Dr. Charles F. Reiff. **Sweet**.—In Newport, R. I., on Tuesday, August 31st, Dr. John E. Sweet, aged sixty-five years. **Tinkler**.—In St. Louis, Mo., on Monday, August 9th, Dr. Pearl Tinkler, aged twenty-six years. **Wheaton**.—In Pawtucket, R. I., on Thursday, August 12th, Dr. James L. Wheaton, aged eighty-two years.



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### Original Communications.

#### MICROORGANISMAL CARDIOVASCULAR TOXINS.

BY ROBERT N. WILLSON, M. D.,  
Philadelphia.

Because insidious in their approach, and therefore difficult to anticipate, the infectious diseases, including tuberculosis and syphilis, deliver their attack without adequate warning, and much harm is accomplished before the danger is realized. I shall consider four of these diseases as furnishing examples of the methods employed by the different members of the entire group.

Syphilis, tuberculosis, rheumatism (so called), and diphtheria illustrate fairly well the various forms of microorganismal invasion of the heart and vessels.

*Syphilis and tuberculosis* begin with heredity! Very frequently do we find the children of luetic or tuberculous parentage the subjects of myocardial or valvular defects or lesions. In the case of syphilis the conviction is growing that in some unexplained manner the disease favors developmental defects. T. R. Whipple (1) has recently reported two instances of congenital heartblock, probably in both cases due to a congenital septal defect. Especially is this syphilitic relationship true of vascular lesions. I have a number of times seen newborn babes with arteries that would have done credit to the latter end of life, rather than its beginning. I have in my collection a specimen from a little child of four years, showing a ruptured thoracic aneurysm and extensive disease of all the cardiac valves. The brachial and radial and temporal arteries resembled those of an old man. Valvular syphilitic disease ranks next in frequency, if it does not actually surpass the incidence of lesions due to the acute rheumatic infections. Warthin (2) has well described the myocardial lesions of syphilis, some or all of which are to be noted in the heart of every syphilitic. Gummata, while not rare, are comparatively infrequent findings. Vaquez (3), Keith and Miller (4), and Harbitz (5) have all reported instances, and I myself have seen several. Brooks (6) found a true cardiac gumma present in five out of forty-four syphilitic cases examined. Colonies of spirochætae are almost invariably present, often indicating the areas of degenerative change. The usual lesions consist of fatty degeneration with marked atrophy of the cells and fibres, or of simple atrophy

as the result of the presence of the spirochetes. Myxomatous areas are found freely in the hearts of congenitally syphilitic infants. Interstitial changes are present in all syphilitic hearts, varying from a simple edema to a profuse fibroid proliferation, with new capillaries and always with perivascular colonies of spirochetes. It seems that the heart shows an almost invariable involvement in syphilis. On account of its lack of tendency to effective repair of myocardial lesions, it also seems as though we had in the implication of this vital organ one of the strongest indications for the thoroughgoing eradication of the spirochetes from the entire economy.

*The tubercle bacillus and its toxin* also furnish us with an invariably diseased heart. We have not far to seek for the reason when we remember that Besanti and Panisset have demonstrated the presence of tubercle bacilli in the heart's blood four and five hours after being administered in the food. Nothing is more typical than the small heart of tuberculosis, driven far beyond its normal rate, in an almost characteristic, irritable, toxic overaction. The early and constantly low systolic blood pressure of the tuberculous patient indicates the severity of the toxic action upon the cardiac muscle and nervous structures. Not all cases show the small heart, and not all present a lowered blood pressure; but a sufficient number do, to make both distinctive features of the physical picture. In most instances of long standing tuberculosis the walls of the vessels are thickened and more or less inelastic, and offer a mechanical obstacle to the output from the heart, thus draining still further upon its resources. Myocardial wasting goes hand in hand with that of the general musculature of the body. At first there is probably a moderate hypertrophy of the wall of the right ventricle to compensate for the disturbance in the pulmonary circulation. In the majority of advanced cases of tuberculosis the lungs and pleura pull the attached pericardium, and with it the heart, out of the normal positions and relations. Soon the toxins, always of a mixed infection, malnutrition, exhaustion from overwork, and an increasing poverty of normal blood, lead to definite myocardial degenerative changes. These are as a rule not tuberculous in character. They include all the gradations of fibrous and fatty change, the result of long continued exhaustion of muscle, ganglion, and nerve. Rarely miliary tubercles are found in the myocardium, and even in the walls of the vessels. They seldom or never give clinical evidence of their presence. The endocardium is occasionally attacked by the tubercle bacillus or by the organisms underlying

the customary secondary infection. Also the pericardium is not infrequently implicated, more often than the heart in the wall.

I have cited tuberculosis and described its cardiac lesions as illustrating a typical toxemia, and an overtaxed, often underdeveloped, cardiovascular mechanism. And yet we must be prepared at any time to hear that as with the spirochete, the tubercle bacillus is present everywhere throughout the cardiac musculature. I have found it in the heart blood of a tuberculous guinea pig, and have no doubt, especially in the early stages of the bacteremia, it makes its way into every capillary supplying every cardiac muscle fibre.

The acute rheumatic infections form, at the present moment, a difficult subject for discussion. That which is certain today may be disproved literally tomorrow. We are in an uncertain and a transition stage with respect even to their etiology. As a clinical picture rheumatism means something very definite. As a microorganismal invasion it has already been conceived to mean many different things. Recent studies render it likely that the majority of instances are due to some one of the various strains of streptococcus. It seems probable, however, that the symptom complex may occasionally be caused by the invasion of the blood stream by any one of a number of microorganisms, including the staphylococcus, pneumococcus, and possibly the influenza bacillus. Rosenow's demonstration of the intertransmissibility of the pneumococcus and the streptococcus, with *Streptococcus viridans* as the intermediate stage, has opened a new phase of bacterial life which bids fair to modify our ideas concerning certain of the specific infections.

In both children and adults the cardiac involvement in the rheumatic infections is a carditis. All of the structures are involved, especially the myocardium. Even the pericardium shows a frequent tendency to implication. The disturbances frequently noted in the cardinal functions of the rheumatic heart, such as auricular fibrillation and flutter, gallop rhythm, pulsus alternans, and cardiac asthma, all point to grave and usually permanent structural change. Whatever the causal organism or organisms, the disease is a bacteremia and the heart manifestly suffers from the presence of the microorganism as well as from the toxemia. It has been the general impression that the valves bear the main brunt of the storm. This is by no means true. They suffer often and seriously enough; but it is safe to say that the myocardial lesions are of more vital import, whereas they are usually ignored. All grades of inflammatory involvement may be found in the muscle cells and fibres, from cloudy swelling to an interstitial edema or a fibrosis. Fatty degeneration and fibroid replacement are the two most frequent terminal processes, and because of one of these in due time usually supervenes the clinical picture of cardiac dilatation with rupture of compensation. Another very characteristic lesion of the rheumatic heart infections is the so called nodule of Aschoff, consisting of a focus of large (giant) cells, often multinuclear, and apparently fibroblastic in character. They are found in most, if not all cases of true rheumatism. Fraenkel (7) noted them in seventeen out of twenty cases. Thalhimer and Rothschild (8)

found them present in three cases of chorea without arthritis. They were absent in fourteen cases of endocarditis due to *Streptococcus mitis*, and also in endocarditic infections due to the gonococcus, staphylococcus, streptococcus, and pneumococcus.

In diphtheria we experience nearly 100 per cent. of instances of myocardial involvement, some clinically almost insignificant, others resulting in sudden cardiac death. In from fifteen to twenty per cent. of all cases of diphtheria there are clinical symptoms indicative of the heart implication. Beginning as an acute myocarditis due to the bacteremia as well as to the well recognized toxemia, the changes in the cardiac muscle are found varying from a cloudy swelling to a widespread fatty degeneration. There is an increase in the size and number of the nuclei of the muscle cells, with a decided tendency to destruction of the nucleus or even of the fibre itself. Fatty and granular degenerations account for most of the destructive change. Vincent found in one case of sudden fatality no recognizable change except loss of the strie, and an increase of the connective tissue around the bloodvessels. Extensive fragmentation of the fibres has been noted by Papkow (9) with red corpuscles and leucocytes between the fragments. Vincent also found marked changes in the cardiac plexus, including an intense parenchymatous degeneration, with loss of the axis cylinders. The capillaries were dilated, and the nerve cells were granular, vacuolated, and some had lost their nuclei. These nervous changes undoubtedly account for many of the features of cardiac failure in diphtheria, which up to now have seemed difficult of explanation. I know of no successful attempt at demonstrating the diphtheria bacillus in the myocardium, though many investigators, among them Frosch (10), have found it in the heart's blood, in the lung, the liver, the spleen, and in lymph nodes. That it is in all likelihood present in every capillary of the heart cannot be doubted. In a number of instances diphtheria bacilli have been isolated from the vegetations upon the valvular endocardium in an ulcerative endocarditis (11). Both the clinical picture and the microscopic findings post mortem testify to the rapid and extensive injury worked by the bacillus and its toxin. The not infrequent sudden deaths in diphtheria and its convalescence furnish another form of evidence of the damage done to the muscular and nervous cardiac structures. In very many cases the streptococcus can also be demonstrated in the blood and organs of the diphtheria patient. The feeble, almost absent apical impulse, the dullness and loss of character in the cardiac tones, the demonstrable widening of the cardiac area indicative of dilatation, and the occasional atrioventricular dissociation, all form a clinical composite that is too well known to be regarded otherwise than with dread and foreboding. Usually the toxic symptoms make their appearance about the second week of the disease. Not seldom the convalescence is the period during which grave signs of cardiac incompetence manifest themselves. The patient often vomits, the stomach rejecting everything that is introduced into it. The cardiac action may at first be rapid, but soon becomes weak and slow (50, 40, 30), and toxic heartblock is not infrequently noted. Death may occur while the patient is mentally active,

and is evidently due to sudden cardiac paralysis, more than possibly through crippling of the vagal centre and the terminal cardiac filaments. Occasionally the patient may live for days, seemingly pulseless (heartblock). Especially if an adult, he



FIG. 1. Streptococcus embolus in a nurse infected in the eye service of a city hospital.

may experience the almost typical pain of an angina pectoris, reports of which in the various infectious diseases are increasing in frequency. More often the precordial pain is of a vague, worrying character, grumbling and persistent, rather than the vise-like seizure of true angina. I have briefly outlined the cardiac involvements in this treacherous toxemia, which prior to the days of antitoxin reaped its annual harvest of thousands of child lives. Under the microscope the heart of a diphtheria patient shows varying grades of parenchymatous change. Fatty degeneration is the dominating process, and few diphtheria hearts escape. I have already referred to the fact that marked degenerative changes have been noted in the nerves of the cardiac plexus, suggesting strongly those found in the peripheral nerves in postdiphtheritic paralysis (12). No doubt these

changes extend to the finest nervous distribution throughout the heart structure, and presumably they are the ultimate cause of the cardiac death of diphtheritic toxemia.

The foregoing are fairly illustrative of the lesions recognized in the hearts of patients dying in or from the acute infectious diseases. Each represents a type, and certain other of the infections will be found to accord with its pathology and pathological physiology. Cloudy swelling, edema, vacuolization of the nuclei and cells, atrophy of the fibres, pigmentary,

fibroid, fatty degeneration, fragmentation, are the important muscle lesions, common at some time to all. Typhoid fever presents Zenker's hyaline degeneration of the fibres. The cardiac nerve lesions, noticed so little and their significance even less clearly understood (as in influenza, diphtheria, etc.), may all be comprehended in the different phases of fatty degeneration. The nerve changes begin usually in the myelin sheath, and the axis cylinder often takes on a swollen and beaded appearance. The degenerative lesions in the cardiac ganglia have not, as yet, been thoroughly studied.

The point claiming final emphasis is the fact that in every case of infectious disease all the cardiac structures are injured. Some require time and rest for their rehabilitation. The greater portion of the cardiac damage can never be repaired.

#### REFERENCES.

1. WHITIAM: *Lancet*, 1917.
2. WARTEN: *Arch. Surg.*, March, 1917, p. 102.
3. KELLY and MILLER: *J. Clin. Med.*, 1917, p. 102.
4. HARBIZ: *Medizin*, 1917, p. 102.
5. FRANKEL: *Arch. Surg.*, 1917, p. 102.
6. FRANKEL: *Arch. Surg.*, 1917, p. 102.
7. FRANKEL: *Arch. Surg.*, 1917, p. 102.
8. FRANKEL: *Arch. Surg.*, 1917, p. 102.
9. FRANKEL: *Arch. Surg.*, 1917, p. 102.
10. FRANKEL: *Arch. Surg.*, 1917, p. 102.
11. COUNCILMAN, MALLORY, and PLARGE: *Arch. Surg.*, 1917, p. 102.
12. VINCENT: *Arch. Surg.*, 1917, p. 102.

1827 SPRUCE STREET.

#### PROSTATIC CALCULUS.\*

*An Impacted Cystin Calculus in a Boy Five Years Old; Operation; Recovery.*

By FRANCIS HUBER, M. D.,

New York.

Professor of Clinical Medicine, College of Physicians and Surgeons, Columbia University; Visiting Physician, Gouverneur Hospital; etc.

According to Jacobi, "calcareous deposits are found in the newborn mainly in the lower end of the straight canaliculi, near the papilla. . . . The normal frequency of uric acid and other renal infarctions explains the great frequency of gravel and stone in the very young." He met with six cases in forty autopsies on babies dying of different diseases. To quote further: "Nor do I believe I am mistaken when I express my conviction that many of you have observed actual gravel in the very young, and many more the violent spasmodic pains of infants, accompanied with erections, dysuria, even convulsions, and sudden relief attended with urination." Holt says: "Small renal calculi are very common in infancy; occasionally a calculus as large as a pea is found. In one instance in over 1,000 autopsies, a calculus an inch in length and half an inch wide was found. It is possible that the minute calculi are either dissolved or washed down into the bladder and passed per urethram."

In fact, in small children practically all urethral concretions are of intrauterine renal origin, migrating downward and becoming impacted at one of the normal anatomical constrictions, at the bulb, pre-scrotal angle, and meatus.

Pedersen (1) in an article on Urethral and Peri-

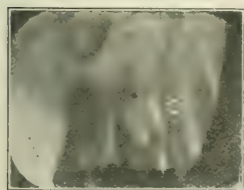


FIG. 2.—X ray photograph. The arrow points to a streptococcus abscess about the root of the first molar tooth. The patient showed marked cardiovascular embarrassment and chronic general septicemia.

urethral diseases. Each represents a type, and certain other of the infections will be found to accord with its pathology and pathological physiology. Cloudy swelling, edema, vacuolization of the nuclei and cells, atrophy of the fibres, pigmentary,

\*Read, by title, at the meeting of the American Urological Association, New York, N. Y., 1917.



urethral lithiasis, cites, among others, four interesting cases, reported by Dugan, of stones impacted in the urethra, with rupture and extravasation of urine in very young males, one four days old, one eight days, one a month old, the fourth eighteen



Fig. 1. Prostatic calculus.

months of age. All four were operated in, the last twice. The first two were fatal, one from ruptured urethra and extravasation, the other from operation and infection. A case of a stone three times the size of a cherry pit, impacted two inches from the meatus, has been reported by Willmoth. The stone was split and extracted with mosquito forceps.

Those interested in the general subject of urinary lithiasis in infancy are referred for further details to a recent article on the subject by Dr. A. N. Collins (2). The frequency, etiology, symptomatology, diagnosis, prognosis, and treatment are discussed at some length; in addition, a fairly complete bibliography and additional references are appended.

Max Kahn (3) arrived at the conclusion that the larger proportion of renal stones are composed of oxalate of lime; sometimes the calcium salt is the only component. Uric acid and urates are found in small quantities in all renal calculi. It is rare, however, to find a stone composed mainly of uric acid or urates. Textbooks teach that calculi are composed, in order of frequency, of uric acid, the earthy phosphates, and oxalate of lime. Stones composed of cystin, xanthin, and indigo are occasionally met with. They may be found in the kidneys, ureters, bladder, or urethra. The case reported below is of interest because of the rare occurrence of cystin calculi.

CASE. Harry K., aged five years, was admitted to Beth Israel Hospital April 2, 1905. He had been under the professional care of Dr. M. Duckman, who requested me to see him in consultation. As the boy could not receive the necessary care at home, he was referred to the hospital for observation and treatment. He was born in New York city; the parents were Russians. The family history had no bearing upon the case, except that an older sister had been operated upon in Russia for vesical calculi, with a fatal result. It was not possible to discover the cause of death or the nature of the stone. With the exception of measles at two years and pneumonia, he had always enjoyed fair health.

The present illness dated back about one year, when it was noticed that the child would wet the bed at night, occasionally getting up to void urine. Micturition was painless, though as soon as the desire occurred he was compelled to hurry, otherwise he would wet his clothes. He drank large quantities of water, frequently two glasses upon getting up in the morning. About two and a half months ago, he began to complain of severe pains and irritation about the head of the penis. Urination became more frequent, small amounts being passed. About ten days ago the symptoms became more acute, urination more painful and frequent, causing great distress. He would tug at his penis to relieve the pain and difficulty in urination. At no time was there any bleeding, nor was there any history of fever or chills. His general health was not affected in any way. There was now a constant dribble, the bed and clothes being constantly wet. Physical examination of heart and lungs was negative. Abdomen negative, except that distended bladder could be felt about two inches above the umbilicus. When the child was put to bed (foot elevated), the urine was passed more readily and without pain. The diagnosis of stone was confirmed by a Little searcher, a distinct grating and click being evident as the instrument entered the bladder.

Urinary examination, on the day of admission, revealed the following: Pale straw color, specific gravity 1.010, acid in reaction, no albumin, no sugar nor casts and but few pus cells. Blood examination, leucocytosis of 18,000, small mononuclear 11 per cent., large 10 per cent., polynuclear 79 per cent.

To eliminate the possible presence of other calculi, a radiographic examination was made by Dr. I. S. Hirsch. As shown in Fig. 1, only one stone was found.

On April 5th, the patient was anesthetized. A finger was inserted into the rectum and the stone, distinctly felt, was pushed forward and readily removed through a small perineal incision about three quarters of an inch in length. A catheter was inserted into the bladder through the perineal wound; two days later the catheter was removed. The subsequent recovery was uneventful and rapid, and the patient was discharged, April 24th, in excellent condition.

The calculus was somewhat egg shaped and weighed 1.22 gram; dimensions, 18 by 11 by 18 mm. According to the report of Dr. F. E. Sondern the composition was chiefly cystin, with some additional substance, probably xanthin.

The principal points of interest to be discussed are the chemistry of the calculus, the rarity of this variety, and its location. Prostatic calculi are not common in childhood. It is highly probable that the stone had its origin higher up, probably in the kidney, was washed down and became impacted in the prostatic portion of the urethra, where it acted as a ball valve—causing distention of the bladder and the attending symptoms. I can only recall one other instance of a cystin calculus in a young patient, who many years ago was observed at the Van-

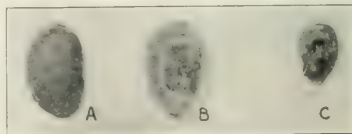


Fig. 2. A and B, first stone, removed April 5, 1905; C, second stone, removed January 1, 1911.

derbilt Clinic and was operated on in the Roosevelt Hospital.

The suspicion that the stone had its origin in the

kidney was strengthened by the fact that on January 22, 1910, the patient presented himself again at the hospital with the statement that three days before he was taken with acute retention of urine and relieved by catheter. Urine was amber in color, with a slight sediment, specific gravity 1018 to 1020, acid, marked traces of albumin, numerous pus cells, few epithelial cells, otherwise negative.

Examination with a Little searcher revealed a stone in the region of the prostate. In the necessary manipulations the stone was displaced and carried upward a short distance into the urethra. As it could not be extruded nor removed by means of small forceps, the boy was put under anesthesia and the stone easily taken out through an external urethrotomy incision. The boy was discharged, cured, February 5th. The calculus was of the same general composition as the first removed in 1905. It was one half by one quarter inch, smooth, except at one end, as if a small piece had been broken off. He had complained of some pain over the right kidney region, and though slight tenderness was evident upon deep pressure, nothing was discovered upon x ray examination.

It is most unfortunate that it was not possible to make any studies in metabolism in the case. According to Neumann (4), 170 cases of cystin calculi and cystinuria have been reported up to the present. Sondern (5) says: "True cystinuria is a rare condition; it does not give rise to any characteristic clinical symptoms unless it has formed calculi in the urinary tract, and would generally seem to be a metabolic curiosity rather than a true clinical entity." In approximately 3,500 specimens of urine, he found true cystinuria in but four cases, and one of them presented symptoms referable to renal calculi, the presence of cystin in the urine in the others being discovered on routine analysis.

Cystinuria and a tendency to form cystin calculi also appears to be a family trait. In the case reported, an older sister had a similar trouble in all probability. Cystin, so uncommon in urine and the calculi of which are so rare, has been the subject of much controversy and research. Fowler (6), after passing under review the various theories of its origin, concludes: "Cystinuria or the presence of cystin in the urine is, therefore, to be looked upon as an indication of defective proteid metabolism. . . . It is not known in what part of the body it is formed, but the suggestion was made long ago that that overworked organ, the liver, is responsible. We have seen that the recent work of Friedmann lends some support to this view. It remains, however, for further clinical and experimental work to solve the question."

"Occasionally calculi form in the kidneys or bladder in cystinuria. There are no symptoms of auto-intoxication and no known sequelae except calculi. The condition is not affected by any constituent in the diet; in particular, meat does not seem to cause any noteworthy increase" (7).

*Position of calculus.* Dr. William M. Brickner, in a contribution to the diagnostics of prostatic calculi, states that textbooks on genitourinary surgery give but little space to the subject. He adds to the scant information furnished by the literature the two following practical diagnostic considerations:

"One of these data is a simple physical deduction, and the other is an almost equally obvious clinical observation:

1. If a radiograph of the *unemptied* bladder, exposed with the patient in the level supine or in reversed Trendelenburg position, shows a shadow or group of shadows in the region of the neck of the bladder, and a second radiograph, exposed with the patient in the Trendelenburg position and the x rays passing in the same relative direction, shows the shadow in the same place as before, the stone or stones are fixed in the prostate or the prostatic urethra or in a diverticulum behind the prostate. I suggest to radiographers this technic in order to differentiate vesical from prostatic calculi.

2. The absence, for a long period of time, of all signs of local infection in a case of purulent prostatitis, is strongly suggestive of a calculous etiology.

#### REFERENCES

1. PEDERSEN: *New York Medical Journal*, March 2, 1913.
2. A. N. COLLINS: *Amer. Jour. Dis. of Children*, Oct., 1913.
3. MAX KAHN: *Arch. Int. Med.*, Jan. 15, 1913.
4. NEUMANN: *Deutsch. med. Wochenschr.*, Dec. 10, 1914.
5. SONDERN: *Arch. f. Diag.*, July, 1911.
6. FOWLER (*Quart. Systems & Med.*, vi, p. 326).
7. IDEM: *Ibidem*, i, p. 305.

209 EAST SEVENTEENTH STREET.

## HIGH BLOOD PRESSURE; TREATMENT BY MEANS OF MUSCULAR RELAXATION.

*Report of Five Cases, Associated with Organic Lesions, of the Cardiovascular and Renal System, with Detailed Pressure Readings and Outline of Method Used.*

By MORRIS GROSSMAN, M.D.,  
New York,

Admitted Visiting Physician, Central and Neurological Hospital;  
Clinical Assistant, Lebanon Hospital, Out Patient Department.

*Physiology of blood pressure.* Within all fluid systems at rest, Pascal's law decrees that pressure shall be equal. The blood in the circulatory system is, however, in constant movement, and its pressure varies practically everywhere throughout each cardiac cycle. The fluid pressure in a system such as the circulatory system depends on three factors:

1. The force which propels the fluid.  
2. The calibre of the channel through which the fluid is propelled.

3. The bulk of the fluid to be propelled.  
The stronger the propelling force and the more frequently that force is applied, the higher is the pressure; the weaker the propelling force and the less frequently it is applied, the lower is the pressure. Again, the greater the calibre of the channel through which the fluid must flow, the lower is the pressure; and the smaller the calibre, the higher is the pressure. Other things being equal, the greater the bulk of the fluid propelled, the greater is its pressure; the less the bulk of the fluid propelled, the less is its pressure. In the circulatory system the essential propelling forces are two: *a*, The contraction of the cardiac muscle; *b*, the elastic recoil of the arterial system. The impact of the blood propelled from the heart induces an elastic recoil in the bloodvessels after the distensible power of the cardiac contents has ceased. This recoil acts upon the blood and tends to propel it in

with retroflows, but, owing to the closing of the aortic valves, a backward flow is prevented, and the force has only a forward result. This forward propulsion distends the adjacent parts of the arterial system; these recoil and so, through the fluid blood, a wave of tension is propagated toward the arterioles.

The recoil of the arterial system converts the intermittent impulse applied by the heart to the blood into a continuous force, so that the stream through the capillaries is uninterrupted. As the heart alternately contracts and relaxes, the pressure alteration arising from the heart's action is intermittent. The blood pressure varies most in the heart itself, and least in the capillaries, and in the intervening arteries its change is greater the nearer the point of examination is to the heart. At any given point we have, therefore, a maximum pressure occurring soon after the heart contracts, and a minimum pressure following the heart's relaxation.

The maximum pressure depends upon the strength and frequency of the heart's contraction, and upon the elastic recoil of the bloodvessels. The strength of the heart's contraction depends upon the development of the cardiac muscle and upon the degree to which that muscle is stimulated. The muscle may be stimulated by distention, by its contents, or by nervous influences. The frequency of the heart's contraction is governed mainly by nervous influences. The elastic recoil of the bloodvessels depends in part upon the amount of elastic tissue which the bloodvessels contain, but essentially upon the involuntary muscle fibres which so largely compose the middle coat.

Upon the tone of the muscles in the bloodvessels depends not only their calibre, but also their elasticity. This tone is dependent partly upon nutritive influences, but mainly upon nervous action. This nervous action emanates from a centre in the medulla oblongata, which lies about four mm. from the calamus scriptorius and which was defined experimentally by Claude Bernard.

The minimum pressure depends partly upon the volume of blood in the bloodvessels, partly upon the calibre of the bloodvessels, and partly upon the elasticity of the vessel walls. The volume of blood bears a certain definite ratio to the size of the animal, but depends also upon the fluid intake of the animal. There are, therefore, two essential factors in the regulation of blood pressure. One is the muscular factor pertaining to the heart and bloodvessels; the other is a nervous factor to which the muscular factor is partly, but not wholly subservient. In the medulla are centres for cardiac and for vascular regulation; these are so intimately connected as to form practically one mechanism, which we may call the cardiovascular regulating mechanism. This mechanism is automatic in action. It is completely beyond the scope of the will. Its effects we may briefly consider, as they are evident under normal, experimental, and morbid conditions.

*Physiological effects.* In changing from the upright to the recumbent posture, a regulation by this cardiovascular mechanism occurs, so that the heart's action is slowed and mitigated. In assuming the upright from the recumbent posture, the heart's action increases both in strength and frequency. Coinci-

dent with these changes, vascular dilatation occurs in the first, and vascular constriction in the second. The action is wholly automatic and is normally so finely adjusted that it is imperceptible by the person. In sleep the heart slows, the bloodvessels dilate, the blood pressure falls; in excitement, either physical or mental, the blood pressure rises and the heart's action quickens.

Changes in this cardiovascular mechanism play an important part in the expression of emotion. What affects the bloodvessels, affects the heart; what affects the heart, affects the bloodvessels. The changes in the heart and in the bloodvessels are not related merely as cause and effect; they are in part synchronous and common effects of the same cause; the emotion, excitement, or other physiological condition which has induced it. When an excessive quantity of fluid is taken, there is a rise of blood pressure. In vigorous exercise, Albu, of Berlin, has shown that there are two phases, "primarily an increase in the blood pressure due to increased cardiac activity; this is followed sooner or later, as the varying intensity of the exertion may determine, by a depression phase, during which there is a fall in blood pressure." This primary rise is probably also induced by the increased amount of carbon dioxide in the blood, as well as the increased cardiac action.

*Pathology.* In chronic interstitial nephritis where there is a thickening of the bloodvessels, hypertrophy of the heart and high blood pressure, sometimes when the heart's action begins to fail, the blood pressure still remains high. As the heart is obviously failing, this sustained high blood pressure cannot be due to an increased cardiac action. The thickening of the arteries is not enough in itself to account for this continued high pressure. This phenomenon must be due to a reflex nervous effect, probably excited by the prevailing toxemia; as such a nervous effect is clearly demonstrable under these circumstances, it is probably present earlier in the disease, before the failure of the heart's action makes it evident.

In conditions of shock, we see, instead of the stimulation noted as the result of the toxemia of nephritis, a paralysis of the vasomotor centres, which results in loss of tone in the vascular musculature. The blood pressure falls, the heart at first quickens and later slows, and perhaps stops. In anxiety psychosis quickening of the heart and raising of the blood pressure occur. In exophthalmic goitre, analogous symptoms are often observed.

We may regard the cardiovascular centres in the medulla as controlling the intrinsic cardiac and the vasomotor centres, which are situated in regions other than the medulla. The centres in the medulla are the seat of the controlling influence of general automatic regulation of vascular conditions. These centres in the medulla have not an absolute power; they depend for their influence partly upon stimuli brought to them from other vasomotor centres, and they are partly controlled by the brain areas which are not directly concerned in vascular changes.

*Mechanical and pharmacological influences.* With drugs we cannot so closely trace the dependence of the vascular and cardiac mechanisms upon one another, because drugs act by combining chemically with protoplasm; protoplasm is not identical



throughout the human organism, and the action of the drug depends upon its chemical affinity for the protoplasm, at a particular site, the site of election. A drug such as strophanthus acts upon the blood pressure mainly by increasing the strength of the heart's action, but also by constricting the blood channel.

A drug such as a nitrite, which dilates the peripheral arterioles, diminishes the blood pressure; a drug such as adrenaline, which constricts the peripheral arterioles, raises the blood pressure. A drug such as aconite, which slows the heart, reduces blood pressure; a drug such as atropine, which increases the frequency of the heart's action, raises blood pressure. A drug such as strychnine increases the blood pressure mainly by stimulating the nerve element in the pressure regulating mechanism; a drug such as a bromide, which has a sedative effect on the nervous system and diminishes reflex irritability, lowers blood pressure.

Actions of drugs are seldom confined to one element of the blood pressure regulating mechanism. Digitalis, for example, acts not only upon the heart muscle, upon the muscles of the arterioles, but also upon the cardiac and vasomotor centres of the medulla. Digitalis, therefore, exerts an influence upon the whole neurocardiovascular apparatus which is concerned in the regulation of blood pressure.

Nitrites, although acting mainly upon the musculature of the small bloodvessels, have also a secondary effect upon the heart. Strophanthus, even in dilute solutions, produces, in addition to its essential action upon the heart, a constricting effect upon the bloodvessels. It is a well known principle to which we know no exception, that if several elements participate in the same function, the derangement of any one temporarily deranges the others also. Thus the derangement, whether of the cardiac, arterial, or of the nervous component of the blood pressure regulating mechanism will affect all three. It is extremely difficult to procure an isolated influence upon any one component.

Beside the drugs just enumerated, there is one other great influence which may be exerted upon blood pressure; the influence of autocondensation. In some cases, high blood pressure is reduced under the influence of autocondensation; other cases are apparently unaffected by it, and at different times in the same case, autocondensation does not act to the same degree. There is a certain amount of evidence in our experience to show that the effect of autocondensation is mainly psychic.

We know that in sleep, the blood pressure falls; that in placid states, the blood pressure is low; that under conditions of mental perturbation, such as is seen in the neurasthenic, and in exophthalmic goitre, the blood pressure rises. The influence of the nerves upon the calibre of the arterioles has been proved experimentally and clinically. It is an influence, the extent of which cannot be overestimated, and has not as yet been properly appreciated.

The presence of carbon dioxide in increased quantity in the blood, is also a decided factor in raising the blood pressure. The "positive phase" in the blood pressure, described by Albu, is probably due largely to this factor. At first there is a stimulation of the cardiovascular centre, owing to the increased

amount of carbon dioxide in the blood; this is always accompanied by an increase in the number and depth of respirations; this is nature's effort to diminish the excess of carbon dioxide present and so keep the blood pressure at a lower level. Deep breathing is usually associated with placid mental states, in which there is an absence of emotion; it aids materially in keeping the arterial tension at a lower level.

Every emotion, every thought, is externalized in muscular tension or in some muscular action. Depending on the intensity of the psychic state, we may also have accompanying these muscular changes, accelerated cardiac action and increased respiration rate. Since we know that all these factors play an important role in maintaining high blood tension, it is obvious that any measure, by means of which we can reduce or eliminate them, will tend to lower blood pressure. When a patient is thoroughly relaxed, we find that cardiac action is reduced, the respiration rate is slower and fuller, and the muscular tension is diminished or obviated. In so far as these muscular changes are emotional expressions, it is obvious that to minimize them is to minimize the emotion. To remove them is largely to dispel the emotion; to dispel emotion reduces mental tension and reduces therefore the blood pressure. In addition, the diminution of muscular action in itself serves mechanically to reduce the blood pressure.

Hence it follows that muscular relaxation reduces blood pressure probably both by a psychical and a mechanical action. In muscular relaxation for the purpose of reducing blood pressure, we endeavor to produce mental and physical tranquillity, to induce a state somewhat similar to sleep, a state typified by diminished spasm of the muscles of expression, and of winking; a state of muscular relaxation accompanied by regular, effortless diaphragmatic breathing. These exercises were elaborated by Dr. William J. M. A. Maloney as an aid to the cure of ataxia in his method of treating tabes. A report on its various other applications can be found in a paper, *The Relief of States of High Vascular, Muscular, and Mental Tension*, by Dr. William J. M. A. Maloney and Dr. Victor E. Sorapure, *NEW YORK MEDICAL JOURNAL*, May 23, 1914.

The following is a description of the technic used. The exercises are divided into two parts, *a*, breathing, *b*, relaxation. A quiet room, preferably darkened; a bed or couch wide enough to keep the patient's arms from hanging over the side when they are relaxed; and a small cushion for the patient's head are all the equipment necessary. The bed should be quite high, so that the operator can manipulate the muscles comfortably.

*a. Breathing exercises.* The patient is placed in a recumbent position; the clothes about the chest and abdomen are loosened. He is then directed to inspire deeply, using his diaphragm and restricting his thoracic movements; at the height of inspiration he is asked to pause, then slowly and evenly to expire to the fullest extent and again pause. His mind should be free from any distracting influences and his attention must be kept on the sensation of the current of air passing through his nasal cavities. A small sandbag or weight placed upon the

abdomen will help to fix his attention on the exercise. After six or eight deep breaths have been taken, the patient is asked to take about the same number not quite so deep, and to shorten the pause at both inspiration and expiration; after this medium breathing is mastered, the depth of respirations is further decreased and the pause shortened, until the patient is breathing quietly and regularly, as if asleep.

*b. Relaxation exercises.* To relax the muscles, passive movements, in which the muscles are alternately lengthened and shortened, are employed. The muscles of the scalp, forehead, eyelids, cheek, and jaw are first passively moved until wrinkling and blinking of the eyelids diminishes and disappears, and muscular spasm is reduced or eliminated. Next a shoulder, then the arm on the same side is relaxed; each in turn must be passively moved until all traces of muscular tension vanish and the part lies motionless and flaccid and falls limply from any unsupported position. After a part is relaxed, those previously and that newly relaxed should be briefly dealt with again, in the order in which they were first relaxed. This linking of parts previously to parts newly relaxed is helpful in bringing the whole to a satisfactory state of relaxation. The lower extremity on the same side is next dealt with. The trunk may be relaxed, at first with the patient sitting in a chair, and the muscles being moved from side to side.

CASE I. T. B., aged twenty-eight years, married, housewife, Ireland. Family history unimportant. Past history: Scarlet fever during childhood. Menstrual history normal. Two normal pregnancies, one premature labor at seven months, no miscarriages. Cerebral apoplexy two years ago, followed by paralysis on the right side, which subsequently cleared up. Present history: For past year patient had been very nervous and irritable, and had complained of headache, dizziness, dyspnea, and pain in her back.

Physical examination: Heart moderately enlarged, apex in the sixth interspace and displaced to the left; first sound regular, slow and booming in character, second sound markedly accentuated, no murmurs. Lungs normal. Pupils unequal, reacted to accommodation, but sluggishly to light. Knee jerks and abdominal reflexes present and active. Blood pressure, systolic 260, diastolic 120. Urine showed faint trace of albumin, and an occasional hyaline cast; otherwise negative.

Treatment and subsequent history: Relaxation was begun on May 5, 1914. Her systolic pressure was 260, her diastolic pressure was 120, giving her a pulse pressure of 140 mm. Hg. She was relaxed for one hour, and her systolic pressure came down to 230, her diastolic went up to 130, giving her a pulse pressure of 100 mm. Hg. Returned on May 11, 1914. Her systolic pressure was 250, her diastolic 146, giving her a pulse pressure of 104 mm. Hg. After forty-five minutes of relaxation, her systolic pressure came down to 180, her diastolic to 118, giving her a pulse pressure of sixty-two mm. Hg. After fifteen minutes of brisk walking, her systolic pressure went up to 200, her diastolic to 126, giving her a pulse pressure of seventy-four mm. Hg.

May 13, 1914, the systolic pressure was 220, her diastolic pressure was 120, her pulse pressure was 100 mm. Hg. She was relaxed for one hour, and her systolic pressure was brought down to 176, and her diastolic to 112, giving her a pulse pressure of sixty-four mm. Hg. May 16, 1914, systolic pressure was 210, her diastolic 120, giving her a pulse pressure of ninety mm. Hg. She was relaxed for twenty minutes, and her systolic pressure came down to 190, her diastolic to 110, giving a pulse pressure of eighty mm. Hg. She was then sent out for an hour's brisk walking, after which her systolic pressure was 186, her diastolic 112, giving a pulse pressure of seventy-four mm. Hg. May 18, 1914, systolic pressure 206, diastolic pressure was

120, giving pulse pressure of eighty-six mm. Hg. She was relaxed for fifteen minutes, and her systolic pressure came down to 170, her diastolic to 98, giving a pulse pressure of seventy-eight mm. Hg. She walked for two hours and her systolic pressure went up to 188, her diastolic to 114, giving a pulse pressure of seventy-four mm. Hg. May 20, 1914, systolic pressure was 218, diastolic was 128, giving a pulse pressure of ninety mm. Hg. She was relaxed for twenty minutes, and her systolic came down to 200, her diastolic to 120, giving a pulse pressure of eighty mm. Hg. She walked for one hour, and returned with a systolic pressure of 190, and a diastolic pressure of 124, giving a pulse pressure sixty-six mm. Hg. May 25, 1914, systolic pressure 180, diastolic 110, giving pulse pressure of seventy mm. Hg. She was relaxed for twenty minutes and her systolic came down to 166, and her diastolic pressure to 106, giving pulse pressure of sixty mm. Hg. She returned six hours later, and her pressure was systolic 170, her diastolic pressure was 120, giving a pulse pressure of fifty mm. Hg. June 3, 1914, she returned on this date with a systolic pressure of 160, and a diastolic pressure of 106, giving a pulse pressure of fifty-four mm. Hg. After fifteen minutes of relaxation, her systolic pressure was 154, and her diastolic was 106, giving a pulse pressure of forty-eight mm. Hg. She returned for observation on June 27, 1914, when her systolic pressure was 170, diastolic 110, giving a pulse pressure of sixty mm. Hg. She reported for further observation on January 21, 1915, a period of eight and one half months after having received her last treatment; her systolic pressure was 160, diastolic 116, pulse pressure forty-four mm. Hg.

This patient shows a remarkable reaction. Within one month of treatment, a pulse pressure of 140 mm. was reduced to sixty mm. Hg. with practically a normal relation between the systolic and the diastolic pressures. Her pressure reading, nine months later, shows a still further reduction, and entire freedom from symptoms. The variations in her pressure encountered during the course of the treatment, were undoubtedly due to the nervous temperament of the patient.

CASE II. H. B., widow, aged sixty-four years, American. Family and past history unimportant. Present history: For the past eighteen months had complained of general malaise, headache, dizziness, and pain in her back. These symptoms were gradually getting more severe. Physical examination: Heart showed moderate amount of hypertrophy, apex displaced downward and to the left; first sound clear, regular, good quality; second sound moderately accentuated, no murmurs. Arteries moderately sclerosed, otherwise negative. Urine, twenty-four hour specimen, 1,500 c. c., specific gravity 1.015, acid, no sugar, faint trace of albumin. Microscopic examination showed an occasional hyaline and granular cast. Blood pressure was systolic 210, diastolic 120, giving a pulse pressure of ninety mm. Hg.

Treatment and subsequent history: Relaxation was begun on February 18, 1914. Her systolic pressure was then 210, her diastolic pressure 120, giving a pulse pressure of ninety mm. Hg. After one hour of relaxation, systolic pressure was 190, diastolic 110, giving a pulse pressure of eighty mm. Hg. February 22, 1914, after four days of practising, her systolic pressure was 164, diastolic 94, giving a pulse pressure of seventy mm. Hg. She was relaxed for an hour and her systolic pressure came down to 140, diastolic to 100, giving a pulse pressure of forty mm. Hg. She returned on February 25, 1914; systolic pressure 164, diastolic 90, giving her a pulse pressure of seventy-four mm. Hg. She was relaxed for one hour and her systolic pressure came down to 138, and her diastolic went up to 94, giving her a pulse pressure of forty-four mm. Hg. After this treatment, her headache, dizziness, and other symptoms had disappeared. February 27, 1914, her systolic pressure was 152, diastolic 100, giving a pulse pressure of fifty-two mm. Hg. After one hour of relaxation, her systolic pressure was reduced to 140, diastolic to 94, giving a pulse pressure of forty-six mm. Hg. She returned on March 10, 1914; systolic pressure 150, diastolic 94, giving a pulse pressure of fifty-six mm. Hg. After one hour of relaxation, her systolic pressure came down to 140, her diastolic went up to 98, giving a pulse pressure of forty-



two mm. Hg. She returned for further observation on April 15, 1914, and her systolic pressure was 148, diastolic 98, giving a pulse pressure of fifty mm. Hg. She received no treatment and returned for pressure reading June 9, 1914, systolic pressure 150, diastolic 102, pulse pressure fifty-four mm. Hg. November 14, 1914, systolic pressure 154, diastolic 102, pulse pressure fifty-two mm. Hg. February 20, 1915, systolic pressure 150, diastolic 102, pulse pressure fifty-four mm. Hg. The blood pressure in this case was reduced from 210 to 150 mm. Hg. in six treatments, and subsequent examinations, one, four, nine, and twelve months later showed practically no material increase in tension or return of her symptom. Of course, she continued her relaxation exercises faithfully.

CASE III. H. E., aged fifty-four years, Austrian, tailor. Family and past history unimportant. Present history: Patient was feeling quite well on retiring previous night; sleep was undisturbed, but on arising patient found he was unable to speak clearly, and unable to move the left side of his face. Physical examination showed a well nourished man. Lungs normal. Heart not enlarged, first sound shortened, muffled, poor quality; second sound slightly accentuated; no murmurs. Left facial palsy. Tongue deviated to the left. No paralysis or sensory disturbances of the upper or lower extremities. Knee jerks diminished on both sides. Pupils normal. Blood pressure, systolic 170, diastolic 100, giving a pulse pressure of seventy mm. Hg. Urine showed slight trace of albumin; positive reduction of copper in Fehling's test; about two per cent. of sugar by fermentation test. Microscopically, a few hyaline and granular casts.

Treatment and subsequent history: This patient was taught relaxation, and given daily treatments for seven successive days; his blood pressure gradually came down to systolic 140 mm., his diastolic remained 100, giving a pulse pressure of forty mm. Hg. Subsequent pressure readings taken monthly for the next year, showed a systolic pressure that varied between 126 and 130 mm., and a diastolic pressure from 92 to 96 mm., giving an average pulse pressure of thirty-four mm. Hg., a reduction of half of what it was when he came under observation.

CASE IV. A. X., aged sixty-five years, Greek, female, married. Family history negative. Past history: Patient had a similar attack five months ago; otherwise unimportant. Present history: Patient had been complaining of dizziness and headache for the past twenty-four hours. Suddenly became unconscious, and fell to the floor; remained unconscious for one hour. Left arm, leg, and side of face began to twitch and continued to do so intermittently for the next six hours, particularly the fingers of the left hand. On regaining consciousness, she complained of violent headache. Physical examination: Well nourished woman. In deep coma; cyanosed and breathing stertorously. Heart sounds slow, regular, soft systolic murmur at the apex; second sound moderately accentuated. Heart showed moderate amount of hypertrophy. Lungs showed many coarse, moist rales on both sides. Abdominal and cremasteric reflexes present. Knee jerks present, more active on the left side. No Babinsky. On regaining consciousness, there was no evident paralysis. Urine showed a moderate trace of albumin, and a few hyaline and granular casts; otherwise it was negative. Blood pressure, systolic 220, diastolic 120, giving a pulse pressure of 100 mm. Hg.

Treatment and subsequent history: Relaxation exercises were begun on April 2d; her systolic pressure was 220, diastolic 120, pulse pressure 100 mm. Hg. She received daily periods of forty-five minutes of relaxation for the next seven days; her systolic pressure was gradually reduced to 170, and her diastolic to 100, pulse pressure being seventy mm. Subsequent pressure readings showed slight variations, but the average pulse pressure continued to be about seventy mm. Hg.

CASE V. M. W., aged forty-nine years, married, colored, American. Family and past history unimportant. Present history: Three months ago, while lying in bed, patient felt numbness of right arm and found she was unable to move it. Numbness and paralysis gradually extended to leg and face. Physical examination: Well nourished woman. Heart showed moderate amount of hypertrophy; apex displaced downward and to the left. First sound normal, second sound markedly accentuated. No murmurs. Spas-

tic paralysis of right arm and leg. Urine showed trace of albumin and a few hyaline casts.

Blood pressure was systolic 260, diastolic 180, pulse pressure eighty mm. Hg. May 15, 1914, relaxation was begun. Her mentality was not of the best, and she grasped things with great difficulty. I persisted in this case to see what could be accomplished, despite the fact that she possessed such limited mentality; and further to handicap the treatment, her attendance was very irregular. On this date with breathing exercises alone, her systolic pressure was reduced ten mm., her diastolic was unaffected. She returned May 18th, with a systolic pressure of 250, diastolic 180, pulse pressure seventy mm. Hg. She was relaxed for twenty minutes, and her systolic pressure came down to 230, her diastolic pressure remained unchanged, giving her a pulse pressure of fifty mm. Hg. May 21st she returned with a systolic pressure of 230, diastolic 180, pulse pressure fifty mm. Hg. After fifteen minutes of relaxation, her systolic came down to 220, diastolic to 165; she returned five days later with a systolic pressure of 240, diastolic 146, giving a pulse pressure of ninety-four mm. Hg.; after fifteen minutes of relaxation her systolic pressure was reduced to 220, and diastolic went up to 150, giving a pulse pressure of seventy mm. Hg. She then appeared on June 10th, a lapse of two weeks; her systolic pressure was 220, diastolic 160, giving a pulse pressure of sixty mm. Hg. After fifteen minutes of relaxation, her systolic pressure was 210, her diastolic pressure remained 160, giving a pulse pressure of fifty mm. Hg. June 15th, her systolic pressure was 210, diastolic 160, pulse pressure fifty mm. Hg.; after fifteen minutes of relaxation, her systolic pressure came down to 200, diastolic remained 160, giving a pulse pressure of forty mm. Hg. She then disappeared from observation. She never thoroughly grasped what was being taught her; her relaxation was never complete. Nevertheless, despite these handicaps, in six irregularly distributed, incomplete, relaxation exercises, we were able to reduce her systolic pressure from 260 down to 200, and her diastolic pressure from 180 down to 160, giving her a pulse pressure of forty mm. Hg., which was just half of what she had when she came under observation. Her spasticity had been reduced to such an extent during the course of the treatment, that she was able to come unassisted to the clinic. I have no doubt that should she continue to practise her exercises, incomplete as they were, her blood pressure will remain as it was when last seen, perhaps be further reduced. I am indebted for the report of this case to Dr. Isador Abrahamson, from whose service at Mount Sinai Hospital it was taken.

#### SUMMARY AND CONCLUSIONS.

Other cases of high vascular tension, due to varied etiological factors, have been treated along the same lines with uniformly good results. Of these cases subsequent reports will be made. The cases reported here are limited to those with definite organic lesions of the vascular and renal system. These patients were not selected, but were taken indiscriminately from private practice and from the out patient department of the hospital, the only requirement being sufficient mentality to learn what was being taught to them.

In these cases, the initial systolic pressure at successive sessions tends to be progressively lower, although at no time reaching normal. This is attained because the influence of the procedure does not cease when the patient leaves the physician's office. It is essentially an educational procedure, and once learned can and should be practised at every available opportunity, especially after any strenuous or exciting occurrence. In this way the average pressure is maintained constantly at a lower level, and the periods of high level pressures are abbreviated. Together with the shortening of the periods of high pressure level, the maintenance of a lower average pressure level, and the approximation to a normal pulse pressure, the oscillations in pressure become



less frequent, less easily induced, and of smaller extent. The blood pressure regulating mechanism seems to acquire stability under the influence of the exercises.

# CONCLUSIONS.

1. We do not by relaxation remove the primary causes, such as nephritis, arterial sclerosis, etc.; but we do markedly influence the mental state accompanying these conditions, thereby reducing the increased tension in the bloodvessels, due to this factor; thereby also minimizing the dangers which accompany that state.

2. In giving the patients this method of maintaining blood pressure at a lower level, he not only has a constant safeguard, but also a greater control of the blood pressure regulating mechanism.

3. The results obtained in these cases of high blood pressure treated by muscular relaxation, seem to be a great deal better and more permanent than those obtained by medicinal or any other measures at our disposal at the present time.

1 WEST EIGHTY-FOURTH STREET.

## AN IMPROVED METHOD FOR THE REPAIR OF THE LACERATED PERINEUM.\*

BY HENRY A. BERNSTEIN, M. D.,  
New York.

Notwithstanding all that has been said about internal and external abdominal pressure, deflecting planes, etc., the greatest pressure continues as always, to be exerted in the direction of the least resistance.

It is obvious that no mathematical nor geometrical calculation can overcome the havoc wrought by the loss of function occasioned by displacement of organs and the contraction of muscles. Nothing but intelligent surgery can replace muscles and organs (if they exist) in their original positions and restore their functions. Where by long inaction, muscles have become partially or wholly atrophied, a contingency arises which often requires that other muscular structures be brought into action to take the place of those destroyed.

During the passage of the head through the parturient canal, the stretching of tissues paralyzes to a certain degree the action of the muscles that control the vaginal outlet and perineum; about in the same manner as when before operation upon the rectum, the sphincters of the anus are more or less paralyzed by forcible dilatation. As pressure continues, paralysis increases until resistance is too feeble to counteract the force exerted, and the tissues give way.

Lacerations usually begin in the vaginal mucosa, at the point where the head first emerges from the cervix; so that while the bulging perineum appears to all intents and purposes to be intact, and even so in some cases after the head has passed out of the canal, the slightest pressure of the shoulders or pelvis of the child during its exit, completes the tear, long before begun internally, and when labor is completed, an unexpected laceration is frequently in evidence.

Tears of the perineum are seldom exactly in the centre, and frequently have ramifications extending in various directions; nevertheless, when sufficient time has elapsed since the injury, almost all perineums lacerated within the same degree, are very much alike in appearance.

At the very beginning, owing to the temporary paralysis of the perineal muscles, there is no gaping of the vaginal orifice; but as soon as the muscles have regained their tone, their contraction causes the vaginal canal to be shortened in the centre, bringing the cervix closer to the exit, and widening the distance between the labia at their lower angle.

Loss of function in the pelvic musculature is the main cause of prolapse of the pelvic organs; and while it is true that there are many cases of intact perineums with prolapse of all the pelvic organs; for such a condition, muscular paralysis is usually the responsible agent. In cases where direct pressure or injury of the parts cannot be demonstrated, the cause of the paralysis may sometimes be traced to remote lesions affecting the motor nerves at this site. In stout women there may be a complete tear of the rectovaginal septum without prolapse; but ultimately the false supports will lose their powers of resistance and will succumb before superior forces. There can be no infraction of Nature's laws without a compensating penalty. No two beings are formed exactly alike, and there is no single individual whose measurements are at all times the same. With these ever changing proportions, there must be some section of the organism that wanes in power sooner than the rest.

The muscles with which we are principally concerned in this affection are the sphincters of the anus and vagina, the pubic bands of the levator ani, and the transversus perinei.

The rejoining of the separated parts of the perineal muscles, or the substitution of muscular bands from nearby structures, to take the place of those destroyed, is the *modus operandi* favored by most gynecologists of today, and marks the greatest advance in corrective surgery of this part of the female organism since the first perineum was sutured, almost one thousand years ago; but while fundamentally correct, there are a number of important features lacking, which are necessary in order to achieve a perfect result.

In the secondary operation for the repair of the lacerated perineum, it has long been the custom to separate from its underlying tissues a large portion of the vaginal mucous membrane and reflect it upward and backward. Up to the present there has been no change in this regard.

I believe it to be a mistake in technic, to raise these flaps of mucous membrane and fascia from the centre of the wound; as by so doing, the tear is deepened, the vagina is shortened, and the trauma is increased. The circulation already established is interfered with, the amount of blood and serum naturally thrown into the wound is multiplied, edema and sloughing are encouraged, infection is invited, and healing is retarded. But most of all it is unnecessary, and therefore bad surgery.

The operation described below is submitted to the profession for consideration, with confidence that it will prove to be a satisfactory improvement upon

\*Read at the May, 1915 meeting of the Harlem Medical Association.

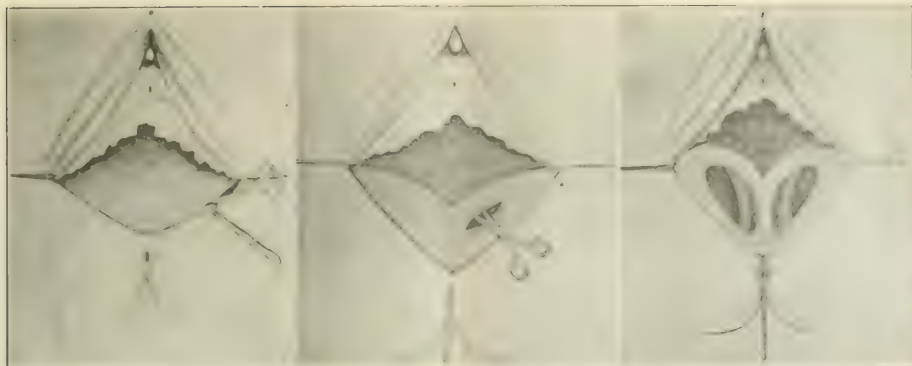


FIG. 1.—Making the first incision along the crescentic border formed by separating the labia at the lower angle.

FIG. 2.—Opening into sides of exposed surface, to find the bands of the levator ani. (Note double triangle, with common base, forming a central ridge.)

FIG. 3.—Bands of levator ani exposed.

previous methods. The steps of the operation are as follows:

1. Either with tenacula or sutures, catch up the tissues at the entrance of the vagina, just below the lowest caruncle on either side, and separate the labia, making an incision along the crescentic border created between these points. Separate slightly the edge of the mucous membrane from its underlying fascia. Then make an incision into the fascia, following the same line as the first one, and raise the fascia slightly from its bed.

2. With artery clamp or suture, draw down the central point of the lower cut edge of the wound, which makes a central ridge (Fig. 2), corresponding to the deepest part of the original tear. (In most cases, after healing of the wound, the contraction of the muscles will cause the deepest part of the original tear to appear in the centre, even though the laceration was lateral.) With blunt scissors or finger, make an opening on either side into the exposed connective tissue, leaving the centre intact,

and the strands of the levator muscle can easily be brought into view.

3. Catch up the strands of the levator muscle on either side, bringing them out of the wound and together in front of the central ridge, with three or four chromic catgut sutures.

4. Close your triangles (Fig. 2) like a book, by bringing the original guiding sutures together. Suture first the vaginal side of the wound, comprising mucous membrane and fascia, from within outward, with a continuous suture. Before completing the operation, I insert two or three buried sutures into the connective tissue, bringing the exposed surfaces into closer contact. (This step is not illustrated.)

5. Having tightened the vaginal stitches and buried sutures, there now remains merely a straight line of fascia and skin, extending downward from the lowermost point of the vagina to the bottom of the tear, to be sutured in separate layers, with such material as the operator may select.

In the operation thus completed, there will be no

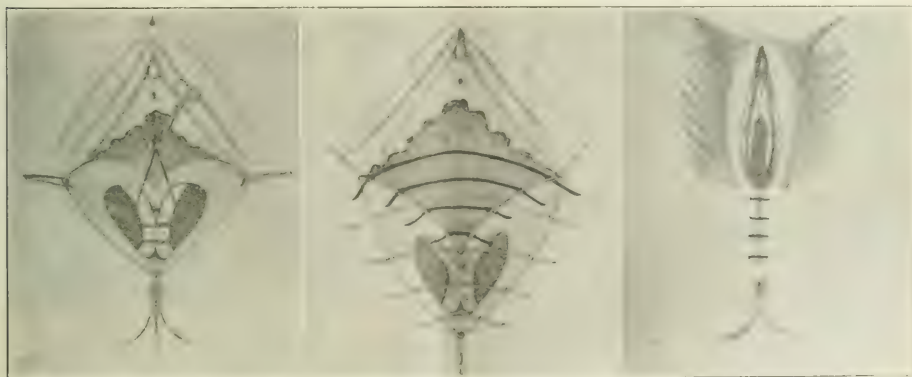


FIG. 4.—Muscles brought out and anchored with sutures over the central ridge.

FIG. 5.—Sutures inserted (diagrammatic). Upper row, vaginal; lower row, skin and fascia. The sutures appear to be interrupted, but are meant to be continuous. (Note the flap raised.)

FIG. 6.—Sutures inserted together and sutures tied; operation completed.

peeling of vaginal mucous membrane, and no redundant tissue at the entrance of the vagina. As there is very little separation, there is hardly any destruction of bloodvessels, and consequently a minimum amount of bleeding; in the absence of



FIG. 1. Full size of stopcock. The larger ring and the smaller ring are shown in the diagram, showing the position of the stopcock handle, due to raising the flap.

oozing, there is no necessity for drainage; besides, primary union is facilitated, and recovery with a good functioning and cosmetically perfect perineum is assured.

130 WEST FIFTH STREET.

## A TWO WAY STOPCOCK FOR INTRAVENOUS AND INTRASPINAL INJECTIONS AND AS AN ASPIRATING SYRINGE.

By JOSEPH ROBY, M. D.,  
Rochester, N. Y.

The stopcock is a small cock ground at one end to fit a twenty c. c. Luer glass syringe and at the other to fit the needles of this same syringe. The little side arm to which a piece of rubber tubing is usually attached is ground so as to fit into an upright small stand pipe of twenty c. c. capacity, and also for measuring the pressure of spinal fluid, to fit a graduated piece of glass tubing. The butt of the spinal needle is also ground to be of the same calibre as the ordinary slip Luer needles. For safety's sake, a small rubber ring with a small rubber elastic band attached to it is slipped over the barrel of the syringe and the elastic band is stretched to fit over the upright of the two way cock so as to make a constant pull and hold the cock firmly against the syringe.

1. *For intravenous injection.* The syringe is filled with the injecting fluid (salvarsan, salt solution, sugar solution, etc.) and then inserted into the vein with the handle of the stopcock horizontal. When the vein has been pierced, blood appears in the syringe and is the sign for the immediate removal of the tourniquet and the injection of the fluid. This first twenty c. c. is injected at any desired rate. The stand pipe is then fitted over the upright of the stopcock and with the disengaged hand filled with the fluid to be injected. The handle of the stopcock is put into the vertical position and the piston of the syringe drawn back, sucking the fluid with it to the twenty c. c.

mark. The operation is then repeated until the desired amount is injected. The disadvantage of the apparatus is that one is liable to pull out of the vein when the syringe is full unless the hand is steady. The trick is easily acquired. It presents possibly these advantages.

a. A very small needle may be used which is an advantage for children and sometimes for adults.

b. The apparatus requires little room.

c. There is no rubber tubing. One is always doubtful about what may be going on inside of a piece of rubber tubing, especially with a drug like salvarsan.

2. *For intraspinal injection.* The two way stopcock is fitted into a piece of rubber tubing three quarters of an inch long, this in turn into a piece of glass tubing, and this into a No. 9 French catheter (small, so as not to waste the serum); this in turn into another piece of glass tubing, then a piece of rubber tubing to fit over the barrel of the syringe or a test tube drawn out at the bottom and cut off. The whole apparatus is then filled with the serum to be injected, the air is expelled, and the cock shut off at the half way mark. The syringe or test tube is then either held by an assistant or, if no assistant is present, it may be placed in a jacketed receiver working up and down on a burette stand. This jacketed receiver is a hollow metal cylinder two inches in diameter and five inches high, surrounding the syringe almost completely and having an opening on one side to receive the warm water and hold the thermometer as well as a tube running up and down through it for heating purposes. Into this tube may be fitted a little alcohol lamp, made from a five cent oil can, to the top of which is soldered a double spring wire; upward pressure on the oil can holds it in position. The cylinder is then filled with warm water and the alcohol lamp lighted or blown out as is necessary. This little apparatus enables us to do a spinal puncture and inject serum without an assistant. The spinal needle is inserted, and when the spinal fluid flows the stopcock is gently slipped into the needle with the handle of the cock upward and the vertical upright downward. The spinal fluid will then still flow through the cock, showing that the eye of the needle is still in the spinal canal. After enough fluid has been withdrawn the stopcock

is turned horizontally and the serum flows in. By changing the position of the stopcock to vertical the cerebrospinal fluid mixed with the serum comes out instantly. If we wish to get the pressure first, the stopcock with the graduated glass tubing over its vertical arm may be inserted into the spinal needle.

3. *As an aspirating syringe.* The stopcock with a larger needle attached is fitted to the twenty c. c. syringe as for intravenous injection. The needle is plunged into the chest wall with the stopcock handle horizontal and twenty c. c. of fluid is withdrawn.



FIG. 2. Showing full size of stopcock.



The handle is then directed downward, the piston pushed in, discharging the fluid into any convenient basin, and the operation repeated as often as may be necessary until all the fluid is withdrawn. It may be well to have some cold boiled water ready so that the syringe may be rinsed out, as the repeated

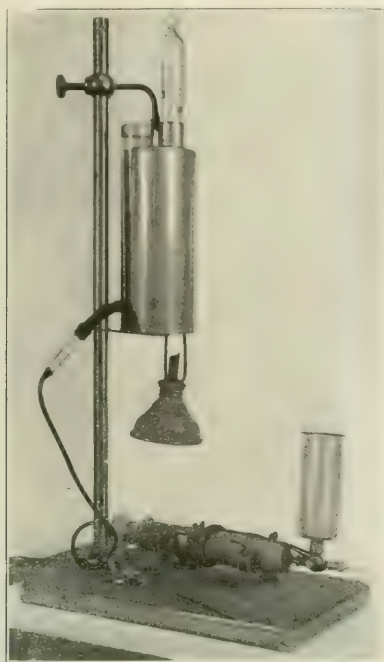


FIG. 2.—Showing stopcock in position.

drawing and expelling of serum is apt to bind a glass syringe.

4. *Citrate of sodium method of blood transfusion.* When this method of transfusion is used either two or three large or a number of smaller syringes are employed, each syringe being filled with the requisite amount of citrate of sodium solution. In drawing the blood as one substitutes an empty for a filled syringe, the stopcock is shut off and scarcely a drop of blood is lost. In injecting the blood the stopcock is shut off as the full syringes are substituted for the empty ones.

234 CULVER ROAD.

## RECENT PROGRESS IN ETHER ADMINISTRATION.\*

By W. O. WEISKOTTEN, M. D.,  
Utica, N. Y.

Since the discovery of ether by Valerius Cordus over three hundred years ago, through the long history of experiments by numerous investigators from the time Dr. C. W. Long etherized his first series of patients in 1842, up to the present time, it has

been the aim of those devoted to this branch of scientific research ultimately to produce a method of ether administration which would possess all the advantages of an ideal anesthesia and at the same time be as free as possible from the objectionable features which any narcotizing agent must necessarily possess.

The administration of ether by inhalation was the first method employed, and today is used more generally than the newer methods which have but recently been brought to a stage of practical value. It was early recognized that the fumes of ethyl oxide produced varying degrees of narcosis when breathed into the lungs, and until about fifteen years ago the method in common use was inhalation by means of the old closed cone into which the ether was poured from the can. The cone, usually made from a towel and a folded newspaper, was applied snugly over the patient's face and held there until unconsciousness relieved him of his struggle for air. When this method was in vogue, it was expected that the patient would pass through the various stages of ether anesthesia described in the older textbooks, and the period of excitement was usually anticipated by the presence of several stout orderlies or nurses whose duty it was forcibly to prevent the patient from getting up from the table and wreaking vengeance on his tormentors. An ether anesthesia was frequently more dreaded than the operation, and coughing, fighting for air, and vomiting before the patient was fully "under" were considered part of the stage through which the patient was expected to pass during the long fifteen to twenty-five minute induction period, before emerging into the stage of complete narcosis, with the stertorous breathing and bubbling mucus. The old air tight closed cone with the extremely low temperature of the inspired vapor had many disadvantages, and the expense alone of administering hundreds of such anesthetics a year in a hospital was no small item, when we consider the cost of using one or two half pound cans of ether for an ordinary abdominal section. The patient was saturated with ether poured into this closed cone throughout the entire period of administration, and when he finally awakened, four or five hours later, the "coming to" was accompanied by nausea and vomiting and the exhalation of the obnoxious ether fumes for forty-eight hours or longer. But these most uncomfortable experiences for the patient were thought little of by the surgeon, because ether by this method was better than none at all and methods of administration had not reached the present degree of perfection.

Several years ago, there began to appear numerous new mechanical devices for the administration of ether and each inventor seemed to be trying to produce an inhaler which would rob the anesthetic of some of its unpleasant features and reduce the amount of anesthetic shock to the patient. These various inhalers consisted mainly of devices which would allow the administrator to regulate the percentage of the air and ether vapor inhaled and many of them were fitted with rubber bags into which the patient breathed and rebreathed, the idea being to cut down the amount of ether, and to allow the expired air partly to warm the vapor. Such admirable inhalers as the original Clover portable regulating

\*Read before the Utica Medical Library Association, March 1, 1911.

The Allis inhaler and the Bennett inhaler were designed to allow proper regulation of the air-ether percentage, and when fitted with the bag, allowed a certain amount of warming which rendered the inspired vapor less irritating to the respiratory passages. These inhalers and their modifications are used by

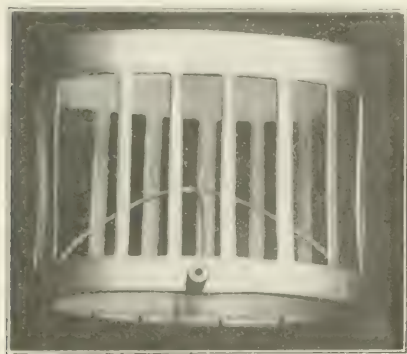


FIG. 1. — Metal frame of Allis inhaler for drop or insufflation method of ether administration; metal frame without cover.

many anesthetists at the present time and are probably the best of the so called closed inhalers.

About fifteen years ago, the semiopen and open methods of ether inhalation came into popularity, and numerous inhalers which would permit the breathing of a larger amount of air appeared as rapidly as various anesthetists, here and abroad, could put their ideas into mechanical form. The use of these open and semiopen inhalers necessitated the use of the drop method instead of the "douche" method and closed cone of the earlier days. The many advantages of the former were quickly recognized and adopted, and today the drop method with an open inhaler is more generally used than any other ether inhalation method.

One of the best of the older semiopen inhalers was the one known as the Allis ether inhaler and from this original have sprung many modifications. In 1905, when the writer was serving his internship and giving many anesthetics, the drop method was introduced in our hospital after one of the staff members returned from a visit to the Mayo clinic, where the drop method had been in use for some time. The old paper cone and the douche method which had been in use for years, we then discarded and the open drop method was adopted. We first tried to use the ordinary Esmarch chloroform inhaler, but experienced difficulty in keeping the patient under on account of the inability properly to regulate the percentage of air and ether. Many times we were forced to return to the old closed cone to keep reflexes sufficiently abolished to allow the operator to work. Necessity then forced the designing of an inhaler which would allow the anesthetizing of the patient in a satisfactory manner still by the drop method. We had used the old Allis inhaler, but found that the chief disadvantage was the time consumed in removing and rethreading the bandage through the metal frame and cleansing the inhaler when several anesthetics were to be given in suc-

cession. Another disadvantage was the rubber sleeve which allowed condensed vapors to run down on the patient's face, and if the inhaler was fitted with a metal cover instead of rubber, this metal became icy cold from the rapid evaporation of the ether. The disadvantages of the Allis inhaler were entirely obviated by the construction of the Weiskotten semiopen ether inhaler here described.

A metal frame, similar in size and shape to the inside frame of an Allis inhaler is utilized and two cross pieces made from bicycle spokes are soldered in the bottom as in an Esmarch mask. An oval wire ring holds eight layers of gauze over the cross pieces. The frame is then enclosed in a cover of tent canvas, shaped to fit the face and secured with tapes and buckles. The ether is dropped on the gauze from above in the usual manner. All inspired and expired air must pass through the gauze on which the ether is evaporated, and an extremely easy, quick induction is accomplished with very little ether. With this inhaler the patient goes under very comfortably, coughing, smothering, and spasm of larynx are absent, and there is practically no period of excitement. From two to three ounces of ether an hour is all that is required, and in many cases this amount can be cut down. The cover being made of absorptive material, prevents the running down of liquid ether or condensed fumes, and it does not become ice cold like the all metal inhalers. The whole inhaler can be taken apart, cleansed, sterilized, fresh gauze and a clean sterile cover applied in less time than it would take to dismantle some of the older and more complicated devices. I have since added to this inhaler a perforated metal oval

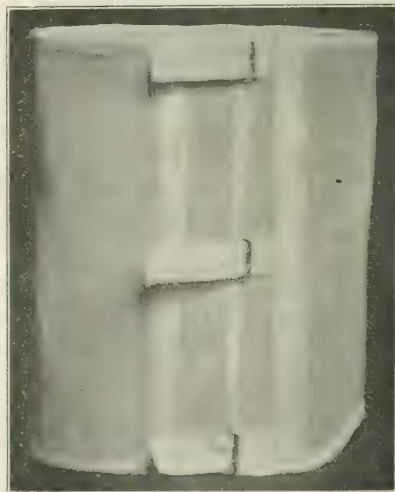


FIG. 2. — Ether inhaler showing washable cover of tent canvas.

shaped tube, fitted within the bottom of the frame, which allows me to use the ether insufflation method with this same inhaler.

The drop method of ether administration with a suitable inhaler which will allow plenty of air and at the same time prevent great waste of ether by ra-

diation and diffusion into the operating room, is the best method in common use today, with the exception of the newer methods which go a step further and render the ether vapor more acceptable and less irritating by raising the temperature by means of a suitable warming device.

B. F. McGrath (1) says in part, "the best anesthetic administered by the most expert anesthetist would be the ideal anesthesia; but such an ideal condition is no more feasible than that every surgical operation be performed by the most skillful surgeon by the best technic. No other method or anesthetic is so soundly supported by time and experience as ether administered by an expert, with due allowance of air to the patient, and compared with other methods, ether by the drop method is at least as immediately safe and is more available, more economical, and more conducive to efficiency in extensive work." It is true that the drop method properly used is nearly ideal compared to the old saturation method with the closed cone of years gone by, but within the last few years still greater improvement has been made by men who are making a special study of anesthesia. In many hospitals and among many anesthetists in private practice, the administration of warmed ether vapor by the insufflation method has entirely supplanted the other inhalation methods.

With the introduction of artificially warmed ether vapor into the realm of anesthesia came numerous more or less complicated devices, some of them placed on the market by enterprising instrument houses who knew from past experience that almost anything new and with shiny nickel plating would appeal to that large number of the profession who fall for anything from oxyline generators to stock in an orange plantation in Labrador. Many of these devices had no practical value, but the Caine warm ether apparatus and the apparatus designed by Dr. J. T. Gwathmey, one of the pioneers in this line of work, are both valuable instruments and admirably serve the purpose for which they are intended.

Since the introduction of warmed vapor anesthesia, numerous articles on this subject have appeared in the medical journals from time to time and the reports of the experiences of the various writers show that like most of the newer procedures in medicine and surgery, warm ether vapor had its share of adverse criticism. Statements have been made that warm ether possessed no great advantage over the older methods of cold anesthesia. In considering these statements, it is well to make allowance for the varying conditions under which these anesthetics were administered and the experience and capability of the anesthetist who makes the report. Warmed vapor anesthesia is a forward step in the direction of truly ideal surgical narcosis and the statement of Dr. R. C. Coburn (2) that "warming anesthetic vapors has well established scientific merit both theoretically and clinically" is an axiom not to be gained.

During the past few months I have used with a great degree of satisfaction the insufflation method of warmed ether anesthesia, the simple apparatus used being my personal modification of the Caine-McDermott. No originality is alleged for the method or means of warming the vapor as the principle involved is an old one.

The ether is placed in the Wolff's bottle which has been alluded to as the "carburetor." The longer of the two tubes is connected to a foot bellows or compressed air supply by means of rubber tubing and conveys the air into the carburetor, spraying the air over the surface of the ether by means of a perforated metal disc. The ether-charged air then passes into the warmer through the afferent tube, the warming device consisting of an air tight metal drum containing about twelve feet of coiled metal tubing around which is packed commercial sodium acetate crystals. The warmer is placed in boiling water for fifteen minutes before use, and the sodium acetate absorbs sufficient heat to keep the apparatus warm for three hours. The ether charged air is sufficiently warmed by passing through the coiled tubing and is delivered into the inhaler at a temperature of about 95° F., or about ten degrees warmer than the ordinary operating room temperature. The open inhaler first used was found unsatisfactory and a metal oval shaped tube with small perforations was placed in the semiopen inhaler above described and this allowed me to combine the drop method with insufflation when necessary.

In using this inhaler and the warmed vapor method, the patient may be given preliminary hypodermic medication if there are no contraindications, depending, of course, on the physical condition of the patient and the character and extent of the operation to be performed. Unless there is some special reason for omitting the preliminary medication, I prefer to have administered one half hour before operation a hypodermic injection of scopolamine grain 1/100, morphine grain one sixth, and atropine grain 1/150. This is the usual adult dose, and variations in dose may be made to suit individual cases. If this is used, the patient comes to the operating room more quiet and requires a much smaller amount of ether. Even if other medication is omitted, one full dose of atropine should be given some time before operation, to control secretions and stimulate respiration.

When this method of ether administration is used, the semiopen inhaler covered with the canvas sleeve is connected to the warmer, applied closely to the patient's face, and a few drops of the essence of bitter orange are dropped on the gauze to disguise the ether. The vapor is then gently blown into the inhaler until the patient becomes accustomed to the sensations produced. I prefer also to use a few drops of chloroform while the patient is going through this first stage, as narcosis is hastened and the induction period is rendered less unpleasant. As consciousness gradually diminishes, a larger volume of air is turned into the apparatus and the patient is quickly and quietly brought to a stage of complete narcosis in from three to five minutes. The warm ether vapor is then continually insufflated throughout the entire operation, the strength of the ether being regulated by the position of the sprayer disc over the liquid ether, and the volume being regulated by the amount of air from the bellows or compressed air tank.

Comparing this method with the drop method and open inhaler, we note the following facts: The temperature of inspired air when ether is dropped on an open inhaler is very low—40° F. by actual test and



probably lower as rapid evaporation takes place. Seig (3) shows that "by the time this vapor reaches the lungs it is warmed to body temperature. If this is the case the heat utilized must come from the patient and the body temperature of the patient must necessarily be lowered." Again, quoting Coburn (2), "cold ether vapor is more irritating than warm, therefore it is a scientific as well as clinically observed fact that cold ether vapor causes more irritation to the upper air passages than warm. The injury to the cells thus produced and the augmented secretion of mucus both increase the liability of post-operative infection, for the patient's resistance at this time is considerably lowered by the anesthetic. Besides, the energy required to warm the cold ether vapor is abstracted directly from the patient's energy. Why, then, should the patient be required to sacrifice any vitality needlessly at such a critical time?" Gwathmey (4) has also shown that anesthetics administered at their normal temperature are more toxic than when administered warm. Official clinical reports from the Johns Hopkins *Bulletin*, cited by Coburn (2), and covering hundreds of cases, show that with the ordinary drop method and open inhaler, the loss of body temperature averaged  $1.02^{\circ}$  F., and when the vapor was artificially warmed the loss was only  $0.20^{\circ}$  F., and in extensive operations involving much exposure the difference in loss of body temperature of the patient was  $1.2^{\circ}$  F. in favor of the warmed vapor.

Actual tests with the apparatus used by me show that the temperature of the vapor as it leaves the warmer is  $110^{\circ}$  F. and from  $95^{\circ}$  to  $98^{\circ}$  F. as it enters the inhaler. Similar tests with an open inhaler upon which ether was dropped and allowed to evaporate showed a temperature of  $40^{\circ}$  F. A difference then of  $50^{\circ}$  F. in the temperature of the inspired vapors certainly must have some marked effect on the patient.

Dr. H. C. Falk, in his article (5), reports the results of 800 warm vapor anesthetics at the French Hospital, New York, and states that the warmed vapor method has entirely replaced the closed and drop methods formerly employed. Doctor Falk further states that warm ether vapor has the following commendable advantages: "It is more agreeable to the patient, especially during the first stage. The smothering sensation and coughing are entirely absent. Respirations are normal and not even stertorous when properly administered. The pulse and color remain good, and there is no cyanosis. The operator can usually begin in from three to five minutes after the anesthetic is started. Snoring and mucous rales are absent, the mouth remains dry, and swabbing and sponging of the throat is unnecessary. Before using warmed vapor anesthesia, ninety-five per cent. of the patients had some postoperative albuminuria and seventy per cent. of these patients showed hyaline casts. With the present method in use, thirty per cent. of the patients showed postoperative albuminuria and only three to four per cent. showed hyaline casts."

Dr. Yandell Henderson, of New Haven, at a meeting of the American Gynecological Society in Boston, last May, stated "that the time was close at hand when in every well regulated and scientific operating room, where ether was used at all, instead

of its being poured as a liquid over the patient's face and into his mouth, there would be a device, and it could be a very simple device, on a stand at the elbow of the anesthetist, or over in the corner, or possibly in the basement, in which ether would be volatilized and from which it would be conducted to the patient's face and mouth as if it were an unusually strong variety of nitrous oxide. That this idea was rapidly gaining recognition and acceptance was evidenced by the insufflation method of Meltzer, the simple and accurate device of Dr. J. M. Flint, and most recently by the anesthesimeter of Connell. It was at once a simpler, safer, and more economical and scientific procedure to administer the gas which they called ether vapor than it was to handle liquid ether" (8).

All these desirable features, together with the absence of postanesthetic nausea and vomiting, the quick reaction after the discontinuance of the vapor, the small amount of anesthetic shock, and the great saving in the cost of ether commend this method as probably the most ideal way of administering ether by inhalation.

When it is necessary to block off the mouth from the upper air passages to avoid aspiration of blood or septic matter, the method of Doctor Crile may be used by connecting rubber nasal tubes to the nasal inhaler or a Y piece. Crile's method consists in passing two rubber tubes into the nasopharynx as far as the level of the epiglottis. The mouth is held open as wide as possible with a suitable mouth gag and the tongue being drawn forward, the pharynx is shut off from the mouth by carefully packing with sterile gauze. Care must be taken to avoid compression of the tubes. Warmed ether vapor is thus insufflated into the larynx and the operator can continue his work unhampered by the old face inhaler. Nasal and pharyngeal insufflation anesthesia is indicated in more or less prolonged operations on the oropharynx. Connell (6) reports over 2,600 cases of endopharyngeal anesthesia with no mortality.

Endotracheal anesthesia, which was rendered possible and practical through the experimental work of Dr. S. J. Meltzer and Dr. John Auer, of the Rockefeller Institute, is of great practical value in certain cases which require operations on the lungs and pleura. With this method special apparatus for carrying the anesthetic vapors directly into the trachea and maintaining proper pulmonary pressure is required and when used by those thoroughly familiar with the technic is probably a safe method of etherization. Elsberg, at Mount Sinai Hospital, reports 1,000 cases, and Peck, at the Roosevelt Hospital, reports 516 cases of endotracheal anesthesia with no mortality (6).

The introduction of ether directly into the blood stream by infusion has been used extensively for the production of general anesthesia, and when the proper technic is followed, is not considered especially dangerous. Abdominal sections, extensive operations about the upper air passages, operations which involve the mouth, pharynx, and larynx, when the inhalation method is contraindicated might suggest intravenous anesthesia. Special apparatus and a thoroughly experienced administrator are essential to this method of etherization.

Rectal etherization by means of warm vapor and

colonic anesthesia by injection into the bowel of ether and oil have been used extensively in late years. The former method, in which vapor is passed directly into the bowel, has been largely replaced by the oil-ether method of Gwathmey, who employs olive oil and ether in strengths varying from fifty to seventy-five per cent., depending on the age and physical condition of the patient. This method is quite simple and comparatively free from danger when properly used; a very simple apparatus, consisting of a glass funnel and two or three small rubber catheters, being all that is required in the way of apparatus. After proper preliminary preparation, such as thorough bowel irrigation and the injection of the scopolamine, morphine, atropine combination hypodermically, eight ounces of the oil-ether mixture is slowly injected into the bowel through the glass funnel and small rectal tube. Gwathmey also uses a preliminary injection into the bowel of five grains of chloretone, two drams of ether, in equal parts of olive oil, one half hour before general anesthesia is to be induced. Signs of too deep anesthesia are indication for the removal of two or three ounces of the ether mixture by means of the small catheter. If breathing is easy and regular, and no untoward symptoms are manifested, no other manipulation is needed and surgical narcosis is completed.

At the end of the operation the bowel is washed out with cold water soapsuds introduced through one tube and withdrawn through the other and four ounces of olive oil are finally introduced into the colon and the tubes are withdrawn. This method is especially indicated in bronchoscopy and operations on the head and trunk, also in cases of Graves's disease and similar conditions in which fear of an anesthetic might contraindicate other methods (7).

Relative to this method of colonic etherization, Gwathmey states, "if a local anesthetic is used and ether is administered by the oil-ether method, every principle of the anociassociation as enunciated by Crile will be fulfilled and the patient awakens gradually without pain, nausea, or vomiting, the analgesia continuing for some time after consciousness is restored" (7). The writer believes this statement to be rather broad and takes the position that colonic etherization has its place, but unless very specially indicated, cannot hope to supplant the improved warm ether insufflation method.

To sum up then, we may draw the following conclusions regarding these various methods of etherization:

Ether inhalation should be used unless contraindicated or unless the administrator has had sufficient experience with the other methods of administration.

The open drop method is in common use and is preferable to the closed douche method.

Artificially warmed vapor with a suitable inhaler is preferable to cold vapor for all inhalation anesthetics.

Nasal, pharyngeal, or endotracheal insufflation of warmed ether vapor possesses great advantages and should be used when specially indicated.

Rectal etherization when indicated is comparatively simple and a safe method when proper technic is employed.

And for the benefit of the patient, I would add that the golden rule in anesthesia should never be forgotten: "Etherize others as you yourself would be etherized."

#### REFERENCES.

1. McGRATH: *Journal of M. J. C.*, 1913, 10, 100.
2. COHEN: *Medical Record*, March 1, 1913, 5, 111.
3. SELL: *Philadelphia Medical Journal*, Sept. 1913, 1.
4. GWATHMEY: *N. Y. State Journal of Medicine*, Feb. 1908, 1.
5. IDEM: *Journal of M. J. C.*, 1913, 10, 100.
6. FALK: *Medical Record*, Apr. 5, 1914, 5.
7. GWATHMEY: *N. Y. State Medical Journal*, Nov. 7, 1913, 8.
8. IDEM: *Philadelphia Medical Journal*, Dec. 15, 1913, 9.
9. *Proceedings of Societies, British M. J.*, 1914.

122 MAYRO BUILDING.

#### GALLBLADDER DISEASE.\*

BY MICHAEL G. WOHL, M. D.,

Omaha, Neb.,

Pathologist, Nicholas Senn Hospital; Formerly Professor of Pathology, Temple University, Philadelphia.

Within the last few years, surgeons have been inclined to look upon the gallbladder as a "useless reservoir of bile," to use Doctor Hutchinson's words, hence the surgeon's fancy of late for cholecystectomies.

Is the gallbladder really of no physiological moment for the human being? It is well known that the gallbladder is absent in some mammals, such as the horse; so too some mice and rats lack this organ. The gallbladder is also known to be congenitally absent in some human beings. Not infrequently we get in our laboratory a gallbladder removed by the surgeon, which is so markedly altered—the walls being thickened and contracted, the lumen filled with stones—that it would seem rather doubtful that such an organ is of any physiological value to the patient. Possibly such considerations led Langenbeck, in 1882, to introduce cholecystectomy into human surgery, and only recently men like Körte and Kehr went so far as to declare that the gallbladder is even harmful to us. Are such radical views justified?

Let us review briefly the physiology of the gallbladder. Schröder and others believe that the gallbladder produces mucus only. Luciani and his followers consider the gallbladder a regulator of the flow of bile. According to the latter, the thick bile of the gallbladder being mixed with the thin bile of the liver causes the slowness of the bile current. On the other hand, after ligation of the gallbladder, the flow of bile is increased. It acts as a regulator not only through its bile, but also through the associated innervation of the musculature of the gallbladder and that of the ampulla Vaterii. Recently Rost has proved to full satisfaction that in a large group of cholectomized dogs the papillæ Vaterii remained open, although in a smaller group the mechanism of closure of the papilla of Vater was re-established.

Why this should occur in one group of animals and not in all, is still a matter of speculation, yet it is probable that the same takes place in human surgery. The secretion of bile itself was diminished in the cholectomized dogs, although digestion apparently did not suffer to any great extent.

That the gallbladder secretes more than mucus can be readily appreciated from the work of Ham-

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marsten, who showed that bile of the gallbladder is eight times as rich in solids as the bile from the liver. That the gallbladder is of great importance to the digestive apparatus was clearly pointed out by McCarthy: "Embryologically, the gallbladder, stomach, duodenum, liver, and pancreas are closely related and the functional cells of these organs having a common ancestry, retain their original activity and sensibility."

We owe to Delinsky the demonstration that presecretin in the mucous membrane of the duodenum, when acted upon by hydrochloric acid, is changed into secretin. This later enters the blood stream, stimulating the liver and pancreas. Hydrochloric acid, therefore, is indirectly an important factor in the secretion of bile. Now, according to Hohlweg, seventy per cent. of patients in whom the gallbladder was removed show a reduction or even a total absence of hydrochloric acid. This fact possibly will explain the gastric symptoms, e. g., vomiting, belching, constipation, which are seen in number of postcholecystectomy cases, which as a rule are attributed to postoperative adhesions and not to the lack of hydrochloric acid.

It is interesting to note that Nature compensates for the loss of the gallbladder by a dilatation of the ducts. I recall having posted a case about four weeks after a cholecystectomy, in which the common bile duct was about twice the normal size.

Another case that will bear out the foregoing statement is that posted by Doctor McConnell and myself. On account of marked jaundice and presence of an indefinite mass in the region of the pancreas and gallbladder, a tentative diagnosis of malignancy was made. The autopsy revealed a mass of dense connective tissue adhesions surrounding and binding the gallbladder. The common duct as well as the hepatic ducts were dilated.

Of course, a large number of post mortem findings in cholectomized patients, as well as the surgeon's observations at the operating table, will be necessary to prove conclusively that a compensatory dilatation of the ducts ensues in cholecystectomies.

Haberer found that upon leaving the cystic duct behind, the cholectomized animals develop a newly functioning gallbladder. Höcker even reported a case of gallstone formation in such a newly formed gallbladder. The rationality of leaving the cystic duct behind is therefore apparent.

*Etiology.* Though many phases of the etiology of gallbladder disease are known, nothing definite has been established. However, in view of the work done, it is fair to assume that bacteria play an important role. Bachmeister and Exner have pretty well established the fact that the typhoid bacillus is of importance in the causation of the affection. The bile has no germicidal effect upon typhoid bacilli, as they are known to remain within the gallbladder for forty years. But, because the bile offers a good soil for the typhoid bacillus, it does not mean that it constitutes the only factor in gallbladder disease. I am rather inclined to think that too much stress has been laid lately upon this germ, with the result that other sources of the affection have been disastrously overlooked. For, if we admit that the typhoid bacillus plays such an important role, then the reverse should be true—that a great part of humanity

have suffered from typhoid fever, which must have run an asymptomatic course. Likewise, gallbladder disease would have been more common in districts where typhoid prevails endemically, which, however, is not the case.

Streptococci, I believe, are far more frequently responsible for the affection than is generally known. If in one instance they have a predilection for the joints, in another for the appendix—why not in other cases for the gallbladder—especially since streptococci have been isolated from the walls of inflamed gallbladders? Clinically this statement is well borne out. Cases of myocarditis, arthritis, etc., have improved remarkably after cholecystectomy. The primary source of infection, therefore, would have to be carefully looked for, especially when we wish to treat such patients by vaccines, which naturally should be made up from the virus responsible for the affection.

The avenue by which the germs get to the gallbladder is still a matter of speculation. Adami emphasized that germs from the portal circulation may escape destruction in the liver and get to the gallbladder. They possibly travel likewise by the lymphatics of the intestines or directly ascend from the gastrointestinal tract (appendix and duodenum especially) through the common duct. In sectioning a large number of gallbladders and appendices removed by Dr. W. W. Babcock, we found that over fifty per cent. of appendices from patients suffering from gallbladder disease showed inflammatory changes. That duodenal ulcers are frequently found in association with gallbladder disease is also well known.

Among other germs concerned in the etiology of gallbladder affections are the paratyphoid bacillus and the colon bacillus. The experience of pediatricists shows that pneumococci are likewise responsible for a great percentage of cases of cholecystitis in children.

*Pathology.* It seems convenient to divide gallbladder disease into 1. Catarrhal; 2. cholelithiasis; 3. empyema and gangrene; 4. complications; duct obstruction and pancreatitis.

The acute catarrhal form is usually associated with stones; McCarthy found this condition in sixty-nine per cent. of his cases. The gallbladder has more or less a normal appearance, yet it may be slightly thickened on palpation, as well as the lymphatics near the cystic and common bile ducts. The bile in cholecystitis catarrhalis is darker in color, frequently viscid, so that the diagnosis may be made from the appearance of the bile.

Histologically, we find in this form of cholecystitis a round cell infiltration extending into the submucous and sometimes into the mucous coat. A very interesting fact we observed was that the so called Luschka glands (which normally are confined to the mucosa or submucosa) are increased in number and almost invariably penetrate the muscle coat, reaching the serosa.

This probably explains the higher viscosity of the bile. If this condition becomes chronic, we get the so called strawberry gallbladder, described by McCarthy. The mucosa is dotted with minute yellow points, similar to those seen in a ripe strawberry. This characteristic appearance is due to the erosion



of the apices of the villi. The fine yellow spots have been mistaken for bile sand.

The strawberry gallbladder is found with or without gallstones. This form may be associated with proliferation of connective tissue around the villi and submucosa, and hence the surface of the gallbladder is contracted and edges of scar tissue may become prominent.

Papillomatous cholecystitis—a type described by McCarthy—was observed by us in one case. We found in this specimen the papillæ showing an irregular growth, about to penetrate the basement membrane. Whether this condition would have become malignant if allowed to go on, cannot be stated with certainty, of course. It is of great interest to find that this form is associated with gallstones.

Another form of chronic cholecystitis observed by us in three specimens, is the thin distended gallbladder with smooth, flattened out mucous membrane; the contents of the gallbladder are clear and free from bile pigment. We found in all three specimens impacted stones at the neck of the gallbladder.

Another type of cholecystitis not yet mentioned is the one where the walls are quite thick, the lumen being, however, greatly distended and the mucous membrane replaced by connective tissue. This condition is associated with multiple stones of which one or more are imbedded in the wall of the gallbladder.

*Cholelithiasis.* Gallstones should be looked upon as an advanced form of gallbladder disease; if this fact is impressed upon the practitioner's mind, the importance of making an early diagnosis will be evident. Gallstones occur frequently; one meets them in one out of every ten autopsies. They are four times more frequent in females than in males.

The inflammatory origin of gallstones was taught long ago by Naunyn. Recently, however, Aschoff and Bachmeister tried to prove that the single cholesterol stones are not inflammatory, but result from precipitation of cholesterol due to stagnant bile. The truth must be between the two extremes.

Stasis of bile is caused by the inflammatory changes of the gallbladder. The bile salts being destroyed as result of infection, the cholesterol from the bile will precipitate, as the bile cannot hold cholesterol without bile salts. Gallstones vary in shape, size, color, and number. The pure cholesterol stones are usually single, white, not faceted. The size may vary from that of a pea to that of a hen's egg. The stones of calcium and pigment are rare; are usually multiple; they may be flat or mulberry like; they are brown or black in color.

The mixed stones, consisting of cholesterol, calcium, and bile pigment are of light yellow or brown color; they are faceted, the size being that of a pea. The nucleus of these stones is rather soft, while their covering is of much harder consistence.

Gallstones usually form in the gallbladder. They may or may not enter the bile ducts. They still further complicate the pathology of gallbladder, and suppurative conditions or gangrene may result. Perforation may follow and peritonitis develop.

Disease of the gallbladder is usually associated with the formation of adhesions between the bladder, colon, duodenum, and stomach. The adhesions

prevent the gallbladder from emptying itself and thus prolong the process of inflammation in the bladder. Stenosis of the pylorus and duodenum may follow. A complication of great importance is inflammatory changes in the pancreas.

Finally, of great significance is the probability of malignancy of the gallbladder following inflammatory changes. Malignancy so frequently follows chronic inflammation, e. g., carcinoma of the stomach following chronic ulcer, that the same danger must be borne in mind when considering gallbladder disease.

NICHOLAS STANN HOSPITAL

## ERYTHREMIA.

### *Report of a Case,*

BY RALPH R. MELLON, M. S. C., M. D.

Ann Arbor, Michigan.

Assistant Professor of Physical Diagnosis and Director of the Laboratory of Clinical Pathology, University Homeopathic Hospital.

The interesting condition, erythremia, was first reported by Vaquez (1) in 1892. It has been variously styled Osler's disease, erythremia, splenomegalic polycythemia, myelopathic polycythemia, etc. Until the year 1903, Osler (2) was able to collect only five cases from the literature. These he reports with four of his own, making a total of nine. That the condition is by no means as rare as is evidenced by this report, a review of the more recent literature bears testimony. Anders (3), in 1907, reports fifty-three cases, including three of his own. Since that time, Waskasugi (4), Hamilton and Morse (5), Kuttner (6), Moewes (7), Watson, Chauffard and Troisier (8) report one case each; Királyfi (9) and Löwy (10) report two cases; Wanyss and Monroe (11) and White (12), three cases each. Hedenius (13) reviews the literature and reports nineteen cases of his own. Friedmann (14) reports an interesting series of twenty-five cases with symptoms of duodenal ulcer, chronic pancreatitis, and disturbance of the internal secretions. He concludes that it is a frequent phenomenon in cases of nonbleeding ulcers, which he proves by operation or by answering the clinical symptom complex erected by Moynihan and others. If we consider the polycythemia secondary in these cases, they cannot be classed with true erythremia. Excluding these cases, a review of the literature, including the case which it is the object of this paper to report, gives a total of ninety-six.

Our knowledge of the various features of the condition has not been greatly amplified since Parkes Weber (15) gave his splendid review in 1908. I have seen nothing that describes in such comprehensive detail the observations made on the cases and the logical way in which the phenomena are interpreted. It seems to be the consensus that this condition should be called erythremia. The polycythemia is to be regarded as primary in the absence of any known cause. Whenever we have an obvious cause to which the increased number of red cells is secondary, we should designate the fact by the term erythrocytosis. This seems logical as it follows the order of nomenclature adopted for increased whites and decreased reds.

*Etiology.* Among the causes of erythrocytosis, Weber (*loc. cit.*) has found the following: *a*, chronic cardiac and pulmonary disease; *b*, great altitudes; *c*, blood stasis not of cardiac or pulmonary origin—e. g., thrombotic changes in the spleen and other organs; cirrhosis or great enlargement of the liver, and disease of the bloodvessels in the limbs; *d*, toxic conditions—e. g., carbon monoxide poisoning, acute phosphorus poisoning, or excessive ingestion of some of the coal tar derivatives, acetanilid, antipyrin, and phenacetin; *e*, the injection of serum from an animal in which an erythroblastic reaction is in progress, or the injection of minute doses of hemolytic serum; *f*, chronic infectious diseases, tuberculosis, syphilis, and malaria; *g*, certain local processes affecting the nutrition of the bone marrow, such as osteitis deformans, intermittent claudication, or beginning gangrene from arterial obstruction in one of the lower extremities.

Weber considers the following theories regarding the etiology of the disease.

1. It is due to a toxemia having its origin in the alimentary tract, spleen, or lungs, etc.

2. It is the result of a compensatory reaction toward a disturbance in the gas-exchanging function of the blood, due to toxins of alimentary or metabolic origin.

3. The increased viscosity of the blood is the primary condition. This by favoring secondary blood stasis, produces a congestion in the bloodvessels of the lungs and bronchi, with resulting chronic catarrhal changes, cyanosis, and extra work on the right heart. This further increases the polycythemia, and so there is established a vicious circle.

4. Other theories for which there is little evidence depend on blood stasis, increased durability of the red cells, diminished oxygen carrying power of the hemoglobin, possible toxic and infectious causes, such as disorders of the intestinal tract, bronchiectasis as in pulmonary hypertrophic osteoarthropathy, syphilis, malaria, fracture of the long bones, splenic tuberculosis, or a continuance of or reversion to the fetal type of bone marrow in the long bones.

*Pathology.* Wakasugi (*loc. cit.*), Stern (17), and others who have had an opportunity to examine these cases post mortem, believe that the great increase in red cells is due directly to a hyperplasia of the bone marrow. It is significant also that the yellow marrow of the long bones is changed to red, which would of course greatly increase the amount of erythrocyte-producing tissue.

The enlargement of the spleen is usually a prominent feature. There is moderate hyperplasia of the pulp and in some cases, many anemic infarcts. The cardiac hypertrophy is a varying factor. In some cases it is negative, but in others it equals the enlargement in Bright's disease. Considerable stress has been laid by some writers on the blood picture as strong evidence of a compensatory bone marrow disturbance. It appears to me that the contributory evidence furnished by this factor is practically negative notwithstanding an occasional high leucocytosis with a few nucleated reds.

Other conditions in which a severe drain on the bone marrow is present show many nucleated reds and myelocytes. There are in addition, many eosinophiles as well as some varieties of large

mononuclears. Such a picture is certainly not to be seen in the typical case of erythremia. The observations of von Jaksch (16) are interesting. He has studied a case of polycythemia under treatment with the x ray with a view to ascertaining the relations of the nitrogen content of the whole blood and the red cells. He found that the whole blood was richer in nitrogen than normal, and that the nitrogen content varied directly with the red cells. The reds were poorer in nitrogen than normal, and this poverty was inversely proportional to the number of red cells.

The observation of a hyperæmia rubra present in polycythemia is a counterpart of the relation of red cells in pernicious anemia, when a decrease in cells is accompanied by a decrease in the nitrogen content of the whole blood, which is a normal relation. This observation, taken in connection with the fact that no normoblasts were found, leads us to believe that we are not dealing with an increased formation of young cells. Regenerative forms are absent. Von Jaksch also says that apparently we are dealing with reds of lessened physiological worth, perhaps with old cells, therefore cells which have escaped physiological destruction. In this circumstance, the nature of Osler's disease may find its explanation.

*Treatment.* Among the many agents which have been used for the relief of these cases, few have enjoyed even transient success. Benzol has been used by Királyfi in two cases with apparently good results. Red cells were decreased twenty per cent., and hemoglobin fifteen per cent. After an interval of one month there was a slight rise in red cells and hemoglobin.

McLester (18) gave benzol in one case for six months, and the reds gradually declined from 8,300,000 to 4,300,000. His dose was three grams a day. One case with a complicating nephritis and pulmonary tuberculosis grew much worse on the administration of 1.5 gram a day for a period of ten days. The history of the case which I have had under observation follows:

CASE. A., aged fifty years, occupation, sailor on the Great Lakes. Excepting the diseases of childhood and an attack of gonorrhea at twenty-five years, his health had always been of the best. Married and had a healthy daughter eighteen years of age. For the past two years, he had had periodical attacks of a throbbing headache, most severe in the occipital region. They had been associated with bloating of the stomach and abdomen, which symptom had no relation to the time of eating. When the gas disappeared, the headache was relieved. His eyes had recently pained him, and the intense injection of the conjunctiva was a striking feature. A fundus examination was negative, except for the greatly distorted veins which were unusually dark in color.

Cyanosis was general, but more intense in the extremities and face. The lips and ear margins were very dark blue, and the veins and capillaries of the alae nasi showed intense engorgement. No dyspnea. Very slight relative diminution in the respiratory excursion of the left side. In the erect position, by oblique illumination, the apex beat was slightly visible in the eighth left interspace anterior axillary line; it was fully three inches to the left of the nipple line. Palpation confirmed the location of the apex beat and revealed a normal distribution of tactile fremitus over the thorax. The radial pulses were synchronous, rate 110 a minute, tension decidedly increased. No arrhythmia. Systolic pressure 195, diastolic 169 (Tycos). Radial arteries moderately sclerosed. Spleen not palpable in its normal position, but on deep inspiration it slid

out from under the costal margin where it was easily detected by the examining fingers of the observer's right hand. (His left hand should be employed in drawing the patient's left chest forward during inspiration.)

Percussion showed a moderate bathydrasia with an obliteration of the thoracic portion of Traube's area. The area of splenic dullness was noticeably enlarged. Its upper border passed through the following points: Bottom of the eighth rib in the midaxilla; top of the eighth rib in the anterior axillary line; seventh interspace in the nipple line. The line was projected forward to the costochondral margin, whose border it then followed until the midaxilla was reached, where the area had a vertical diameter of 7 cm. The horizontal diameter was about 9 cm. There were no breath sounds audible over the area, except on forced inspiration. A slight cardiorespiratory murmur was noticeable at the end of inspiration, much intensified by exercise. It was also detectable over the left subscapular region. Diminished vesicular breathing was general over the left chest. Auscultation of the mitral area showed absolute accentuation of both sounds and a marked relative accentuation of the aortic second. At the aortic area, the second sound had the same snappy quality that was present at the apex.

Blood findings, December 11, 1914, reds, 10,270,000; white, 10,700; hemoglobin, 140 plus (Fleischl). Color index, 0.6; specific gravity, 1.080 plus (pycnometer); fibrin diminished. No pathological changes in the red cells. Micrometer measurement of 100 cells showed them to vary between the limits of 7.1 and 7.8 microns. Differential count: Large lymphocytes, 12 per cent.; small lymphocytes, 11 per cent.; transitionals, 2 per cent.; polymorphonuclears, 70.5 per cent.; eosinophiles, none. December 13, 1914. Spectroscopic test for methemoglobin and sulphhemoglobin negative. Wassermann negative. Coagulation time normal. Centrifugations of five c. c. specimen for one half hour resulted in the separation of but a few drops of serum.

Viscosity: The readings were taken at a temperature of 35° C., using the Oswald type of viscosimeter. Correction was made for the high gravity, and a stop watch was used to record readings. No hirudin was obtainable, so blood was first defibrinated. Distilled water was taken as a standard. Four normal bloods averaged 3.13. The patient's was 5.52.

December 21, 1914. Reds, 11,450,000; white, 13,000; hemoglobin, 140 plus (Fleischl). No differential changes. Reds, negative. Viscosity, 5.49. December 18, 1914. Venous blood. Reds, 12,120,000; white, 10,300; hemoglobin, 140 plus (Fleischl). February 8, 1915. Reds, 10,030,000; whites, 12,700; hemoglobin, 140 plus. Viscosity, 4.1 (Oswald). Systolic pressure, 180. Diastolic, 152. March 1, 1915. Reds, 11,100,000; whites, 6,200; hemoglobin, 140 plus. Viscosity, 5.2 (Oswald).

Uranalysis. Amount in twenty-four hours, 1,820 c. c. Color, amber; sediment, slight, granular; specific gravity, 1.012; total solids, 57.8 grams; urea, 27.4; albumin, decided trace by Heller's, Purdy, and potassium ferrocyanide acetic tests. Fehling's, negative; indican, negative; Rosenbach's, negative; diazo, negative. There was a moderate number of hyaline and granular casts and many cylindroids. A few erythrocytes. January 15, 1915. Twenty-four hour amount, 1,800 c. c.; specific gravity, 1.009. Solids, 38.8. Urea, 27 grams. Trace of albumin. No casts. February 8, 1915. No special change.

Treatment: December 20, 1914, second decimal dilution of nitroglycerin (one in 100) in one half glass of water, one dram every three hours. January 24, 1915, decided improvement of headaches. By February 20th headache had entirely disappeared. Benzol, five drops every morning and evening.

Benzol has been given for one month, but so far no effect has been produced on the number of red cells or on the hemoglobin.

There was very little in the history of this case that would give any clue to its possible cause. He had severe attacks of bloating in the stomach and intestines, which came on independently of eating, and seemed to give rise to vertigo and arterial throbbing: These symptoms were invariably relieved when the gas disappeared. Such a history

might fit in well with theories that the polycythemia is a toxemia with its origin in the alimentary tract. But with no more evidence to substantiate it, hypotheses of this sort are valuable only as such. However, the cardiovascular nephritic signs are those of interstitial nephritis, and were it not for the polycythemia, the case would easily fall into this category. From a standpoint of pure theory, it could easily be conceived that in certain cases a specific intestinal toxin was formed, the same as homotemistic acid is formed in certain persons, giving rise to the peculiar condition known as alkaptonuria.

The patient has felt perfectly well at all times, with the exception of the headaches and vertigo to which I have already referred. When one looks over the notes of his case, it seems astonishing that so much pathological change is revealed, in the face of so few subjective symptoms.

The red blood cells showed considerable variation in number, although the counts were carefully made. The cells were absolutely normal in size and shape. Some observers have imagined a general microcytosis, but accurate measurements certainly did not show any in this case. The specific gravity was 1.080 plus. I have not seen heretofore a record of such high specific gravity.

The viscosity of this blood was most marked. The drop was very sticky, and was with difficulty drawn from a vein, even with a large needle. It has been conjectured that the number of red cells accounted practically altogether for the high viscosity. On December 13, 1914, the reading was 5.2, and on February 8, 1915, 4.1. The red count was practically the same. The change was very noticeable without the use of the viscosimeter. At this time, the headaches had practically ceased to annoy the patient, although the blood pressure was not greatly reduced (systolic 180).

#### CONCLUSIONS.

The case is typically one of erythremia, and clinically could be considered as the well known cardiovascular nephritic complex, plus the polycythemia and mild splenomegaly.

Benzol in the doses given did not produce any change in the patient's condition. Although the number of red cells have been reduced to normal in some instances through the use of this agent, such a procedure would seem of questionable value for two reasons: First, because of the sudden deaths occurring in cases of leucemia where apparently only good had resulted from the drug's use; and, second, according to the findings of von Jaksch, its administration would seem to be illogical. If, as he shows, the corpuscles are of lessened physiological worth, then the increase in number would seem to be compensatory. A destruction of this excess would then react only in deleterious fashion. Since the few symptoms that this patient complained of were readily alleviated by nitroglycerin, I did not think it justifiable to resort to drastic measures merely to reduce the number of red cells.

#### BIBLIOGRAPHY.

1. VAQUEZ: *Bulletin médical*, vi, 849, 1892.
2. OSLER: *Am. Jour.*, 179, 85, A. S. 1907.
3. WAKASUGI: *Endocrinol.*, vi, 1, 1912.
4. HAMMILL and MORSE: *Boston Med. and Surg. Jour.*, June 27, 1912.
5. KUTTNER: *Revue de Médecine*, 1912.
6. McLEWIS: *Progressive Medicine*, 43, 1912.
7. CHARNARD and TROUSSE: 1912.



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## BLOOD UREA IN RENAL CONDITIONS.

*Its Value as a Prognostic and Therapeutic Guide.*

BY ALBERT J. UNDERHILL, M. D., F. A. C. S.,  
Baltimore.

While the primary object of this investigation has been to determine the value of estimations of the urea content of the blood as an index to the functional activity of the kidneys, particularly in cases where operative procedures on the genitourinary tract were contemplated, in order to add to our knowledge of the behavior of this substance in the organism under various conditions, I have taken all cases of nephritis available, irrespective of their clinical classification. Many of these cases were taken from the medical service and the blood withdrawn for examination with the kind permission of the physician in charge. No suggestions were made as to treatment except in a few instances, as it was desired to observe the variations of the blood urea under conditions obtaining in ordinary hospital practice. Marshall's (1) method for the estimation of urea was used both in blood and urine and his technic was followed exactly as he described it.

Urea is the product of normal physiological activities, and its constant presence in small quantities would presumably render the organism more or less immune to its harmful effects. In great concentration, however, or where the body is subjected to its presence in abnormal quantities over long periods of time, unmistakable evidences of toxemia are seen. These evidences may be due in some instances solely to the urea; in other cases additional substances are associated with the urea, thus modifying the picture. This association does not lessen, in my opinion, the value of the urea as an index to the condition of the patient. While we are familiar with the apparently harmless results of the experimental injection of urea in varying quantities, from the work of Marshall and others, we must bear in mind that in these cases the urea is rapidly diffused throughout the body and is quickly and readily eliminated by the healthy kidneys. We are not so well acquainted with the results of long retention except through clinical experience, which would indicate that urea or substances closely associated with it may be more deleterious under these circumstances than experiments on animals or transitory retention would lead us to infer. The degree of concentration in the blood when evidences of toxemia appear, seems to vary like that of any other toxic substance, with the age and general condition of the patient. In older patients in whom the disease is of long standing and who are often alcoholics, the symptoms appeared with much smaller proportions of urea.

*Case I.* A patient, aged twenty-two years, entered April 24, 1914, in a condition of stupor; blood urea on entrance 1.73 gram to the litre; seven days later, he became semicomatose, the blood showing at this time 2.49 grams

to the litre; on change to an absolute carbohydrate diet his blood urea fell rapidly until the sixteenth day, when it showed 0.92 gram to the litre; his mind at this time was clear and he was perceptibly improved.

*Case II.* A man, aged twenty-two years, strong and muscular, with a history of nephritis extending over many months, entered October, 1914; blood urea 2.59 grams to the litre; he became comatose when it reached 4.02 grams. He died five days later, the blood urea reaching 4.65 grams to the litre, three days before death.

The influence of the general condition of a patient on the degree of concentration when symptoms appear, was shown in the case of a man, aged fifty-two years, convalescing from lobar pneumonia, who had an attack of uremia following an emergency operation on his bladder; blood urea at the time of the attack, 1.25 gram to the litre. Grehan and Quinquaud (2) concluded from their experiments that a concentration of six grams per 1,000 c. c. of blood is fatal to healthy dogs. One of our patients, admitted April 2, 1915, comatose, died the following day; blood urea estimated from blood withdrawn three hours before death showed 6.15 grams urea to the 1,000 c. c. A patient with acute nephritis had a blood urea content of 5.3 grams to 1,000 c. c. for two successive days and recovered.

Symptoms of poisoning by urea observed in acute cases in which other factors could reasonably be excluded, were peripheral dilatation of the blood-vessels, thickened speech, marked slowing of the mental processes, increasing comolence, stupor, and finally coma. There is some difference between these signs and those commonly attributed to uremia. Few of our patients have had gastric symptoms such as nausea, vomiting, etc. Widal attributed these to retention of the chlorides and called this particular manifestation chloridemia. Practically all of our cases in which death occurred have shown an acidosis with its accompanying signs of failing circulation for ten days to a week before death, more marked on the near approach of this event. This has been observed so frequently that the appearance of a reduced alkalinity of the blood is regarded as a greater cause for immediate concern than the amount of urea in the blood. It seems that the symptom complex commonly designated as uremia is made up chiefly of these factors, all of which it may be well to consider in the treatment of the condition.

Widal and Javal (3) called attention to the prognostic value of the blood urea. They placed the amount of normal urea in the blood at from 0.15 to 0.5 gram per litre, according to the period of digestion; anything above this they said, showed a retention due to defective elimination by the kidneys. They stated that all cases showing above two grams per litre were approaching death. Of one group of thirty-one cases observed by them, eighteen who had a blood urea content between two and three grams to the litre died in from one week to seven months; thirteen who had over three grams to the litre died in from one day to five months. Marshall and Davis (4) showed that large amounts of urea injected into the veins of healthy dogs were excreted within twenty-four to thirty-six hours after injection. Widal and Javal showed that this regulating mechanism was present to a limited extent even in nephritis; that while there may be retention, this

retention was greater or less according to the amount of protein in the diet. A nephritic fed for several days on milk containing 105 grams of protein showed a blood urea content of 1.21 gram to the litre; twenty grams urea added to this diet gave after ten days a blood urea of 1.93 gram to the litre. The same patient on a vegetable diet containing only twenty-eight grams protein, after nine days showed a blood urea of only 0.36 gram; with a mixed diet containing sixty-four grams protein, the blood urea showed 0.57 gram to the litre. It can be seen from this that, although the diseased kidneys have a certain limited power of adjustment to the work they must do, the point is soon reached at which they cannot excrete all the urea formed. This accumulates and the normal limits of the blood urea are passed in spite of the increased stimulation to activity which experimenters have shown to accompany an increased concentration of urea.

An example of the almost reciprocal relation between the output of urea in the urine and the quantity in the blood is shown in the following case of acute toxic nephritis as the result of bichloride of mercury poisoning.

CASE III. B. G., aged twenty-nine years, was admitted to the University Hospital at 8:10 p. m., March 31, 1914. Two hours previous to his entrance he had swallowed ten 7.3 grain tablets of bichloride of mercury dissolved, so he stated, in a glass of beer. He had vomited shortly afterward. His stomach was washed on entrance to the hospital. He was a well developed, well nourished, muscular, white man. The first specimen of blood was withdrawn for analysis seventeen hours after entrance and showed an accumulation of 0.25 gram to the litre of urea above normal.<sup>1</sup> Daily estimates were made from April 1st to April 26th inclusive, and a final estimate was made on the 29th. There was total anuria until the morning of the third day, when he passed thirty-five c. c. (See table.)

| Date Specimen Taken. | Urea Excreted                  |                    | Remarks. |
|----------------------|--------------------------------|--------------------|----------|
|                      | Grams in 1,000 c. c. of Urine. | Percent of Normal. |          |
| April 1, 1914        | None                           | None               |          |
| April 2, 1914        | None                           | None               |          |
| April 3, 1914        | 3.15                           | 330 c. c.          |          |
| April 4, 1914        | 1.65                           | 165 c. c.          |          |
| April 5, 1914        | 3.18                           | 330 c. c.          |          |
| April 6, 1914        | 3.28                           | 340 c. c.          |          |
| April 7, 1914        | 2.78                           | 288 c. c.          |          |
| April 8, 1914        | 3.6                            | 360 c. c.          |          |
| April 9, 1914        | 3.8                            | 380 c. c.          |          |
| April 10, 1914       | 3.36                           | 336 c. c.          |          |
| April 11, 1914       | 4.13                           | 413 c. c.          |          |
| April 12, 1914       | 5.23                           | 523 c. c.          |          |
| April 13, 1914       | 5.32                           | 532 c. c.          |          |
| April 14, 1914       | 4.70                           | 470 c. c.          |          |
| April 15, 1914       | 4.44                           | 444 c. c.          |          |
| April 16, 1914       | 3.94                           | 394 c. c.          |          |
| April 17, 1914       | 3.74                           | 374 c. c.          |          |
| April 18, 1914       | 3.1                            | 310 c. c.          |          |
| April 19, 1914       | 2.49                           | 249 c. c.          |          |
| April 20, 1914       | 2.56                           | 256 c. c.          |          |
| April 21, 1914       | 2.68                           | 268 c. c.          |          |
| April 22, 1914       | 1.95                           | 195 c. c.          |          |
| April 23, 1914       | 1.04                           | 104 c. c.          |          |
| April 24, 1914       | 1.42                           | 142 c. c.          |          |
| April 25, 1914       | 0.87                           | 87 c. c.           |          |
| April 26, 1914       | 0.48                           | 48 c. c.           |          |
| April 29, 1914       | 0.27                           | 27 c. c.           |          |

Phenolphthalein output less than 1 per cent.

P. m., first hour, 16 per cent, second 24 per cent.

April 29, 1914 0.27

The blood urea continued to rise until the thirteenth day, when an equilibrium was established between the amount of urea formed in the body and that excreted by the kidneys. As the quantity of urea excreted increased rapidly from this time, there was a correspondingly rapid fall in

the percentage of blood urea. It was interesting to note the rapid rise in the blood urea in this patient during the first forty-two hours, in which time no urine was passed. The urea formed as the result of the great destruction of tissue protein, probably due to the direct action of the chemical, was the leading factor in this rapid rise, as the patient fortunately vomited the food, consisting of milk, given him during this period, as soon as he swallowed it.

The curve of urea excretion rose steadily with an occasional partial remission, from the sixth day. This curve illustrated the uncertainty of examinations of the urine when made only at intervals, and was in marked contrast to the more regular blood urea curve. He received no drugs. The diet was as follows: April 1st to 8th, vomited all food consisting of milk immediately on swallowing. April 9th to 14th, no food given. April 15th to 18th, pure carbohydrate diet consisting of 90 grams sugar on the 15th and increased by 90 grams daily; all of this was retained. April 19th to 27th, 35 grams protein was added. April 28th, allowed full house diet.

The more marked fall in the blood urea after the 15th, was apparently due to two factors: An increased excretion of urea following the gradual recovery of the kidneys; and a decreased formation of urea from the breaking down of the tissue protein, this latter result being due to the protection of the body protein afforded by the carbohydrate ingested and later of the small amount of protein allowed. At his discharge, on the 29th, the blood urea was but 0.27 gram to the litre, well within normal.

Cases IV and V. Two other patients who were admitted after taking bichloride of mercury showed the same rapid increase in the blood urea associated with suppression of urine. The blood urea of the first of these patients (one hour after taking the poison) was as follows:

| Grams.             |       | Grams.             |      |
|--------------------|-------|--------------------|------|
| September 20, 1914 | 0.619 | September 26, 1914 | 3.08 |
| September 21, 1914 | 0.999 | September 28, 1914 | 3.63 |
| September 22, 1914 | 1.107 | September 30, 1914 | 4.87 |
| September 23, 1914 | 1.5   | October 2, 1914    | 4.15 |
| September 24, 1914 | 2.37  | October 4, 1914    | 4.83 |

The more gradual rise which this patient showed during the first few days was probably due to the excretion of some of the urea through the intestinal tract as there was a profuse diarrhea, the accumulated stools of one twelve hour period showing 4.2 grams of urea.

CASE V. The second of these patients took the poison, September 8, 1914. I did not see him until September 18th, ten days later. Analyses were as follows:

Sept. 18, 1914, blood urea.....4.44 grams to the litre  
Sept. 21, 1914, blood urea.....5.3 grams to the litre  
Sept. 23, 1914 (3 hours before death) 5.66 grams to the litre

The patient, an illiterate Pole, refused all nourishment either per rectum or otherwise, and was removed from the hospital by friends to avoid forcible feeding. This patient died some days later, the end hastened by voluntary starvation.

These patients were young, vigorous, muscular persons aged twenty-five, twenty-nine, and thirty-two years respectively, all in good health and good physical condition at the time the poison was taken. They had almost total anuria and gave excellent opportunity for the study of the clinical effect of a high concentration of urea in the organism without other factors, such as are interposed by a long illness, obscuring the picture. There was no acidosis and the nausea incident to the action of the poison had disappeared. The symptoms of poisoning by urea, as observed in these acute cases in which other factors could reasonably be excluded, were such as I have enumerated. In the one case which ended favorably these signs cleared up as the percentage of urea decreased in the blood. Of nearly the same age, having total suppression of urine from the same cause, they showed a difference of but 0.8 gram urea to the litre between the twelfth and the fifteenth days, a uniformity of action which was of some interest in studying the accumulation of urea in the body after suppression of renal action in otherwise healthy persons. They had not been subjected to the influence of a concentration of urea over long periods, as in many cases of chronic nephritis, and they all showed the same stupor and

<sup>1</sup>Taking 0.6 gram to the litre as normal. This is slightly above Widal's estimate of 0.5 gram as the upper limit of normal. The average of forty specimens taken from normal cases by me has shown 0.37 gram to the litre. A number of individuals, however, in apparently perfect health in whom no kidney lesions could be demonstrated, showed from 0.5 to 0.6 gram urea to the litre. I have therefore taken this as the upper limit of normal in this study.

... better when the urea had passed four grams to the litre. The same was then observed in chronic nephritis with general edema.

CASE VI. A fourth patient, aged twenty-three years, who swallowed a 7.3 grain bichloride tablet instead of a headache tablet, discovered his mistake in a few minutes and induced vomiting. He entered the hospital fifteen minutes later and had his stomach washed. He vomited at intervals for twenty-four hours afterward, the ejected material containing blood. His urine the following day showed blood, albumin, and large numbers of epithelial cells, renal in origin. The blood urea on the days following the ingestion of the poison was as follows:

|                       |                        |
|-----------------------|------------------------|
| January 16, 1915..... | 0.9 gram to the litre  |
| January 16, 1915..... | 0.64 gram to the litre |
| January 17, 1915..... | 0.37 gram to the litre |

In spite of the urinary findings, the blood urea in this instance indicated such a good prognosis that when he insisted the patient was allowed to go home, apparently no worse for his mistake. We had no reason to regret the favorable prognosis made as a result of the estimation of the blood urea.

It appears from the following estimations that the blood urea follows a similar curve in acute nephritis from causes other than mineral poisons. This patient had acute hemorrhagic nephritis with rheumatic fever and tonsillitis.

CASE VII. The patient entered the University Hospital, January 25, 1915, about two weeks after the beginning of his illness; the blood urea was first estimated the second day after admission. The estimations made on different days were as follows:

|                     |                         |
|---------------------|-------------------------|
| January 27th .....  | 1.26 grams to the litre |
| January 30th .....  | 1.62 grams to the litre |
| February 4th .....  | 2.74 grams to the litre |
| February 7th .....  | 2.90 grams to the litre |
| February 20th ..... | 0.6 grams to the litre  |

The patient insisted upon leaving the hospital at this time as he said he felt well enough. The kidneys, as shown by the blood urea estimated before he left, were capable of excreting the urea formed from the protein in his diet. According to his physician he continued to improve.

The blood urea in forty cases of chronic nephritis ranged from 0.80 to 2.18 grams to the litre on admission. No attempt was made to classify them clinically between parenchymatous and interstitial nephritis, as it was considered that such classification was unnecessary for the purpose of this investigation, especially as it is by no means possible to make it with certainty in many cases. The cases, however, which gave the lowest blood urea on admission were those with edema and commonly classed as chronic parenchymatous nephritis. These patients also showed a lower blood urea before death than those in whom no perceptible edema was present. This lower proportion is probably relative, as the urea is more widely distributed in the increased amount of fluid in the body in these cases. This seems to be shown by the increased concentration of the blood urea which accompanies the disappearance of an edema under an active eliminative treatment, especially with a diet comparatively rich in protein, such as milk.

CASE VIII. A patient was admitted April 6, 1914, abdomen distended and extremities edematous; blood urea 0.97 gram. Under magnesium sulphate, digitalis, and milk the blood urea rose to 1.62 gram to the litre on April 15th. The edema was much reduced. Two weeks later, when the edema had disappeared and the patient was supposed to be much improved, he died suddenly.

CASE IX. On X. In a second instance the blood urea rose in twenty days from 1.15 gram to 1.83 gram under the same circumstances, when death occurred. A third patient was admitted May 6, 1914, with general edema, on entrance blood urea 1.73 gram. Ten days later, it had

reached 2.49 grams with marked reduction in the edema. Death occurred, May 23, 1914.

It may be possible to explain the increased concentration of urea in the blood and tissues under these circumstances in part as follows: Marshall (5) showed that urea is present in practically the same percentage in all the fluids and tissues of the body, except the fat and urinary organs. It is conceivable that an active eliminative treatment which throws the edematous fluid into the blood stream to be eliminated by organs which may have the power to excrete fluids of low specific gravity, but whose ability to excrete urea is limited by disease, increases



CHART.—Bichloride patient; solid line, blood urea curve drawn on the scale of 5,000 c. c., the total blood of the average man; dotted line, urine urea daily output; April 16th, phenolsulphonephthalein less than one per cent.; April 28th, phenolsulphonephthalein fifteen minutes first hour, sixteen per cent., second hour twenty-four per cent.

the concentration of the urea in the blood and tissues.

Impairment of the kidney function due to obstruction in the lower urinary tract shows the same cumulative phenomena.

CASE XI. Patient, on the general surgical service, had a very large stone causing almost complete obstruction to the passage of urine; it was removed from the bladder through a suprapubic incision. Both lower extremities at the time of operation were edematous. The blood urea estimations were as follows:

|   |                    |
|---|--------------------|
|   | Gram to the Litre. |
| On entrance September 15, 1914.....                   | 0.70               |
| Day of operation, September 21, 1914.....             | 1.07               |
| Three days after operation (September 24th).....      | 0.9                |
| Eight days after operation (October 2d).....          | 1.15               |
| Twenty-three days after operation (October 14th)..... | 0.6                |



The slight fall in the percentage of blood urea between the day of operation and three days later was probably due to the removal of the obstruction and the resulting improvement in the kidney function. The subsequent rise accompanied the rapid disappearance of the local edema involving the lower extremities at the time of operation. After this had disappeared for a time, it could be seen that the blood urea dropped to normal. This case illustrated, I believe, the exactness with which the work of the kidneys could be followed by means of these determinations; especially so, as in cases like this it was practically impossible because of the conditions present to obtain our information satisfactorily by the usual functional kidney tests.

An effort was made to ascertain the highest limit of concentration at which it would be safe to operate in otherwise apparently good risks. The number of patients available under these conditions is limited; they are extremely important, however, as they belong to the borderline cases and necessarily come under the class in which operation can no longer be deferred. The cases having over 0.5 gram to the litre were taken; they were as follows:

|                                   | the Litre.  |
|-----------------------------------|-------------|
| 1. Suprapubic prostatectomy ..... | 0.59        |
| 2. Suprapubic prostatectomy ..... | 0.67        |
| 3. Suprapubic lithotomy .....     | 0.70        |
| 4. Suprapubic cystotomy .....     | 0.97 Uremia |
| 5. Suprapubic lithotomy .....     | 1.52 Death  |

No. 4 had symptoms of uremia three days after operation and showed at the time the symptoms appeared 1.25 gram urea. He was operated on under local novocaine anesthesia. He recovered. The fifth patient in the series died ten days after operation. Nitrous oxide anesthesia was used and he was under the anesthetic but twelve minutes.

We cannot draw conclusions from so few cases, but they suggest that the upper limit of safety at which it is justifiable to operate under otherwise favorable conditions will be found to be one gram or less.

The phenolsulphonethalein test was made in conjunction with the blood urea estimate in the following cases of nephritis. The changes in the blood urea content estimated at different times as the patients grew better or worse can also be noted.

|       |   |                                |
|-------|---|--------------------------------|
| No. 1 | February 25, 1914.....  | Blood urea, gram 2.18 to litre |
|       | February 17, 1914.....  | Blood urea, gram 2.00 to litre |
|       | Phenol appeared in 28 min.                                      |                                |
|       | 1st hour, less than 1 per cent.; 2d hour, less than 1 per cent. |                                |
|       | February 20, 1914.....  | Blood urea, gram 2.20          |
|       | Phenol appeared in 19 min.                                      |                                |
|       | 1st hour, 8 per cent.; 2d hour, 5 per cent.                     |                                |
|       | March 2, 1914.....  | Blood urea, gram 1.85 to litre |
|       | March 9, 1914.....  | Blood urea, gram 2.2 to litre  |
| No. 2 | October 2, 1914.....  | Blood urea, gram 2.90 to litre |
|       | November 8, 1914.....   | Blood urea, gram 2.5 to litre  |
|       | November 8, 1914.....   | Blood urea, gram 2.5 to litre  |
|       | November 12, 1914.....  | Blood urea, gram 3.0 to litre  |
|       | Phenol appeared 1 hour 40 min.; trace only.                     |                                |
|       | November 14, 1914.....  | Blood urea, gram 3.0 to litre  |
|       | November 20, 1914.....  | Blood urea, gram 4.02 to litre |
|       | November 22, 1914.....  | Blood urea, gram 4.0 to litre  |
|       | November 25, 1914.....  | Death                          |
| No. 3 | June 2, 1914.....   | Blood urea, gram 0.88 to litre |
|       | June 18, 1914.....  | Blood urea, gram 1.25 to litre |
|       | Phenol, 1st hour, 10 per cent; 2d hour, 25 per cent.            |                                |
|       | June 20, 1914.....  | Blood urea, gram 1.25          |
|       | Retention catheter inserted and bladder washed daily.           |                                |
|       | June 27, 1914.....  | Blood urea, gram 0.76 to litre |
|       | July 7, 1914.....   | Blood urea, gram 0.99 to litre |
|       | Left hospital.  |                                |
| No. 4 | February 2, 1915.....   | Blood urea, gram 0.85 to litre |
|       | February 5, 1915.....   | Blood urea, gram 0.62 to litre |
|       | Phenol appeared in 22 min.                                      |                                |
|       | 1st hour, 34 per cent.; second hour, 40 per cent.               |                                |
|       | February 20, 1915.....  | Blood urea, gram 0.42 to litre |
| No. 5 | April 8, 1914.....  | Blood urea, gram 0.67 to litre |
|       | Phenol appeared in 10 min.                                      |                                |
|       | 1st hour, 8 per cent.; 2d hour, 8 per cent.                     |                                |
|       | April 15, 1914.....   | Blood urea, gram 0.62 to litre |
| No. 6 | February 8, 1914.....   | Blood urea, gram 2.51 to litre |
|       | February 11, 1914.....  | Blood urea, gram 2.61 to litre |
|       | Phenol appeared in 27 min.; trace.                              |                                |

|   |                               |
|---|-------------------------------|
| February 21, 1914.....                        | Blood urea, gram 1.8 to litre |
| Phenol appeared in 22 min.                    |                               |
| 1st hour, 8 per cent.; 2d hour, 10 per cent.  |                               |
| March 2, 1914.....                            | Blood urea, gram 1.2 to litre |
| No. 7.....                                    | Blood urea, gram 1.0 to litre |
| Phenol appeared in 22 min.                    |                               |
| 1st hour, 10 per cent.; 2d hour, 6 per cent.  |                               |
| December 20, 1914.....                        | Blood urea, gram 1.0 to litre |
| December 20, 1914.....                        | Blood urea, gram 1.0 to litre |
| January 5, 1915.....                          | Blood urea, 1.8 to litre      |
| No. 8.....                                    | Blood urea, gram 1.0 to litre |
| March 26, 1914.....                           |                               |
| Phenol appeared in 20 min.                    |                               |
| 1st hour, 35 per cent.; 2d hour, 14 per cent. |                               |
| March 31, 1914.....                           | Blood urea, gram 1.0 to litre |

The following case of cardiac edema is of interest, showing that the blood urea remained within normal limits. Urine contained albumin and casts.

#### CASE XII.

|   |                                |
|---|--------------------------------|
| October 28, 1914.....                         | Blood urea, gram 0.60 to litre |
| Phenol appeared in 22 min.                    |                                |
| 1st hour, 36 per cent.; 2d hour, 16 per cent. |                                |
| November 3, 1914.....                         | Blood urea, gram 0.20 to litre |

When discharged, the patient's urine was chemically and microscopically normal.

In the foregoing, patients Nos. 4 and 8 had a good phenolsulphonethalein output, although the appearance was somewhat delayed. They both had greatly impaired kidney function as evidenced by the retention. No. 8 would have been impossible as an operative risk. In the remaining six cases the urea retention varied in a rough way inversely with the excretion of the phenolsulphonethalein.

All patients with nephritis do not show retention. It therefore cannot be used as a means of detecting impairment of the kidneys except when retention is present. Only those cases which might be designated as failures in compensation on the part of the kidneys will show retention of urea in the blood. When the working capacity of the kidneys is equal to, or above that required to excrete the urea resulting from the normal processes of metabolism, the urea content of the blood remains within normal limits; however, if because of disease or some other condition, there should be a breaking down of the body protein, the additional urea from this source must be excreted by the renal organs. The urea lost by the skin, bowels, and other excretory organs under ordinary circumstances is so small in quantity that for the purposes of clinical study it may be disregarded, since we are concerned only with the retained urea and its influence on the organism.

Widal (6) and later Folin (7) showed that the percentage of urea retention could be reduced by decreasing the amount of nitrogenous foods. This holds good in nephritis under ordinary conditions, but does not hold good in all cases. If we estimate the daily average urea output in the urine and the percentage of urea in the blood we should form an accurate idea of the working capacity of the kidneys. The output may be apparently normal and the blood still show a retention of urea if the protein ingested by the patient should be enough to result in the formation of more urea than the kidneys with their decreased power of elimination can excrete. On the other hand, should we give the patient just enough protein in his diet to produce urea which by daily observation of his urine we should judge his kidneys to be able to eliminate, and for some cause there is a breaking down of tissue protein, we shall have a retention of urea in the organism represented by the difference between the urea of the nitrogen ingested and that from the catabolism of the body protein. Retention from the latter cause is frequently seen. An example is the bichloride

case described above in which the patient received practically no food for a week or more. The urea retention increased until the quantity his kidneys were able to excrete more than equaled the amount formed as a result of the destruction of his body protein. A more familiar example is seen in cases of chronic nephritis or impaired kidney function due to surgical causes in the genitourinary tract. In these cases there may be a breaking down of body protein due to associated constitutional disease, toxemia as the direct result of the kidney lesion, or the infection associated with obstruction when the latter is present.

Bradford (8) has shown that two thirds of the total kidney substance can be removed from healthy dogs without impairment of health. Pearce (9) demonstrated that the removal of this proportion of renal substance caused no change in the general nitrogenous metabolism. The experiences of numerous operators on the human subject confirm the conclusions of these investigators that a very large part of these organs can be thrown out of function without fatal results. It is obvious then that a large proportion of the kidney tissue is reserve. It is probable that until this reserve is exhausted by disease or operative procedures, there is, under ordinary circumstances of living, no retention of urea. There must be a limit, however, in a kidney thus affected at which there is a balance between the amount of urea formed in the processes of metabolism and the ability of the kidneys to excrete the urea thus formed. A variation in the mode of living or any condition which leads to a breaking down of the body protein, adding urea from this source to that formed as the end product of the nitrogen metabolism, overthrows this balance and urea retention results.

It is possible to conceive of a kidney working at its highest tension, having an increased amount of work thrust upon it as the result of the destruction of tissue protein after operation. It is probable that the sin of throwing an increased amount of work on an organ which is already overcrowded is most often committed by the use of diuretics in nephritis with retention; or in giving an exclusive diet of milk the protein contents of which, if enough is given to support the strength of the patient, give more work to the kidneys than they are usually called upon to perform in the ordinary conditions of living.

If in operative cases with defective kidney capacity, the percentage of urea in the organism is reduced by careful dieting before operation, this element to a large extent is eliminated, and the kidneys are allowed a certain amount of reserve to take care of any additional work. A case operated in, October 27, 1914, by suprapubic prostatectomy, showed, October 24th, a blood urea of 0.42 gram to the litre; October 29th, two days after operation, the blood urea was gram 0.82, an increase of 0.4 gram to the litre after operation. Another case increased from 0.97 to 1.25 gram to the litre after operation. Under normal conditions there would have been no retention. Marshall demonstrated that urea injected in large quantities is quickly diffused throughout the body and is eliminated by normal kidneys within a few hours.

In preparing for operation patients with diminished kidney functional capacity, and in the treat-

ment of nephritis, the urea estimate should furnish a valuable guide. If too much destruction of the kidney substance has not taken place, the candidate for operation, by systematic dieting in connection with the local measures familiar to all, may go to his ordeal with a minimum amount of urea and its allied substances in his tissues, and in most instances with a margin of safety to take care of that formed from the body protein if any is destroyed as an immediate effect of the operation. A good illustration is afforded by a patient on the service of my colleague, Dr. C. W. McElfresh. The patient was admitted comatose; blood urea on admission was a fraction over one gram to the litre; phenolphthalein output less than one per cent. When by dieting and drainage the blood urea was reduced to 0.2 gram, his prostate was removed by the suprapubic route with complete recovery, in spite of the fact that his phenolphthalein output had not increased at the time of the operation.

The patient with nephritis comes under observation with his reserve kidney substance destroyed and the balance exhausted by overwork, resulting in edema, retention of urea, etc. The amount of retention can be measured accurately, and by reducing proteins and foods the excretory products of which are eliminated by the renal cells, these cells may be given the needed rest and their excretory power increased to the extent that they can later take on additional work. The recuperative power of the kidney cells is well known. Repeated examination of the blood will not only give us a more or less accurate estimate of the condition of the patient, but also serve as a guide in regulating the amount of nitrogenous food. Carbohydrates are admittedly the best conservators of the tissue proteins. They must be given, however, in proper quantities, measured according to their value in calories of heat energy, to conserve the strength of the patient and reduce to a minimum the breaking down of the tissue protein. If this occurs to any degree it may be shown by an increase of urea retention, and an increase of work is put upon the kidneys; aside from the latter aspect, the resistance of the patient is reduced. These organs are thus given the same functional rest that we endeavor to give every other part of the body when it is the seat of an inflammatory process.

Metabolism experiments have shown that the protein portion of the food can be reduced within wide limits and the body still remain within nitrogen equilibrium; that the body in general tends to adjust its protein catabolism to its protein supply, provided of course a sufficient amount of nonnitrogenous foods is given to meet the energy requirements of the body. It is probable that the average individual, especially in America where meats are largely used in the dietary, consumes from 110 to 150 grams or more protein a day. Folin (10) offers good reasons for this being an unnecessarily large and even detrimental amount. Chittenden maintained men of average weight on food containing from forty-nine to seventy-two grams protein a day. In isolated cases nitrogen equilibrium has been maintained on much smaller amounts. If a patient has stored any fats or carbohydrates he may even go on an absolutely nonprotein diet for a time.

Many patients with nephritis to whom formerly

a hopeless prognosis was offered may, by being taught to live within their kidney capacity, not only prolong the period of their usefulness, but through the examination of their blood from time to time, we have a means of detecting when they overstep the limits of that capacity.

#### CONCLUSIONS.

1. Retention of urea is positive evidence of kidney incapacity.

2. The functional capacity of a large proportion of the kidney substance may be impaired without retention of blood urea.

3. As long as what remains is sufficient for the physiological needs of the body, under normal conditions retention does not result.

4. Retention is evidence of overwork on the part of the remaining functioning kidney cells.

5. In many instances the diet can be so regulated that the impaired kidney cells work well within their capacity.

6. The destruction of tissue protein with an impaired kidney capacity may lead to urea retention, as much so as the ingestion of too much nitrogenous food.

7. Diuretics and an active eliminative treatment are contraindicated when there is retention.

8. It is the most practical method of following the course of a patient with impaired kidneys.

9. It is more useful than the color or other tests in that it is an index to the actual condition of the patient.

10. It can be used as a guide to the treatment of patients with impaired kidney capacity in preparation for operation.

11. A blood urea above 0.6 gram to the litre is an indication for caution before operation, when this is contemplated.

12. A blood urea above one gram to the litre contraindicates operation.

1850 NORTH CHARLES STREET.

#### REFERENCES.

1. MARSHALL: *Jour. Biol. Chem.*, 88, 477, 1905.
2. GREHANT and QUINQUAUD: *Ann. de chim. et de phys.*, 88, 108, 1891.
3. WIDAL and JAVAL: *Ann. chim. et phys.*, 8, 104, 1891.
4. MARSHALL and DAWES: *Jour. Biol. Chem.*, xviii, 53, 1914.
5. MARSHALL: *Ibidem*, *ibidem*.
6. WIDAL: *Ann. chim. et phys.*, 8, 104, 1891.
7. FOLIN: *Archives of Inter. Med.*, xiii, 224, 1914.
8. BRADFORD: *Jour. of Physiol.*, xxiii, 415, 1899.
9. PEARCE: *Jour. Exper. Med.*, 2, 632, 1908.
10. FOLIN: *Amer. Jour. Physiol.*, xiii, 137, 1914.

### CANCERUM ORIS TREATED WITH NEOSALVARSAN.

By ADOLPH G. DE SANCTIS, M. D.,

New York.

I would report the following case as of special interest in the treatment:

CASE. William F., aged five years, American, seen June 25th. Family history: Mother and father living and well; no brothers or sisters; no history of tuberculosis, insanity, syphilis, etc. Personal history: Had scarlet fever three years ago; no history of whooping cough, diphtheria, chicken pox, or measles.

Present trouble began two weeks ago; was taken ill with a cough, coryza, and reddening of the eyes as mother described it. Two days later, a rash appeared. Parents called it measles, but did not call a physician to take care of case. Child got along apparently well, till June 24th, when the temperature rose markedly, child became prostrated and had a foul odor from mouth. When no improvement was noticed the next day, I was called in. I

found temperature 104° F., pulse 140, respiration 28. The first thing that attracted my attention was the foul odor as I stood at the bedside. Child was undernourished, thin, and anemic looking, lay prostrated, unconscious of surroundings. There was no apparent rash nor desquamation; profuse sweat about the scalp. Dark red spot, size of a pea, seen on right cheek externally; area around this spot was edematous. Tongue covered with a white heavy coat. Odor from mouth very foul. Teeth in fair condition; some loose. Eyes, ears, and nose, negative.

On examination of the right cheek internally there was seen a greenish black necrotic area, size of an American dime, surrounded by greatly edematous tissues. Left cheek was apparently normal. Tonsils were not enlarged, nor covered with any membrane or exudation. Cervical glands were markedly enlarged on right side.

Lungs negative. Heart sounds rapid and feeble, but regular; no audible murmurs. Abdomen negative to inspection, palpation, and percussion. Extremities negative. Diagnosis: Cancrum oris following measles.

Treatment.—I immediately curetted the necrotic spot on the right cheek thoroughly. After curetting I touched the whole area with pure carbolic acid followed by alcohol. The same day I gave 0.45 gram of neosalvarsan intravenously in vessel of right arm. I also used a mouth wash of equal parts of hydrogen peroxide and water every two hours. Strychnine sulphate one ninetieth grain was given every three hours by mouth, alternating with a teaspoonful of brandy in water.

The next day, when I called, I was surprised at the wonderful change in the patient. The temperature was 101° F., pulse 132, respiration 26. The child was apparently feeling much better, asking for water every now and then. The necrotic spot on the cheek was of a dark red color, had not spread, and the tissues surrounding it were less swollen. Condition kept on improving daily, and on July 1st I discharged the patient apparently cured. The necrotic spot on the right cheek had completely vanished, leaving a small bright red area. No teeth were lost during the illness. I attribute the rapid cure to the neosalvarsan and not to the curettage and cauterization, which, however, are essential procedures in the treatment of noma. Equally amazing results in the treatment of noma were obtained in the Kingston Avenue Hospital for Contagious Diseases, Brooklyn. During my service there as an intern, Doctor Eberle, of the resident staff, successfully treated cases of cancrum oris by intravenous injections of neosalvarsan. I should be greatly indebted to any physician who has followed the same plan of treatment in these cases for a report in order to learn the real value of the treatment in cancrum oris.

204 WEST TENTH STREET.

Colloidal Gold in the Treatment of Infected Wounds.—Cunéo and Rolland (*Paris médical*, April 24, 1915) reported excellent results from the use of colloidal gold in a number of cases of wounds in which infection persisted after surgical intervention. Special benefit was obtained in extensive trauma of the limbs owing to infection by the perfringens and sepsis organisms. Less distinct, but still favorable, effects were obtained in infection with the common pyogenic organisms. The authors administered as a preventive measure intravenous injections of one half to one and a half dram (2 to 6 c. c.) or intramuscular injections of one and two third ounce (50 c. c.) of colloidal gold.



## THE HARRISON AND BOYLAN LAWS.\*

By MENDEL ZWART, Ph.D.,  
New York.

There are so many questions of mutual interest to the medical and pharmaceutical professions, which a friendly collaboration of the two can solve, that it is really a wonder to me why they have not thought of joining hands long before now. One of the things that have temporarily worried the pharmacist is the new Harrison law. The law has placed so many new requirements upon him, has added so many causes for which he may be sent to prison, that the Bronx County Pharmaceutical Association has deemed it advisable to ask for help to eliminate the possibility of the pharmacist getting into trouble for compounding a prescription written not strictly in accordance with the requirements of the law. All, no doubt, have heard of the Breslaw incident, of a young pharmacist who was sentenced to three months' imprisonment for filling a prescription containing codeine, which did not have the name and address of the patient written on it.

It is a very difficult position that the druggist finds himself in when a prescription is presented which is perfectly innocent, contains no overdose of any drug, written by a physician whose good will he is anxious to maintain, for a patient whose patronage may mean an important item in his daily income, but which does not contain the doctor's name in full, the patient's name, age, and address, and the physician's registration number. To refuse to fill such a prescription may cause misunderstanding and trouble all around. To delay it until the prescriber is communicated with, when the patient is suffering and anxious for relief, may mean both irritating the physician and patient, and perhaps endangering the successful treatment of the case.

A pharmacist in the Bronx had occasion only recently to keep waiting for four hours a patient who was suffering very severe pain and was to be relieved by the administration of morphine tablets prescribed by her physician, until the doctor could be found, because he had not signed the prescription properly. The inconvenience caused to the patient and the consequences to the pharmacist and physician, can be readily imagined; still, to fill such a prescription would mean for the druggist to expose himself to serious charges by an inspector who might happen to come in and who was not in the least concerned with the patient's welfare, the doctor's good will or the druggist's future.

Of course, most physicians pay the strictest attention to the requirements of the law, still, there are a good many who innocently fail to remember that if they sign these particular prescriptions in the way they are accustomed to do, by merely writing their initials on the bottom of the blank, or if they write such prescriptions on pieces of paper torn from any writing pad when they happen not to have their own pad handy, by so doing they place the druggist in a position in which he has to choose between the good will of the physician and patient or the good will of the law.

The pharmacist is accustomed to being accused

of a good many things. He has for years patiently borne the charge of robbing the public; that when he gets fifty cents for a prescription, his profit is forty-nine cents. He has been used to hear the physician's accusation that when he takes a cinder out of the customer's eye, and sells him five cents' worth of boric acid as an eye wash, he is practising medicine without a license; but he does not relish the prospect of being accused by an inspector of breaking the Harrison or Boylan law. The consequences are too serious.

We therefore request the reader constantly to bear in mind the eight small requirements of the law in writing prescriptions:

1. Date.
2. Physician's full name.
3. Registry number.
4. Address and telephone number.
5. Physician's office hours.
6. Patient's name.
7. Patient's address.
8. Patient's age.

I have now dealt with the primary object of my paper, but there is a further message. The principal object of organizing the Bronx Pharmaceutical Association was the elevation of pharmacy; it is an attempt to restore the pharmacist to the place which he should hold. The pharmaceutical laboratory and the prescription counter are the pharmacist's delight. He lives and breathes thereby. The pharmacist nowadays is only a store keeper and nothing else. Pharmacy as a profession is no more.

To this end I request the reader's cooperation and good fellowship. It very largely rests with him to render possible the success of our efforts. Go behind the prescription counter of any drug store and you will find that the man who has spent so many years learning to compound your prescription *lege artis*, condemned to counting ready made pills out of one box into another or pouring out a nostrum concocted by one or another manufacturer, commercial vender if you please, from one bottle into another, or scraping off a label and substituting his own when a prescription calls for an original bottle? The pharmacist then feels that he is nothing but a prey of the manufacturer. Do you wonder that under such conditions the pharmacist does not think of elegant pharmacy and *nolens volens* he forgets all ethical pharmacy?

Dust off your copies of the Pharmacopœia, National Formulary, and Dispensatory. Prescribe medicaments and not nostrums. Give the pharmacist an opportunity to apply his skill in filling prescriptions.

Let us join hands and work together in harmony to place pharmacy in the place where it should be; we assure you it will be to our mutual benefit. We are anxious to have you show us other ways in which we can work together to do away with the conditions antagonistic to a friendly understanding between the two professions.

We are always ready to work with you and we will spare no effort to accomplish the end for which our association was organized, namely, the raising of the ethical standard of the pharmaceutical profession. We hope to promote the good will of the physicians and general public by trying our best to deserve it.

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## Therapeutic Notes.

### Treatment of Diarrhea in the Tuberculous.

A. Robin, in a recent issue of *Quinzaine thérapeutique*, is credited with the following combination for use in cases of persistent diarrhea in the tuberculous, where the diet imposed is responsible for the condition:

R Bismuthi subnitrat. .... 5ss (2 grams);  
Tinctura opii camphorate. .... 5ss (2 c. c.).

M. Sig.: To be taken in a glassful of water before each meal.

Where persistent diarrhea is due to actual functional disorder of the alimentary tract, the following powders are recommended:

R Bismuthi subnitrat. .... 5ss (2 grams);  
Magnesii oxidi. .... 5ss (6 grams);  
Sodii bicarbonatis. .... 3ii (8 grams);  
Calcii carbonatis precipitati. .... 3ss (10 grams);  
Sacchari. ....

M. ft. pulv. No. xxiv.

Sig.: One powder after each meal.

Whenever abdominal discomfort begins, the following powder may be taken:

R Bismuthi subnitrat. .... 3ss (1 gram);  
Magnesii oxidi. .... 3ss (3 grams);  
Sacchari. .... gr. xxiii (1.5 grams).

M. ft. pulv. No. i.

In the diarrhea of true tuberculous enteritis, Robin administers one of the following combinations:

#### I.

R Sodii bicarbonatis. .... 3ss (2 grams);  
Zinci oxidi. .... gr. xlv (3 grams).

M. Sig.: To be taken daily in two doses, in a little water.

#### II.

R Hydrargyri chloridi mitis. .... 3ss (0.05 gram);  
Extracti opii. .... 3ss (0.25 gram);  
Ipecacuanhæ pulveris. .... gr. iv (0.25 gram).

Divide in pilulas No. x.

Sig.: One pill every hour.

In addition, enemas of starch and opium may advantageously be employed, and the abdomen painted with tincture of iodine and covered with a firm supporting dressing.

**Autohemotherapy in Typhoid Fever.**—Félix Ramond and Gabriel Goubert, in *Bulletin de l'Académie de médecine* for February 9, 1915, report good effects in a certain proportion of fifty cases of typhoid fever, from the reinjection, into the subcutaneous tissues, of whole blood obtained from one of the patient's own veins. The method was applicable in all cases of typhoid fever, and in all its stages. It proved useful in slow, dragging cases as well as in cases attended with repeated relapses. A single injection sometimes proved sufficient to cut short a fever which had lasted two months. Hemorrhage was found to be a special indication, autohemotherapy increasing the coagulability of the blood.

In carrying out the procedure one of the veins at the bend of the elbow is punctured with a large hollow needle of 0.8 to 1.2 mm. diameter (to avoid clotting which would almost surely take place in a smaller needle), and about five or six drams (20 or 25 c. c.) of blood removed with a carefully sterilized syringe. The blood is at once reinjected into the neighboring cellular tissues, before time is given

for clotting. A single injection will sometimes alter the entire subsequent course of the disease, but generally daily repetition of the injections is required. Where no results have been obtained by the time the sixth injection is administered, it is useless to continue. In the cases exhibiting good results, a distinct constitutional effect is noted. At times the temperature rises slightly in the few hours succeeding the injection, but later—in twenty-four hours on the average—it drops one or 1.5° C., sometimes even more. Repeated injections are usually required to lower the temperature curve permanently. The pulse rate usually improves with the temperature, though occasionally improvement occurs in only one respect. A beneficial effect on the general condition is almost invariably produced, in some instances so marked that the patients asked for further injections. The tongue became more moist, digestion of milk was facilitated, and the appetite improved. The urinary output increased, and copious perspiration occurred. In two cases, the rose spots dried up and desquamated within two days. Bodily strength returned, the color of the facial skin improved, and prostration or stupor diminished or disappeared. Locally, the injections were followed merely by slight pain for twenty-four to thirty-six hours, the blood being very rapidly absorbed. The beneficial results described were obtained in thirty-eight per cent. of the cases. In eighteen per cent. the results were less distinct, temperature being lowered by only a few tenths of a centigrade degree, the pulse was little influenced, though the general condition always improved. In the remaining forty-four per cent. of the cases results were insignificant, though at times some improvement in the temperature, pulse, or general condition was noticed. Failure of the method—as of other therapeutic measures—occurred especially in cases complicated by serious inflammation of the lung or serous membranes, by marked circulatory disturbance or organic lesion of the liver, kidneys, or adrenals. Where the procedure proved ineffective the measures customary in typhoid fever were applied.

**Treatment of Exophthalmic Goitre.**—Sinosersky, in *Semaine médicale* for August 5, 1914, it is stated, has obtained excellent results from exposure of the thymus to the x rays in certain cases of exophthalmic goitre in the pathogenesis of which the frequent participation of the thymus is now recognized. In a series of twenty cases irradiation of the thymus was practised, generally before operation, but occasionally after ligation of two or three of the thyroid vessels. No patient was subjected to the treatment in whom the presence of a distinct thymus gland had not been demonstrated by percussion, radiography, and blood examination. Dullness behind and to the left of the manubrium sterni, a distinct radiographic shadow over the aorta moving up and down with respiration, and a pronounced polymorphonuclear leucopenia and lymphocytosis were thus requisites to the therapeutic use of the x rays. Exposures of the thymus were made at intervals of three or four days and were each of ten minutes' duration, the dose of rays administered being two H units (through an aluminum shield one or two mm. thick). Favorable subjective effects

were generally noticed after five or six exposures; the constant agitation and sense of anxiety, the palpitations, the frequent nightmares, and the tendency to copious perspiration being notably reduced.

After 4 series of exposures, the treatment was suspended for three weeks, the skin in Basedow cases being exceedingly sensitive to the x rays. During this interval the symptoms returned, though in a less marked form than before the treatment. After fifteen to thirty exposures, the cardinal manifestations of the disease were found distinctly reduced, the thyroid enlargement having diminished by one or two cm., the heart rate dropped from 120 or 140 to eighty a minute, and the eyes became less prominent. Simultaneously, the patients became less nervous, slept better, and gained in weight. The blood, after each series of exposures, showed an increase in the number of polymorphonuclears and a decrease in the lymphocytes. In view of all these observations, Sinosersky recommends x ray exposure of the thymus as a measure preliminary to operation in exophthalmic goitre and as one which, in certain cases, may be substituted for thymectomy.

**Formulae for Nutrient Enemata.**—Le Gendre and Martinet, in the *Buffalo Medical Journal* for February, 1915, are credited with the following for-

|  |                       |
|--|-----------------------|
| I.   |                       |
| Serum vitæ æquilæ .....                      | 3i (120 c. c.);       |
| Aque distillatæ .....                        | 3vi (200 c. c.).      |
| Fr. enema.                                   |                       |
| II.  |                       |
| Vitelli ovi .....                            | 3ii (15 c. c.);       |
| Vini rubri .....                             | 3iv (15 c. c.);       |
| Vini opii .....                              | gtt. iv.              |
| Fr. enema.                                   |                       |
| III.   |                       |
| Vitelli ovi .....                            | 3ii (15 c. c.);       |
| Farinæ .....                                 | 3iv (15 grams);       |
| Vini rubri .....                             | 3iii (60 c. c.);      |
| Solutionis dextrini (20 per cent.), q. s. ad |                       |
| Fr. enema.                                   | 3x (300 c. c.).       |
| IV.  |                       |
| R. Pepsini .....                             | gr. viiss (0.5 gram); |
| Sodii chloridi .....                         | gr. xv (1 gram);      |
| Vitelli ovi .....                            | 3ii (15 c. c.);       |
| Solutionis peptoni (20 per cent.) .....      | 3i (30 c. c.);        |
| Solutionis glucosi (10 per cent.) .....      | 3iiss (100 c. c.);    |
| Vini opii .....                              | gtt. iii.             |

**Neosalvarsan in Gangrene of the Lung.**—*Annales Médico-chirurgicales de l'Université de Liège*, 1914, reports a case demonstrating the fact that neosalvarsan may be of considerable value in certain cases of pulmonary gangrene. The patient was a young girl of eighteen years with tuberculosis of the right apex in which pulmonary gangrene developed as a complication a few months after the onset of the tuberculous process. Examination of the sputum showed not only tubercle bacilli but also the combined fusiform and spirochetal infection characteristic of Vincent's angina. *Bacillus pyocyaneus*, *Micrococcus tetragenes*, and several fungi. Daily intramuscular injections of eighty minims (5 c. c.) of the following eucalyptol solution, recommended by Spillmann, caused distinct, but only temporary,

improvement in the fetor, temperature, and auscultatory signs:

|                                 |                  |
|---------------------------------|------------------|
| R. Eucalyptolis .....           | ℥i (3 c. c.);    |
| Misc. Olei olivæ sterilis ..... | 3iii (60 c. c.). |
| Misc.                           |                  |

An intravenous injection of 0.45 gram of neosalvarsan was then given, and a week later another, similar injection. Three days after the first injection the temperature had fallen practically to normal, the sputum was reduced in amount and nearly odorless, and the general condition greatly improved. Soon after the second injection the temperature was persistently normal, all odor disappeared, and the auscultatory signs markedly improved. The fusiform and spirochetal organisms of the sputum, reduced by the first injection, disappeared wholly after the second, the tubercle bacilli, however, persisting. The patient soon after leaving the hospital and living under poor conditions of hygiene, the tuberculous process continued to progress. The effect of the neosalvarsan on the gangrene had, however, been unmistakable, not only proving that the Vincent organisms had been responsible in this case, but showing that arsenical medication is worthy of trial in pulmonary gangrene, especially if the Vincent organisms are detected in the sputum.

**Treatment of Chalazion.**—T. F. Wickliffe, in the *Kentucky Medical Journal* for August 15, 1914, states that in operating in this condition, due to occlusion of a Meibomian gland duct, he prefers removal of a part of the covering of the chalazion with scissors to the crucial incision sometimes advised. A ten per cent. solution of cocaine is first rubbed well into the everted lids with a cotton tipped applicator. The initial incision is made after cutting off the blood supply with a chalazion forceps, and is then converted into a triangular opening by means of scissors. If cocaine solution is then applied to the bottom of the cavity thus exposed, the contents can be curetted practically without pain. Preference should be given to the smallest size chalazion curette, as the larger sizes sold are unsuitable for use in the usual small chalazion. After the curettage has been effected, the majority of surgeons conclude the operation, but the author believes it advisable then to cauterize the cavity with undiluted trichloroacetic acid. The cotton on the applicator tip should be merely moistened with the acid, and as soon as the latter has been applied, the eye should be irrigated with a solution of sodium bicarbonate. If the patient is required to apply at home hot, moist cloths, e. g., towels dipped in hot water, but little reaction will follow.

**Treatment of Tropical Ulcer.**—J. C. Smits, in the *American Journal of Tropical Diseases and Preventive Medicine* for May, 1915, is given credit for the discovery that tropical ulcer is due to a symbiosis of fusiform bacilli and the spirochete of Vincent. In uncomplicated cases he has obtained striking benefit from the use of hydrogen dioxide. In complicated cases, however, stimulation of the vitality of the tissues was found necessary, and at times plastic operations were required. A saturated solution of picric acid was sometimes used as a dressing. In certain cases salvarsan injections were found beneficial.



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EDITORS

CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.

CLAUDE L. WHEELER, A.B., M.D.

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## A SMALL LOSS TO LITERATURE.

If we may speak of journalism as literature, smallpox still has a place in this branch of mental activity, but only as a ghost, which those opposed to vaccination would annually raise to a reality, while those who know history are as earnest in keeping it in the realm of shades. From the pages of general literature, recent history, and especially from fiction, smallpox has disappeared; yet it once held a large place, with which, fortunately, no modern disease can compare.

It was natural that a disease which was so common, so loathsome, so disfiguring, and so fatal for all ages of human life; which was, in a word, so frightful, should have been frequently mentioned by writers who represented the vicissitudes of human life. It is little wonder that "pox!" "a pox upon it!" and like expressions of impatience should, prior to the nineteenth century, have been common in the mouths of stage heroes and the characters in books. The pox was such a damnable disease that it easily lent itself to explosive expressions of feeling. It is true that the word, pox, was applied to syphilis, to measles, and to other forms of disease affecting the skin, but the pock *par excellence*, the most disfiguring scar, was left by variola, and only when the smallpox faded before vaccination did the expression come to refer especially to syphilis.

In that marvelous mirror of seventeenth century life, the *Diary of Samuel Pepys*, we find recorded

that "our family is mightily disordered by our little boy's falling sick the last night; and we fear it will prove the smallpox." This was not a "children's" disease, and another entry reads, "this day I do hear that the Duke of Monmouth is sick, and in danger of the smallpox." The Duke of York has it, but recovers and "Blessed be God! he is not at all the worse, but is only a little weak yet."

In Fielding's great novel, *Tom Jones*, which appeared about the middle of the eighteenth century, we read how Fortune took pity on the wretched state of Partridge, the henpecked pedagogue, "by putting a final end to that of his wife, who soon after caught the smallpox and died." Smallpox could be called upon most consistently by an author in any circumstance where a disease was needed for the disfigurement or prompt execution of a character. On another page, when Mr. Western is asked if he has not noticed that his daughter, who is in love, is acting in an unusual manner, he exclaims, "Why, she doth not complain of anything, and she hath had the smallpox."

In that unique work which foreshadowed the Waverley tales, *The Annals of the Parish*, the parson who wrote it concludes the annals for the year 1774 by observing, "my son Gilbert was seized with the smallpox about the beginning of December and was blinded by them for seventeen days; for the inoculation was not in practice yet among us, saving only in the genteel families that went into Edinburgh for the education of their children, where it was performed by the faculty there."

In the newspapers of prevaccination times no illness was so frequently mentioned in personal items about people of all ages, for the disease was no respecter of persons. It did not hesitate to attack George Washington and Ludwig Van Beethoven, and many a man of genius, along with great men in church and state, was lost to the world through this pox. In those good old times, if one survived, for it killed about one out of ten persons, it was an advantage to have the smallpox. Ben Franklin, who was above all things thrifty, did a not inconsiderable business in slaves. He advertised them in his own Philadelphia paper. Many of these advertisements read as do the following examples:

To be sold. A likely Mulatto girl about 18 years, has had Small Pox, is fit for either Town or Country.

To be sold. A Prime able young Negro man, fit for laborious work in town or country, that has had small pox. As also a middle aged Negro Man, that has likewise had the small pox.

The ravages of smallpox were such a matter of course to the historians of the centuries preceding the nineteenth that they usually made no more of it than a modern historian does of tuberculosis. Pages are given to many battles in which a few thousand

Russians were killed, but how few of us have read that in one year's war with smallpox, two millions of the czar's people were slain? Macaulay, who lived at a time when the absence of the disease could be fully appreciated, wrote: "The plague visited our shores only once within living memory, but the smallpox was always present, filling the churchyards with corpses, leaving to those lives it spared the hideous traces of its power, turning the babe into a changeling at which the mother shuddered, and making the lips and cheeks of the betrothed maiden objects of horror to her lover."

Literature can well do without the word, smallpox, save in such retrospective reminders of what a terrible scourge it was.

#### OUR UNTRUSTWORTHY DEATH RATES.

The discussion at the Section in Vital Statistics of the American Public Health Association brought out again clearly the fact that our mortality statistics are defective, and the death rates computed on the basis of these statistics inadequate, therefore, as a guide to public health administration and to general social policy. Of the 189 items of the international list of causes of death, only about 120 or so can be accepted by registrars of vital statistics as trustworthy when they appear on death certificates. The remaining group, which includes cancer, syphilis, cardiac, vascular, renal, and other organic diseases, frequently contains serious errors in diagnosis.

The suggestion was offered that in our published mortality statistics a differentiation should be made between causes of death which are entirely trustworthy and those which are doubtful. This would guard us against jumping to hasty and misleading conclusions, so frequently formed in various quarters, but the method suggested seems to be impractical for technical reasons. What could be done in its place is the ascertainment of a degree of error in diagnosis in the group of "doubtful" cases of death. This could be arrived at by a comparison of hospital clinical records with those of the autopsy room. The beginning of such comparisons between the clinical diagnosis and the autopsy findings was made by Doctor Cabot, a few years ago, and afterward by Doctor Oertel, in New York. It seems that a useful purpose would be served if somebody made such a study for the larger hospitals of this country and on the basis of the findings established the average error in diagnosis of the various doubtful causes of death. This average error could be revised from time to time and used in interpretation of the mortality rates as published by our census office and the various State and municipal departments of health.

#### THE MANUFACTURE OF SYNTHETIC DRUGS.

While we were all aware in a general way of the predominance of the German synthetics in the field of modern therapeutics, few fully realized how dependent we were upon German manufacturers for medicinal products until our imports were interrupted. A number of these are of botanical origin for we have been depending on central Europe for many botanical drugs which are taken from plants growing wild in the United States as well as in Europe. These drugs have not been collected here largely because it has been cheaper to import them. The American laborer will not be content with the amount paid the European peasant for this work, and if we must depend on domestic sources of supply we must make up our mind to pay a higher price. Some of the botanical drugs hitherto drawn from Europe are not indigenous here. These could be cultivated if there was any assurance that the cultivator would receive adequate compensation; but as European supplies might become available at any time through a cessation of hostilities, which would mean a return to normal prices, it seems unlikely that many Americans will be willing to take the financial risk unless the government gives some assurance of protection against European competition in the form of import duties. Without a protective tariff it will be difficult if not impossible to provide a satisfactory supply in the United States.

The most noticeable effect of the war in the drug field manifests itself, however, in the scarcity and high price of synthetic drugs; in some cases we are threatened with a complete exhaustion of the supply. The United States Government has instructed a special agent to inquire into the situation as regards the supplies of imported dye stuffs, and this investigation will also cover synthetic drugs, many of which are produced by the manufacturers of dyes. The manufacturers of Switzerland have ready equipped and manned factories, but are now unable to continue their work because of lack of raw material for which they have depended heretofore on Germany. It has been suggested that the United States furnish this raw material to the Swiss manufacturers, taking pay in synthetic drugs. This suggestion commends itself as a temporary expedient. The American manufacturer, however, should not allow such conditions to become permanent, but should undertake the manufacture of these drugs so as to make this country completely independent.

An interesting summary of the situation so far as the manufacture of synthetic drugs is concerned, was made in the address delivered by Dr. Herman Engelhardt, of Baltimore, as chairman of the scientific

section at the recent San Francisco meeting of the American Pharmaceutical Association. As pointed out by Doctor Engelhardt, the factor of a lower rate of wages for the working man is not the sole nor indeed the most important factor in placing Germany so far ahead of America in the production of synthetic chemicals. The determining factor has been the large number of highly educated, intelligent research chemists whose efforts have been directed to the systematic development of this particular field. If we are to become independent we must not only help the manufacturer by means of a tariff, but must also provide him with competent chemists.

#### A PROFESSIONAL ADVANTAGE OF KULTUR.

An editorial writer in the *Indian Medical Gazette* for August, 1915, mentions with envy the obedience which patients in Germany manifest toward their medical advisers. He attributes the great vogue of the German and Austrian spas in part to this obedience, which he believes to be originated and fostered by the rigid universal military training. If a German physician mentions a particular spa, to that spa the patient will not fail to go, whereas, on the other hand, a British patient may or may not visit the particular spring favored by his adviser, indeed, is quite likely to choose his own resort, provided that it bears a superficial resemblance to the one mentioned by the physician. This German obedience to the doctor's orders, according to the writer, extends to the minutest details of the treatment, even to the number of respirations prescribed for each minute. The doctor's signed prescription resembles a military order and is obeyed as such. If true, this is indeed an enviable state of affairs, one that American physicians would like to enjoy. So loosely, however, are our instructions regarded, that frequently the patient attributes his recovery to some proprietary remedy that he has added to our course of medicine, or to some trifling additional procedure advocated by a friend in whom he has confided.

#### SIR WILLIAM OSLER ON ACUTE INFECTIOUS JAUNDICE.

Sir William Osler communicates to the *Lancet* for September 11, 1915, a note in which he remarks that among the soldiers invalidated from Egypt are cases of epidemic or acute infectious jaundice, a disease which requires further study. Outbreaks in Great Britain, he says, are not uncommon in schools and villages. It is also a soldier's disease, prevailing in camps and barracks. The clinical features are those of catarrhal jaundice. In Europe and America fatal cases are rare, but in Egypt,

particularly in Alexandria, the death rate, as reported by Professor F. M. Sandwith, has ranged from ten to fifty per cent. Sir William has seen two groups of cases among the soldiers, four in one hospital and ten in another, all mild and convalescing. Those with whom he had spoken knew of no deaths, but there were severe cases on the transports, which had been distributed to other hospitals. Careful bacteriological studies should be made. One fatal case which came from a North Carolina outbreak had a widespread infection with *Bacillus proteus*, which was also present in two of three cases studied by Jaeger. Organisms of the colon group have also been found.

#### CHANGES IN PROFESSIONAL LIFE.

Below we give an extract from a private letter written by a typical general practitioner in a manufacturing town some ninety miles from New York. In a few words it shows the changes that have gradually come about in the life of the country doctor, changes that will have little effect on the passing generation, but which indicate a profoundly different career for the young men about to settle in the more rural districts.

My family is big and expenses increase in proportion to age, while the income grows less from a multitude of causes. Contagious diseases are a rarity; obstetrical cases are tending to the hospital more and more; all surgery is done in the hospital. District nurses do all the minor work and attend as well to infantile ailments due to feeding indiscretions. Specialists are numerous and attract the cream of the cases. If I only had had the courage to strike out into some one line ten years ago, I could probably have lightened my burden and shortened my working hours, but I must go on, the old family doctor to the end.

The new clinical pathology has had less effect on the practitioner than was expected; it is generally taken care of either in a State or municipal laboratory or by one or two younger men who give all or most of their time to the microscope and test tube and furnish the visiting doctor with the necessary data without loss of time and at a moderate fee.

#### A VENERABLE DRESSING.

According to *Presse médicale* for August 26, 1915, Bilhaut informed a medical reunion of the Eleventh Army Corps held on July 17th, that he had remained faithful to the early teachings of Lister and had always used in the treatment of wounds phenol one in 500. He observed certain precautions:

1. Always to have the solutions hot.
2. To avoid irritation of the tissues by tiny crystals of phenol, due to its imperfect solubility, glycerin should always be added to the solution.
3. The solution should be used sparingly; suppurating surfaces after operation should be painted with the hot solution.

In cases of bone suppuration, Bilhaut uses zinc chloride, one in ten, applied cautiously, after operation, but before application of the phenol. Naphtha, applied daily and followed by a dry dressing, he has found to be admirably antiseptic and deodorizing. Vincent's powder, i. e., calcium chloride and boric acid, replaces to advantage Labarraque's solution (liquor sodæ chlorinatæ).



## A BULLET PASSES THROUGH THE URETHRA.

Communicated and presented to the Société de Chirurgie, Paris, on August 25, 1915 (*Presse médicale*, September 26), a Maudsley bullet, which after lodging in the bladder for several days, made its escape by the urethra. The bullet had itself passed into the urethral opening and there obstructed the outflow of urine. By a little manipulation, the bullet was readily worked along to the meatus.

## Obituary.

### AUSTIN FLINT, M. D., LL. D., of New York.

Dr. Austin Flint died suddenly, apparently of cerebral hemorrhage, at his home, 118 East Nineteenth Street, New York, on September 22, 1915, in his eightieth year. Born in Northampton, Mass., March 28, 1836, the son of a distinguished practitioner and writer of medical books, he was educated at private schools and at Harvard University; he began his medical studies at the University of Louisville and under private tuition, as was then the custom, and graduated at Jefferson Medical College, Philadelphia, in 1857. Subsequently he received the honorary degrees of LL. D. and A. M. from Princeton University. He first practised medicine in Buffalo, was the editor for three years of the *Buffalo Medical Journal*, visiting surgeon to the Buffalo General Hospital, and professor of physiology in the University of Buffalo. He removed to this city in 1859 and became professor of physiology in the New York Medical College. In 1860 and 1861 he was connected with the New Orleans School of Medicine, but returned to New York at the outbreak of the civil war to become acting assistant surgeon in the United States army, stationed at the General Hospital. He was one of the founders of Bellevue Hospital Medical College and the first professor of physiology there. In 1868 he was professor at Cornell University Medical College, where he remained until he was created professor emeritus. Doctor Flint was recognized as an expert in insanity; he was the first visiting physician to the insane pavilion of Bellevue Hospital, and in 1866 was consulting physician to the Manhattan State Hospital for the Insane, becoming in 1899, president of the consulting board. He was decorated with the Third Class of the Order of Bolivar by Venezuela in 1891, and was a member of numerous medical societies, here and abroad, being president of the New York State Medical Association in 1895 and of the Medical Association of the Greater City of New York in 1899. He was the author of *Physiology of Man* in five volumes, of which there were two editions; of the *Chemical Examination of the Urine in Diseases* (six editions); *Physiological Effects of Severe and Prolonged Muscular Strain*; the well known *Textbook of Human Physiology*, which ran through four large editions; *Source of Muscular Power*; *Handbook of Physiology*; also of many articles on medical and physiological subjects in medical periodicals and transactions.

Doctor Flint was the medical adviser to the prosecution in the Thaw case, in which he may be said to have represented the best medical opinion, contrasted with the extraordinary theories of the laity. Some of his remarks made at the final trial were totally misunderstood by the newspapers, and this very likely resulted in a wrong impression of his ability among the reading public. No one who knew Doctor Flint could doubt his unusual professional gifts, while socially he was the most delightful of companions. Doctor Flint was for many years a warm friend of the NEW YORK MEDICAL JOURNAL, a frequent and welcome contributor, and a valued adviser in the editorial discussion of many subjects. He leaves a widow and four children, and among them Austin Flint, also a physician.

## News Items.

**Change of Address.**—Dr. Nathan Schwartz, to 257 Lenox Avenue, New York.

Dr. Rudolph C. Miller, of Monroe, Wash., to 206 Bissell Avenue, Buffalo, N. Y.

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Tuesday, September 28th, West Branch, County Medical Society; Thursday, September 30th, Northwest Branch, County Medical Society; Friday, October 1st, Kensington Branch, County Medical Society.

**Foot and Mouth Disease Quarantine Lifted.**—Orders releasing the Pittsburgh and Buffalo stock yards from the foot and mouth disease quarantine, issued by the Department of Agriculture, were effective on September 22d. Shipments originating in quarantined areas, however, are still barred from the yards.

**Oregon State Medical Association.**—The following officers were elected at the forty-first annual meeting of this association held in Portland on October 10th and 11th: President, Dr. W. Kuykendahl, of Eugene; first vice-president, Dr. Robert C. Yenney, of Portland; second vice-president, Dr. B. F. Ferrell, of Bend; third vice-president, Dr. H. J. Clement, of Salem; secretary, Dr. M. B. Marcellus, of Portland; treasurer, Dr. C. C. Manion, of Portland. The association will meet next year in Portland.

### Death Rate from Cancer Increases in Pennsylvania.

—Statistics compiled by the cancer commission of the Medical Society of Pennsylvania and presented at the annual meeting of the society, held in Philadelphia during the past week, show that the death rate from cancer in the State of Pennsylvania has increased out of all proportion to the increase of population. The report shows that since 1906 the rate has increased 23.5 per cent. Last year the total deaths from cancer numbered 5,197, and it is predicted that this year the number will reach 6,000.

**New York State Sanitary Officers' Association.**—At the annual meeting of this association, held in Rochester, N. Y., September 6th to 17th, conjointly with the American Public Health Association, the following officers were elected: President, Dr. Montgomery E. Leary, of Rochester; first vice-president, Dr. G. Scott Towne, of Saratoga Springs; second vice-president, Dr. Halsey J. Ball, of Cortland; third vice-president, Dr. Guy H. Turrell, of Smithtown Branch; secretary, Dr. Thomas E. Bulford, of Schuylerville; treasurer, Dr. George F. Mills, of Oneida.

**A Hospital for Drug Habitues.**—Commissioner Katherine B. Davis, of the Department of Correction, received a few days ago a check for \$18,000 from Mr. John D. Rockefeller, Jr., chairman of the Bureau of Social Hygiene, to be used for the construction and furnishing of a hospital for victims of drug habits. With this amount added to the \$10,000 contributed by Mrs. W. K. Vanderbilt some months ago, Commissioner Davis announces that she is ready to let contracts for the erection of the hospital as soon as the architect's plans are completed. The new institution, which will be situated on Riker's Island, will have accommodations for 132 patients.

**University and Bellevue Hospital Medical College.**—The following new members have been appointed to the regular medical staff of this institution: Dr. Alfred Hess, attending physician for children at Bellevue Hospital; Dr. Charles Goodman, clinical professor of surgery; Dr. William Nathan, clinical professor of orthopedic surgery; Dr. Isadore Abrahamson, clinical professor of neurology, and Dr. Maurice Fishberg, clinical professor of tuberculosis.

**United States Patent Medicine Prosecutions.**—The Bureau of Chemistry of the Department of Agriculture has brought criminal prosecutions against twenty-five manufacturers of patent medicines under the Sherley amendment to the Food and Drugs Act on the ground that they had made false claims as to the therapeutic value of their remedies. Thirty-one cases have been brought to court on civil procedure under the same act. The Government has won all of these cases. The preparations include a wide variety of articles, some of which have had quite a large popular sale.

**Red Cross Relief Work in Mexico.**—Further relief work by the American Red Cross Society in Mexico city has been made possible by a contribution of \$25,000 from the Rockefeller Foundation. It was feared that the work would have to be discontinued for lack of funds, but the \$25,000 now in hand will last a few weeks, and in the meantime other subscriptions will be sought, as it is believed that it will be necessary to carry on the work of relief in Mexico city for some time to come. Thousands are dependent upon charity for food, and there are no prospects of conditions improving.

**Rabies in New York.**—Figures compiled by the Bureau of Preventable Diseases of the Department of Health of the City of New York, for the second quarter of 1915, indicate that the measures adopted last year to control the spread of rabies in this city have been successful. The number of cases of rabies found in animals examined in the laboratories of the department decreased from 64 during the second quarter of 1914 to 15 during the corresponding quarter of this year. A reduction was also observed in the number of persons examined for dog bite, and in the number of dogs examined for rabies.

**Association of Military Surgeons Endorse Compulsory Military Training.**—By a vote of 75 to one, the Association of Military Surgeons of the United States, at their annual meeting held in Washington, D. C., last week, adopted a resolution placing the association on record as being in favor of compulsory military training. In advocating the resolution, which was introduced by Dr. Jefferson Davis Griffiths, of the Medical Corps of the National Guard of Missouri, Assistant Surgeon General William C. Rucker, of the United States Public Health Service, pointed out that even a short period of military training would improve the general health of the young men of the country.

**Social Hygiene Congress to Be Held in Boston.**—The annual meeting of the American Social Hygiene Association will be held in Boston on Friday, October 8th, in conjunction with the meeting of the Massachusetts Society for Social Hygiene. The latter organization is an outgrowth of the Massachusetts Society for Sex Education and was organized a short time ago with Dr. Charles W. Eliot as president. The national body was formed in 1913 by the union of the American Federation for Sex Hygiene and the American Vigilance Association. There will be three sessions. The morning will be devoted to the transaction of business, but at the afternoon and evening sessions, to which the public is invited, addresses will be given on timely topics treated from moral and scientific points of view. At the evening session Dr. David L. Edsall will preside. Among the physicians who will take part in the discussions are Dr. George A. Goler, health officer of Rochester, N. Y.; Dr. Allan J. McLaughlin, of the Massachusetts State Board of Health; Dr. Edward L. Keyes, Jr., of New York; Dr. Hugh Cabot, of Boston; Dr. S. S. Goldwater, health commissioner of New York; Dr. Thomas W. Salmon, secretary of the National Commission on Mental Hygiene; Dr. C. E. Banks, of the United States Public Health Service; Dr. John D. Trawick, health officer of Louisville; Dr. Rollin H. Stevens, health officer of Detroit; Dr. F. N. Whittier, health officer of Brunswick, Me.; Dr. C. F. Dalton, health officer of Montpelier, Vt., and Dr. Walter E. Farnald, of Waverley.

**Cancer Specimens Sent to Columbia University for Safe Keeping.**—Fearing that a Zeppelin raid might destroy the results of research work covering years, the directors of the Imperial Cancer Research Fund have sent from London to the Crocker Special Research Laboratory of Columbia University specimens of cancer which it would be almost impossible to replace. The specimens will be cared for at the laboratory until such time as it is considered safe to send them back to England. It is interesting to note that included in these cancer specimens is one believed to have been taken from the intestine of Napoleon. Dr. J. A. Murray, who directs the research work, had charge of the transfer.

**American Association of Obstetricians and Gynecologists.**—The twenty-ninth annual meeting of this association was held in Pittsburgh, Pa., on Tuesday, Wednesday, and Thursday, September 14th, 15th, and 16th, under the presidency of Dr. Charles L. Bonifield, of Cincinnati. The following officers were elected: President, Dr. Hugo O. Panzer, of Indianapolis; first vice-president, Dr. Gordon K. Dickinson, of Jersey City; second vice-president, Dr. O. G. Pfaff, of Indianapolis; secretary, Dr. E. Gustav Zinke, of Cincinnati (reelected); treasurer, Dr. H. E. Hayd, of Buffalo; executive council, Dr. John W. Keefe, of Providence, R. I.; Dr. X. O. Werder, of Pittsburgh; Dr. Miles F. Porter, of Fort Wayne, Ind.; Dr. Louis Frank, of Louisville; Dr. C. N. Smith, of Toledo, and Dr. M. A. Tate, of Cincinnati. Next year's meeting will be held in Indianapolis.

**New York Kept Well Despite the Hot Wave.**—Despite the fact that during the past week, New York experienced the warmest and most humid weather that has visited the city during September in more than a score of years, the death rate was 0.83 per 1,000 population lower than during the corresponding week of last year. Especially noteworthy is the fact that the deaths from diarrheal diseases under five were fewer than during the week ending September 19, 1914. The following causes of deaths showed a decrease: Scarlet fever, diphtheria and croup, pulmonary tuberculosis, Bright's disease, and nephritis. During the week there were four deaths from sunstroke, compared with one death from the same cause during the corresponding week of last year. The deaths during the week numbered 1,291 with a rate of 11.60, compared with 1,330 deaths and a rate of 12.43 for the week ending September 19, 1914. The difference of 0.83 in the weekly rate means a saving of ninety-two lives. The death rate for the first thirty-eight weeks of 1915 is 13.49, compared with 13.94 for the first thirty-eight weeks of 1914.

**Personal.**—Dr. Charles K. Mills has resigned as a member of the medical faculty of the University of Pennsylvania. He was professor of mental diseases at the university from 1894 to 1901, and then became professor of neurology, a chair which he held until his resignation.

Dr. Joseph A. Blake formerly professor of surgery at Columbia University, has been appointed surgeon in chief of the new British war hospital at Fontainebleau. Doctor Blake has been in charge of the American Ambulance Hospital at Neuilly since its establishment at the beginning of the war.

Dr. Wilbur A. Sawyer, lecturer in hygiene and preventive medicine at the University of California, has been appointed secretary of the California State Board of Health.

Dr. Robert H. Mullin, director of the laboratories of the Minnesota State Board of Health and assistant professor of pathology and bacteriology at the University of Minnesota, has accepted an offer from the University of Nevada, at Reno, to take charge of the hygienic laboratories of that institution. Doctor Mullin has been connected with the University of Minnesota for eleven years.

Dr. Guthrie McConnell, of Philadelphia, formerly professor of pathology, bacteriology, and hygiene at Temple University, is going to Waterloo, Iowa, early in October for the purpose of organizing and conducting a clinical laboratory under the auspices of the Waterloo Medical Society.

Dr. Robert Chambers, Jr., assistant professor of histology and comparative anatomy in the medical department of the University of Cincinnati, has resigned to accept a position on the staff of Cornell Medical College.

Dr. Malcolm C. Grow, of Philadelphia, sailed from New York on September 12th for Russia, where he expects to work in the military hospitals of the czar's army.

## Pith of Current Literature.

### BERLINER KLINISCHE WOCHENSCHRIFT.

#### Frostbite and Frost Blisters, by P. G. Unna.—

In both cases, excessive contraction of the walls of the small arteries produces a hyperemia through stasis. Treatment should be aimed at converting this into an active hyperemia with vascular dilatation and removal of edema. The application of warmth with simultaneous massage toward the trunk is the best means of treatment, but often cannot be applied. When such is the case the application of epispastics and astringents will give very satisfactory results. An ointment containing five grams each of purified sulphur, calcium carbonate, camphor, and oil of turpentine in thirty grams of zinc ointment should be applied and thoroughly rubbed in morning and evening. When blisters are present they should be painted with a mixture of five grams of tannic acid and fifteen c. c. of tincture of iodine, the rest of the part being treated with the ointment mentioned. When ichthyol is available even better results can be obtained by its free application, whether blisters are present or not. After it has dried the whole part should be covered with strips of leucoplast. This dressing can remain in place until healing is complete, up to one or two weeks.

**When Should the Spinal Fluid Be Examined in Syphilis?** by A. Neisser.—Where active syphilis can be proved, either by the finding of spirochetes in the lesions or fluids, or by means of a positive Wassermann reaction, it is unnecessary to examine the spinal fluid, for active treatment will be begun. When one is about to stop general antisyphilitic treatment because of a clinical cure or because the blood Wassermann has become constantly negative, then the spinal fluid should be examined because it may still be positive although there may be no symptoms relative to the central nervous system. When, also, the blood Wassermann remains persistently positive in spite of the most energetic treatment, the spinal fluid should be tested. If negative there is reason to believe that no active process is present in the central nervous system and treatment can be stopped if desired. If it is positive, intraspinal treatment should be instituted. In other words, every syphilitic should have his spinal fluid examined, but only at the time when it has become necessary to do so to answer some direct need. In any case, the removal of fluid should be followed by an injection of salvarsanized or normal serum to minimize the distressing symptoms and the patient should be kept in bed for a day or more following the spinal puncture.

**Essential Thrombopenia**, by E. Frank.—The constant picture in constitutional purpura and in pseudothrombopenia is the great reduction in the number of platelets in the blood, with more or less prolonged bleeding time and a blood which clots within the normal time limit *in vitro*. Examinations of the blood in these cases showed that all of the elements for normal clotting were present in abundance, but that something was lacking which led to

the prolongation of bleeding time. This was shown to be the diminution in blood platelets, the normal function of which seems to be mechanically to check hemorrhage by adhesion of the vessel wall to the site of injury. Accepting the origin of the platelets as being from the megacaryocytes of the bone marrow, two theories of the pathology of these conditions can be offered, neither of which, however, has been definitely proved. The one is that there has been some change in the bone marrow which has prevented the normal formation of the platelets; the other that, while they are formed normally, there is something in the blood which leads to their rapid destruction. The latter theory finds support in the fact that bone marrow changes are usually not demonstrable and that injected blood platelets are rapidly destroyed. Treatment is unsatisfactory, but the local application of coagulens and the injection of fresh normal human platelets give temporary checking of the hemorrhages. (See this JOURNAL for July 10th, page 105.)

### MEDIZINISCHE KLINIK.

August 8, 1915

**Malnutrition in Carbohydrate Feeding**, by Erich Klose.—The nutritional derangement can be defined as a pathological constitution of the body as the result of a faulty balance in the nutriment supplied. It can arise either through some pathological condition of the body itself, or from the character of the food which may be such that it does not furnish the materials needed for normal development. Such is the case when the diet consists largely or wholly of carbohydrate. The ultimate result is a partial starvation. There are three distinct types: An atrophic form, which is not typical; a hydremic form, in which there is an appearance of good nutrition, with gain in weight, but a pasty complexion and the presence of an excessive amount of fluid in the tissues, especially in the subcutaneous and muscular structures; and a hypertonic form, marked by a more or less general spasticity of the skeletal muscles, particularly the flexors of the extremities. Both of the latter forms are of serious prognosis, for it is often impossible to save the life of the infant even with the administration of breast milk. The chief hope of success lies in the very early recognition of the condition and an appropriate change in diet before the disorder has become fixed. The exact chemical pathology of the condition is unknown, but the ash content of the tissues of such children is below normal, showing a deficiency of mineral salts.

**Errors in the Diagnosis of Pulmonary Tuberculosis**, by Bluemel.—Among a large number of soldiers sent to him with the diagnosis of pulmonary tuberculosis, Bluemel found that eighty per cent. did not have the disease. The symptoms and signs which had led others to the diagnosis were cough, pain in the chest, expectoration, and slight evidence of impairment of resonance over the right apex with some changes in breath sounds. The subjective symptoms were attributable to several simple causes. The physical signs were readily accounted for by one or more of the following conditions: Difference in muscular development on the two sides, old induration and collapse of the right apex



secondary to some form of partial obstruction of the upper air passages, and the fact that the right bronchus had more and larger branches than the left and closer to the surface.

**Paroxysms of Auricular Fibrillation**, by Hugo Popper.—A detailed account is given of a case in which there were repeated attacks of typical auricular fibrillation occurring over a period of many years without ultimate serious damage to the heart. The attacks came on suddenly and lasted from a few minutes to two days. They seemed to be independent of definite exciting factors. That there was true fibrillation during the paroxysms was proved by polygraphic and electrocardiographic records. In the same way it was proved that the rhythm was entirely normal between the paroxysms. The only drug which was found to exert any influence on the paroxysms was quinine which, in five grain doses, checked them on several occasions. A few similar cases have been reported in the literature. The author analyzes these and compares them with paroxysmal tachycardia and the ordinary form of auricular fibrillation. From this comparison he suggests that the form here described should be called paroxysmal arrhythmia. He regards the three conditions as being essentially different in mechanism and pathogenesis as well as in prognosis. Auricular fibrillation is due to an anatomical change in the myocardium; paroxysmal tachycardia to a nervous disturbance affecting the normal or one of the lesser pacemakers; and the present form is a nervous action on the auricular musculature at large. Both this and paroxysmal tachycardia are regarded as caused by the action of some circulating toxic substance, which, in the present case, seemed to be related to a slight hyperthyroidism. The prognosis in paroxysmal arrhythmia seems to be good.

#### BULLETIN DE L'ACADÉMIE DE MÉDECINE.

NOV. 15, 1913

**Massive Injections of Saline Solution into the Femoral Vein in Amputation of the Thigh and Removal of the Lower Extremity**, by M. Savariaud.—Special danger attends extensive operations on the leg in the wounded that have already lost much blood through hemorrhage. In pulseless patients with gangrenous septicemia, the risk is so great that many surgeons have refused to operate. Savariaud asserts that with suitable anesthesia, preventive hemostasis by means of a rubber tube tightened at the root of the limb or round the waist (Momburg's tourniquet), and the injection of 1,000 to 1,500 c. c. of normal saline solution into the circulation within a few minutes' time, the shock of the operation may be obviated in these cases, with correspondingly better ultimate results. In the author's patients, warm saline solution was quickly run into the gaping femoral vein as soon as amputation had been done. A conical cannula with a lumen of two m.m. at its tip and a base about the thickness of the little finger was used. In this way the author found it possible almost always to operate in the class of cases referred to, and even though the series included instances of bilateral amputation in exsanguinated subjects, none of the patients succumbed to shock

in the twenty-four hours following operation. Saline infusion in the elbow or even in the apophyseal veins was given up on account of the difficulty of introducing the cannula in these vessels in pulseless patients and the slowness of the flow of saline solution in these veins on account of their small size. Another advantage of saline infusion was the increased intravascular pressure which led to immediate bleeding from various small arteries; occlusion of these vessels by the usual surgical measures was a means of avoiding postoperative hemorrhage.

**Pyoculture and Opsonic Index**, by Fernand Tremolieres and Pierre Loew.—A comparison of the results of Delbet's procedure of pyoculture with the opsonic index was made in twenty cases. The value of pyoculture as a prognostic in wounds was confirmed, a distinctly positive pyoculture showing the presence of an active infectious process; in neutral or negative pyocultures expectant treatment is sufficient or the prognosis is definitely favorable without surgery. The opsonic index generally followed the results of pyoculture. Where the two procedures yielded opposite indications, pyoculture was found in agreement with the clinical course of the local infection, the opsonic index being at fault.

#### PRESSE MÉDICALE.

JULY 1, 1915

**Pyoculture**, by Pierre Delbet.—The severity and clinical course of a local infection depends not only upon the nature and virulence of the causative organism itself, but also very largely upon the local powers of resistance and the nature of the tissues attacked. Measuring the bactericidal and opsonic properties of the blood is of little value in the prognosis of infections localized in tissues more or less profoundly impaired by traumatism. Animal inoculations are likewise only exceptionally of value in affording therapeutic indications in wounds. The author proposes as a prognostic and therapeutic guide in these cases a study of the properties of the wound discharge in each case as a culture medium for the pathogenic bacteria contained therein. Direct information as to the results in the fight between tissue cells and bacteria may thus be obtained at short intervals. This procedure, for which the author has coined the term pyoculture, consists in withdrawing pus from the wound with a pipette, making a smear on a slide, inoculating peptone bouillon, sealing the lower extremity of the pipette over a flame, and keeping the inoculated tube and pipette in the incubator for twenty-four hours. In the most grave cases the immediate smear shows innumerable bacteria; prompt surgical treatment is then required, without waiting for the results of pyoculture. Where bacteria are not so numerous, pyoculture supplies the required information. Where, at the end of twenty-four hours, marked multiplication of the organisms is found to have taken place, pyoculture is positive and opening of the wound and drainage are required, especially if the pipette smear shows greater pullulation than that from the bouillon. Increase in the number of bacteria is most easily detected in a lengthening of the chains of organisms in the case of streptococci, larger groups of cocci in the case of staphylococci, and filamentous forms in the case of vibrios. Where

ORGANISMS show no increase in the pus, though augmenting in the bouillon culture, the tissues may be considered to be holding their own in the combat against the bacteria, and meddling treatment is contraindicated. Finally, if the number of organisms in the pipette has actually diminished, pyoculture is negative; the wound discharge is not only bactericidal but bacteriolytic, the patient is recovering through autovaccination, and treatment which might interfere with the process of bacterial destruction must not be attempted. Frequently the results of pyoculture and the clinical appearances were found opposite in a given case. Under these conditions, Delbet relies on pyoculture. He is convinced that he has saved cases by early surgical intervention indicated through pyoculture, where clinical appearances would not have suggested the necessity of such intervention, and he has avoided some useless operations apparently indicated clinically.

#### REVUE MEDICALE DE LA SUISSE ROMANDE

**Surgical Treatment of the Gastric Crises of Tabes dorsalis**, by G. Patry.—Guleke's modification of Förster's operation is reported. The author's patient, a man of fifty-three years, suffered from gastric attacks for eight years, and was confined to bed. Laminectomy was performed and the seventh, eighth, ninth, and tenth thoracic sensory nerve roots were cut on both sides. Temporary cardiac and respiratory arrest took place upon section of the right tenth thoracic root; this was avoided on the left side by a preliminary injection of novocaine solution into the root. The wound was closed without drainage and healed promptly. The patient's appetite rapidly improved and he gained in weight. On leaving the hospital, two weeks after the operation, he was almost free from epigastric pain. Summarizing the results in sixty-one cases of Förster's operation, Patry notes complete or partial relief in 52.5 per cent., poor results in 16.4 per cent., and death in 31.1 per cent. Tabetic crises being otherwise incurable, he believes the risk of operation should be taken in these cases. Guleke's technic is recommended as being relatively easy, avoiding a number of frequent complications.

**Synergistic Action of Vasoconstrictor Drugs in Local Anesthesia**, by J. Burmann.—It is a good thing to associate two vasoconstrictor drugs, the one, epinephrine, acting promptly but for a short time only, and the other paraoxyphenylethylamine or uteramine—well known as an active principle of ergot—acting more slowly but more persistently, with an anesthetic drug, e. g., cocaine or novocaine. At a time when the vasoconstrictor action of epinephrine is on the wane, thus permitting absorption of the anesthetic drug into the general system and cessation of local anesthesia, uteramine comes into play and maintains anemia some time longer. In dental practice, the following combined solution was found to give the best results: Novocaine, 0.03 gram; epinephrine, 0.0005 gram; uteramine, 0.005 gram, and normal saline solution, one c. c. Seven teeth were extracted painlessly at one sitting after injection of two c. c. of the solution mentioned. Whatever ratio of the anesthetic drug is

used in the solution, Burmann advises that the ratio of uteramine to epinephrine be maintained at one to 100. Credit for being the first to dissolve novocaine epinephrine tablets in a solution of uteramine for the purpose of augmenting their anesthetic power is given by the author to Zbinden.

#### RIFORMA MEDICA.

August 28, 1915.

**Virulence of the Pneumococcus in Pneumonic Sputum**, by N. Camillo.—Direct inoculation of two guineapigs with pneumonic sputum produced death with a bacteremia and marked splenic involvement, whereas inoculation with pneumococci from the same sputum grown on agar plates in much larger doses had a very much milder effect. One guineapig so inoculated was unharmed. From the experiments, it was demonstrated that the pneumococcus from the sputum grown on agar seldom shows a high virulence, whereas the same organism when inoculated subcutaneously gives rise to a strain of high virulence in the blood. This is explained by the power of the pneumococcus to produce strains of different virulence in accordance with environment.

**Pathogenesis of Nephritis in Infectious Diseases**, by P. Montuschi.—The research may be pursued in three ways—the action of an endotoxin, of an exotoxin, and of bacteria themselves. In diphtheria we are dealing with an exotoxin, and in cholera with an endotoxin, but in the majority of infectious processes the bacteria circulate in the blood. Factors in the production of nephritis are the action of exotoxic and endotoxic substances which are products either of secretion or of destruction of the living bacteria, and also a mechanical action exerted by the bacteria in their passage through the renal apparatus. This mechanical action may be produced by the injection into the circulation of inert nontoxic substances, such as colloidal carbon; therefore even nonpathogenic bacteria may in this way cause a nephritis.

#### REVISTA DE MEDICINA Y CIRUGIA PRACTICAS

August 28, 1915.

**A Supplementary Function of the Foot: Prehensile Foot**, by V. Delfino.—In the white race the feet have become merely instruments of locomotion and bases upon which to stand owing to the character of the foot covering and the erect posture assumed at work. In this race repose is always acquired in the sitting or lying posture. On the other hand in the black and yellow races, the feet are either left bare or merely imposed on a piece of wood or leather—a custom which in no way interferes with the full freedom of the toes. Then again these races work and rest in the squatting position and also frequently use the toes to supplement the fingers in performing their daily occupation. In such cases the toes acquire great mobility and prehensile power and at the same time the hip joint develops a range of movement unknown in the white race. A marked feature in the development of the prehensile foot is the great power of separation or abduction of the great toe from the second toe. The great toe also acquires the power of rotation so as to give it somewhat the function of the thumb for prehensile purposes.

## HYGIEA.

Februarius 1. 1915.

**Diagnostic Importance of Tubercle Bacilli in Feces,** by Hilding Bergstrand.—First control tests were made in a series of cases in which the presence or absence of the tubercle bacilli was known, in order to try the different methods, and it was found that the Schönte-Weissenfels ether method was the best and simplest. Then 110 adults with advanced pulmonary tuberculosis were examined, both as to sputum and bacterial contents of feces, with the result that ninety per cent. showed tubercle bacilli in the feces. The inference would be that for diagnostic purposes the bacilli are more readily demonstrable in the sputum, while an examination of both would increase the chances of bacillary findings, as in the foregoing series eight of the patients gave at first positive result for feces and negative for sputum and only after repeated examinations were bacilli found in the sputum of all but one. The frequency of the bacilli in the feces was found to be in proportion to that in the sputum, which would lead to the conclusion that the swallowed sputum was the main source of the intestinal bacilli. Moreover, in thirty-one of the cases, the autopsy showed that there were five with large and numerous intestinal tuberculous lesions, in which cases the bacillary findings in life had been proportionate to those in the sputum, sparse in both. The theory that the blood and bile could be a source of the intestinal bacilli is scarcely probable, and the fact that tubercle bacilli are so seldom found in the feces of children, while frequently demonstrated in their blood, is, the author thinks, an argument against this assumption. In a series of twenty children, known to be tuberculous, tests of the feces were made, but tubercle bacilli were only found in one.

March 15, 1915.

**Cerebellar Symptoms in Myxedema,** by Martin Odin.—To a series of four cases reported by Söderbergh, with whom the author collaborated, a fifth is added, presenting the same features and a new symptom in addition. In this pronounced case of myxedema, as in the others, with one exception, there was a noticeably clear intelligence contrasting with slowness of speech and movement. There was an increased mechanical irritability of certain muscle groups, especially the flexor carpi radialis, biceps brachii, the dorsal flexors of the foot and the abdominal muscles. The symptoms referable to the cerebellum were: Fixation of position above the normal (catalepsy), a loss of equilibrium on walking and standing (cerebellar ataxia), a tendency to let the legs go ahead of the body, as in arising from the recumbent posture the patient would raise the legs instead of the trunk (asynergia), a loss of capacity for executing quickly antagonistic movements such as pronation and supination (adiadochocinesis), a new symptom being added in the author's case, that of *mouvements démesurés* (Babinski), as the inability to draw a horizontal line up to a certain point, the patient either stopping before reaching the point or going past it. The administration of thyroid extract resulted in the disappearance of these symptoms as well as the cure of the myxedema, in the last case after three months' stay in the hospital.

The slowness of speech and motion in these cases is regarded as a somatic condition, and not a psychical state, the cause being a myxedematous intoxication of the cerebellum, causing disorder in its functioning.

## SVENSKA LÄKARESÄLLSKAPETS FÖRHANDLINGAR

April 6, 1915.

**Recent Investigations Regarding the Etiology of Pyorrhœa alveolaris,** by Alfr. Pettersson.—Commenting on the discovery by Smith and Barrett of *Entamoeba buccalis* as the cause of alveolar pyorrhœa, the author believes this protozoon to be identical with the one described by Prowazek in 1904 and Steinberg in 1862, the *Amœba dentalis* of Grassi (1879), and the amœba that Flexner, of Baltimore, found in 1892 in an alveolar abscess. This amœba would only be causative in a part of the pyorrhœa cases, not having been discovered in all. Moreover it has been found in other conditions than alveolar pyorrhœa. Furthermore, Chiovare, of Rome, has come to entirely different conclusions. He has found that this amœba becomes encysted in the mouth; that it moreover occurs in concretions on neglected teeth. He believes that it plays no role in the pathology of pyorrhœa alveolaris, but rather contributes to the autodisinfection of the mouth by taking up and digesting other bacteria. On the other hand, attempts at obtaining pure cultures and immunization by vaccines in pyorrhœa alveolaris has met with partial success, and the author believes that the study of the pus with the object of obtaining a pure culture will lead to the solution of the problem.

## BRITISH MEDICAL JOURNAL.

August 29, 1915.

**Treatment of Gunshot Wounds by Excision and Primary Suture,** by H. M. W. Gray.—The entire wound should be excised as a whole, carrying a third to a half an inch of tissue with it. When bone has been exposed this should also be removed with a rongeur or chisel. The operation should be performed under local anesthesia with an abundance of epinephrine to control bleeding and when completed the fresh surface should be dried and freed from blood clot. The edges should then be approximated and the wound closed with one or more layers of sutures. The suture line and the skin for several inches around it should be painted with a wound varnish composed of forty to fifty per cent. of mastic dissolved in a volatile solvent. When this has become sticky, it should be covered with two or more layers of sterile gauze which should be carefully smoothed out over the whole surface. Cotton wool and bandages are then applied firmly. Often no further dressing is needed and the wound can be inspected with the first layer of gauze left in place. The varnish with one layer of gauze can be left on until healing is complete, and on its removal usually carries with it the knots of the sutures. Where the wound is infected when first seen, it should be painted with five to ten per cent. of iodine in alcohol or ether before the excision and fresh instruments should be used after excision is completed. The advantages of this method of treatment are stated by its author to be the cer-



tainty of healing by first intention with its great reduction of scar formation; the saving of time by the more rapid healing; the reduction in the amount of attention and dressing required; the great reduction of pain; avoidance of septic complications; reduction in deformity through the lessening of scar tissue and in the case of head injuries, the readiness with which fractures can be discovered.

**Antiseptic Substances in the Treatment of Infected Wounds,** by H. D. Dakin. The commonly used antiseptic substances have decided limitations: Phenol is of low germicidal power, especially in the presence of serum, and when sufficiently concentrated, damages the tissues. Peroxide of hydrogen has very little germicidal action in the presence of tissue fluids on account of its rapid decomposition by catalase present in them. Bichloride of mercury rapidly loses much of its antiseptic power in the presence of albuminous fluids and is irritating to the tissues even in very dilute solutions. Silver nitrate is more valuable than bichloride of mercury but also is quite irritant. The coagulation of protein and its irritant properties reduce the value of iodine for use in wounds. Hypochlorite of sodium has high bactericidal powers, but as commonly prepared is of very variable composition and contains free alkali and free chlorine which render it highly irritant. Even when carefully prepared so as to eliminate the free chlorine and to secure a neutral solution, sodium hypochlorite has markedly irritant properties when brought into contact with the tissues on account of hydrolytic dissociation with the liberation of sodium hydroxide and hypochlorous acid. Experimental investigation on the basis of the known powers of certain polybasic acids to maintain a neutral reaction led to the preparation of a mixture of sodium hypochlorite and boric acid of such composition that it retains all of its high bactericidal properties without having the detrimental irritant actions. The preparation is simple; one half per cent. solution of sodium hypochlorite can be made by dissolving 140 grams of dry sodium carbonate and 200 grams of chlorinated lime in ten litres of tap water. The clear liquid is siphoned off and the residue strained into it through cotton. To the total clear liquid are added forty grams of boric acid and the solution is ready for use. Stronger solutions may be prepared in the same manner, keeping the proportions of the ingredients the same. The bactericidal action of the hypochlorite is very high and is relatively little reduced in the presence of organic matter. Chloramines are formed at once in the presence of organic matter and these compounds are powerfully bactericidal so that their formation reinforces the germicidal action of the hypochlorous acid liberated. Two aromatic chloramines having soluble sodium salts have been prepared and have produced good effects, but they must be studied further before definite statements can be made.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

**Acanthosis nigricans as an Indication of Internal Malignancy,** by A. J. Markley.—The regional and symmetrical development of varying degrees of pigmentation and of hard and soft papillary growths

are the chief features of acanthosis. The sites of predilection for these manifestations are the neck, face, axillæ, groins, backs and palms of the hands, and the mucosæ of the mouth and vulva. There is a juvenile or benign form in which there is little or no disturbance of the general health and a malignant form of short duration, marked intensity, and associated with some serious internal disorder, usually cancer. The importance of the condition lies in the fact that its presence is often an indication of some malignant process in the body. In eighty per cent. of thirty-five cases of the adult or malignant type of the disease, some form of cancer was present. It is important that the general practitioner should be able to recognize the features of the adult type of the disease on account of the relation it bears to internal malignant growths.

**Right Sided Hypertension with Occasional Cardiac Dilatation as Postoperative Complication,** by F. F. Simpson.—In a series of 2,000 consecutive abdominal operations, symptoms indicative of this condition were observed in only about two per cent. Studies on dogs and a closer analysis of a second series of 115 abdominal operations in man showed that the condition does occur in man as a postoperative complication, although it is usually slight in degree. Rarely it goes on to right auricular dilatation or dilatation of the entire heart. Its occurrence is rendered more likely or may be precipitated by the presence of a weakened myocardium, by the excessive use of ether, prolonged extreme Trendelenburg position or by the rapid intravenous infusion of considerable quantities of salt solution. Prompt recognition with elevation of the head and the administration of morphine and a cardiac stimulant will quickly overcome it.

**Results of a Quantitative Abderhalden Test in Cancer,** by Isaac Levin and Donald D. Van Slyke.—Series of parallel tests were carried out, using the ordinary Abderhalden technic and an extremely delicate quantitative modification. Both normal and cancer serums were used. The authors thus conclude: The analysis of the results of the present investigation seems to indicate that the more accurate and objective the test employed for the detection of the specific ferment reactions in the blood serum, the less difference can be detected between the reactions obtainable with normal and supposedly specific serums. The diagnostic value of the Abderhalden reaction in cancer is, therefore, to say the least, doubtful, and it must be stated very emphatically that for the present the method belongs to the research laboratory and not to the clinic.

#### MEDICAL RECORD.

September 11, 1915.

**Blood Transfusion: Indications and Technic,** by George I. Miller.—Blood transfusion must not be used as a last resort; it is a cardiac and central nervous stimulant. It is indicated in primary and secondary anemia; in the prevention and treatment of shock; in colaltar poisoning; in pathological hemorrhage and toxic conditions. It is contraindicated when hemolysis is taking place, in cancerous cachexia, in uremia, in acute hyperthyroidism and in diabetes. There are six methods of transfusion, direct, indirect, combined, autotransfusion, reciprocal

transfusion and the injection of blood under the skin and into the peritoneal cavity. Miller describes a special valve which he has devised for direct transfusion and also a cannula for the same purpose. He has used his method in twenty-three cases without mishap.

**Pneumococcic Infection of the Throat**, by William C. Sandy and Charles G. McGaffin.—Two cases of a fatal type of pneumococcic throat infection are reported, one in a man of forty-three years and the other in a woman of seventy-nine years. It is well known that the pneumococcus appears in the sputum of healthy normal people, though it may be that such pneumococci belong to the less virulent strains of the germs. So called pneumococcus carriers are occasionally people who have suffered from pneumonia months before. Pneumococcic septicemia which is the cause of much discussion has certainly been found in severe infections.

**Prevention and Treatment of Deformities in Anterior Poliomyelitis**, by Jacob Grossman.—To prevent foot drop the foot should be kept at right angles to the leg during the painful stage. This may be done with a light Volkman's splint or a moulded plaster bandage. Massage, passive movement and electricity should not be used during this tender stage. Electrical treatments are by no means specific, the static form being the best and galvanism next. The faradic current is not only useless but may be harmful. The best treatment of contractions or fixed deformities is gradual stretching with subsequent application of plaster of Paris or other splints. Improvement of muscle function is usually effected by tendon transplantation, while artificial ankylosis is produced in cases of flail and other useless joints.

**Simple Treatment of Ivy Poisoning**, by John F. Lane.—This treatment consists of constant moist dressings of boric acid solution. The larger blebs are opened, but the smaller ones are not touched. If the solution is kept ice cold, it is more soothing and sometimes more rapid in its action. Ointments should not be used in the acute stage.

**Eczema and the Bulkley Rice Diet**, by F. Tweddell.—Tweddell relates his personal experiences and agrees with Bulkley that a rice diet, followed by a purely vegetable diet, is the only rational treatment, and that the vesicular form of eczema is due to a diet rich in proteins and stimulants.

#### JOURNAL OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

July, 1915.

**Otitic Sinus Thrombosis**, by C. F. Pfingstein.—When the lining of the antrum and the mastoid cells is chronically inflamed, softened, or eroded, and these spaces are occupied with decomposing, purulent products swarming with pathogenic organisms, small thrombi charged with infective organisms may be carried inward from the veins of the mucous membrane of the ear, or of the bone, and cause fresh formations which increase in size until the sinus is plugged. Thrombi may form with or against the blood stream and may extend in either direction from the sigmoid sinus. As long as the thrombus remains firm and solid, the danger of general blood infection is not, as a rule, great, but when it becomes infected, soft and disintegrated, the

broken down, septic material is detached by the blood current, and the emboli resulting give rise to fresh septic centres in some near or remote part of the body, producing infarcts and metastatic abscesses. Pulmonary complications are very common in consequence of infarcts in the lungs; septic pneumonia, abscess, or even gangrene may result. Ocular disturbances are observed when the cavernous sinus is involved. Examination of the blood is frequently of importance. A positive streptococcus blood culture nearly always points to the presence of sinus thrombosis. The continued presence of streptococci in the blood after the sigmoid sinus has been explored may be regarded as an indication for the tying of the internal jugular vein. If, after ligation of the vein, streptococci are no longer found in the blood, the general invasion has been stopped. In some doubtful cases, where there is only evidence of a past suppuration in the ears and of no other focus from which bacteria could have access to the blood, the discovery of streptococci in the blood would suggest the exploring of the mastoid cells and sigmoid sinus.

### Proceedings of Societies.

#### CLINICAL CONFERENCE OF THE NEUROLOGICAL INSTITUTE, NEW YORK.

*Regular Meeting, Held April 8, 1915.*

Dr. J. RAMSAY HUNT, in the Chair.

**Herpetic Inflammation of the Geniculate Ganglion**.—Dr. NORMAN SHARPE presented from the third division a carpenter forty-two years of age, admitted March 9, 1915. His family history was negative, he had had measles and mumps in childhood, and several attacks of rheumatism, gonorrhea six years previously, and a "chance" ten months ago, which healed in one month, and was followed by enlargement and suppuration of the inguinal glands. He was a heavy beer drinker, taking fifteen to thirty glasses daily. One month before coming to the institute, i. e., in February, he was seized with severe lancinating pains in the depths of the right ear, partial deafness, headaches more severe on right side, and dizziness with tendency to stagger. He also had transient diplopia, with the images superimposed. There was no nausea or vomiting. These symptoms persisted for a week, at which time there were noticed small vesicles in the concha and near the auditory meatus of the right ear, and the same day there occurred a paralysis of the right side of the face. The diplopia disappeared, and the pain, headaches, and dizziness, though still persisting, lessened in severity, with the appearance of the palsy. Examination at this time in another hospital showed loss of taste sense on right half of tongue and also several small red spots on the right half of the soft palate, pillars of the fauces, and floor of the mouth on the right side.

One month after onset of illness he came to the Neurological Institute on account of the palsy. The pain in ear had been absent for ten days, but the headaches still were occasionally present. Examination showed several small recent scars (posther-

about the meatus and in the concha of the right ear; facial palsy complete in all three branches, and loss of taste sense on right half of tongue. The right pupil was somewhat smaller than the left; both reacted well to light and accommodation. The right corneal reflex was diminished and the cornea hypesthetic. There was lateral nystagmus, both to right and left. Watch was heard on left side at fifteen inches, on right side only when it was held against the ear. The tuning fork on the vertex lateralized to the left.

There was slight hypesthesia of the right half of the face and slight hypesthesia and hypalgesia around the meatus and concha of the right ear. The tongue protruded straight; station and gait, and all reflexes, superficial and deep, were normal. Examination of the fundi showed slight blurring of the discs; no neuritis. The urine was normal, serum Wassermann negative; cerebrospinal fluid Wassermann negative, globulin content negative, and there were present sixty-two cells per c. mm. The ear examination by Doctor Dench showed thickened and depressed tympanic membranes. Whisper, heard at eighteen feet on left side, was heard only at one inch on the right. The caloric test gave nystagmus on the right. Weber's test lateralized to the left. On April 8th, the status was briefly as follows: Right facial palsy complete in all three branches; right corneal reflex diminished, hypacusis unimproved and taste sense partially recovered; tactile and pain sense had returned to right face and right ear. The nystagmus had disappeared.

Doctor Sharpe said that this case belonged to the group of cases first described by Dr. Ramsay Hunt as herpetic inflammations of the geniculate ganglion, and later this syndrome had been still further elaborated to include the small sensory ganglia of the eighth, ninth, and tenth nerves. [*Arch. of Int. Med.*, 1910.] Though zona of the spinal ganglia and the ganglion of Gasser has long been known, it was to Doctor Hunt that they were indebted for the knowledge that zona also involved the small sensory ganglia of the seventh, ninth, and tenth nerves and possibly also the eighth nerve. He emphasized the fact that though zoster attacked chiefly one ganglion, the adjacent ganglia might also be involved, though to a lesser degree. This accounted for the varied symptoms and nerve complications. In the present case, where should they place the lesion? The eruption, occupying as it did the posterior part of the auditory meatus and the concha, lay in the distribution of the ganglia of three nerves—the seventh, ninth, and tenth. The absence of nausea and vomiting was shown by the history, and the fact that there was no eruption on the posteromesial surface of the auricle and the adjacent mastoid region, which area was also innervated by the vagus, tended to eliminate the ganglia of the tenth nerve as the seat of inflammation. There were, however, symptoms which pointed strongly to the ganglion of another nerve, namely, the geniculate ganglion of the seventh. The site of the eruption, the facial palsy, and loss of taste sense on the affected side, indicated clearly the geniculate as the seat of inflammation. The auditory symptoms, nystagmus, dizziness, and hypacusis, showed involvement either of the auditory ganglia or of the eighth nerve

directly. The eighth nerve, lying as it did in a common sheath with the seventh nerve, upon which was seated the geniculate ganglion, was very prone to be affected by direct extension of the inflammation. Besides, in cases where the evidence was clear that the auditory ganglia were involved in zoster, the symptoms were more severe, ranging from slight to severe expressions of Menière's syndrome, nystagmus, nausea and vomiting, extreme vertigo, and great prostration. The finding of small red spots on the soft palate and the pillars of the fauces on the right side might be merely coincidental, or might point to a possible slight involvement of the glossopharyngeal ganglia. The diminished corneal reflex, the smallness of the right pupil, pointed to irritation or slight involvement also of the Gasserian ganglion of the fifth nerve.

The case was presented as one of herpes zoster of the geniculate ganglion, with involvement of the seventh nerve, causing facial palsy and loss of taste sense; with extension to the eighth nerve, causing the auditory symptoms, and also with possibly slight involvement of the glossopharyngeal ganglia and the Gasserian ganglion.

**Cerebellar Cyst.**—Dr. HENRY K. MARKS presented from the first division a schoolboy fourteen years old with a cerebellar cyst. His heredity was negative. He was a full term baby, but instrumentally delivered after a hard labor and was born badly asphyxiated. His development, however, was normal. He had no convulsions; he learned to talk and walk quite early and had stood very well in school. He passed through measles, chicken pox, and whooping cough in early childhood, had diphtheria at six, scarlet fever at ten years, and a year later, that was three years ago, pneumonia.

His present illness was of four years' duration, possibly longer. The symptoms occurred in the following order: 1. So called bilious attacks. These he had had from his earliest childhood—attacks of nausea and vomiting—at first at rare intervals, as long as a year apart, gaining gradually in frequency, and for the past four or five years coming every three or four weeks and lasting two or three days at a time. During the attacks he had been able to hold nothing on his stomach. For the past six months, though complaining of gastric distress and heartburn, the attacks had been entirely absent. 2. Headache. For the past four years he had complained of headache. This began as a dull heavy pain in the occiput which radiated later to the temples and finally became diffuse. The headaches had occurred practically daily, lasting four or five hours at a time and were brought on commonly by a sudden movement or a jar. 3. Strabismus. His eyes had always turned in slightly, but his mother believed that the squint had become more pronounced during the past two years. 4. Diplopia. For the same period of time he had suffered from constant diplopia. For the first two weeks after its onset it occurred only on looking at distant objects, but since then it appeared at all ranges. 5. For the past year he had had difficulty in swallowing—regurgitated fluids through his nose at times and had to eat solids slowly. 6. Since November, 1914, his gait had been uncertain, staggering, and grown progressively worse.



Physical examination showed an undersized, underdeveloped, poorly nourished lad who might be no older than ten years. His musculature was small and thin; his axillary and pubic hair scarcely visible. He stood commonly with his head flexed slightly forward and not infrequently lightly rotated to the right, the right shoulder drooping somewhat, and the legs abducted. A slight but definite instability of the body was present. With feet together, the instability became more pronounced, was lateral, with a tendency chiefly to the right. On closing his eyes the instability became greatly aggravated. The swaying, not marked at first but definitely greater than with eyes open, became wider and wider in range, and culminated after a few seconds in a sudden lunge, usually to the right. He rose from dorsal bedsores without the use of his arms. He would be able to stand well on his toes were it not for the equilibrium defect which now usually tended to pitch him forward. The dorsal spine showed a slight curvature. On bending backward, vertebral flexion was somewhat angular and awkward. Full flexion was interrupted by violent giddiness, preventing adequate testing of these synergies. His gait was broad based, with a definite titubating tendency, especially when he turned. The swaying was lateral and appeared to be equally distributed right and left. In walking the right shoulder, as a rule, was held somewhat elevated.

As to his upper extremities, nutrition was poor, but without local wasting. Both arms gave the impression of general hypotonicity. Range of movement was normal, power quite proportionate to his muscular development. He raised his arms above his head with the palms directed inward. This position was well sustained, but the right arm tended to droop before the left. With arms directed forward, the right from the start tended to assume a lower level, while on sustained attitude, the left shoulder became even further elevated and the body flexed to the right. The right wrist was slightly more flexed than the left, and in the test of Babinski the right hand tended to drop slightly in advance of the left. There was no tremor, no involuntary movement of the outstretched fingers, no intentional tremor, no ataxia in the finger-nose test. The tip of the nose was as a rule accurately approximated. Only occasionally there was slight fumbling or underreaching. Disturbance of diadochocinesis was inconstant, but it undoubtedly occurred at times and was then greater on the right than on the left.

In the lower extremities were found normal range of movement and adequate muscle power. Both legs were somewhat hypotonic, the left more than the right. Slight incoordination was detected on the right in the heel knee test, more marked in coordination on the left, but no tremor of the intentional type. No asynergia. Dysmetria was evidenced in the heel knee test on the left by the relatively violent heavy replacing of the heel on the bed. Cerebellar atalepsy was absent. The arm reflexes were lively and about equal. The Hoffman sign was wanting. The epigastrics and abdominals were present and somewhat greater on the right than the left. The knee and ankle jerks lively and about equal on two sides. The patellar jerks were active, the left slightly greater than the right, and both

showed exhaustible clonus. No ankle clonus; no Babinski; plantar stimulation gave as a rule no response.

The cranial nerves showed certain positive findings. The right palpebral aperture was somewhat greater than the left with slight frontalis overaction on the right. The pupils were of moderate size, equal, circular, and reacted well to light and accommodation. With the eyes at rest, there was moderate convergent strabismus, more marked on the left than on the right. Range of ocular movement, however, was normal. On lateral deviation to the left, moderately coarse and relatively slow rhythmic nystagmus movements occurred, and on lateral deviation to the right a finer and more rapid rhythm. Diplopia was present in all directions. The fundi were normal and vision 20/20 in both eyes. Corneal sensibility was possibly slightly reduced in the two eyes, especially on the left. Both labyrinths were very hyperesthetic, both cochlear and vestibular portions; there was no evidence of intracranial condition involving the eighth nerve or its branches. Pharyngeal sensibility was possibly slightly reduced on the left, otherwise the cranial nerves showed no abnormality. Superficial and deep sensibility was everywhere intact. No abnormality of the internal organs could be discovered.

A consideration of this case would, the speaker thought, leave little room for doubt that they were dealing with a cerebellar affection. The nystagmus, the titubation, the distinctive gait, the hypotonia, the dysmetria, the dysdiadochocinesis were undoubted evidence. The vital question was the nature of the pathological process and its localization. As to the nature of the process they must consider primarily cyst and new growth and, in a more restricted sense, tubercle, syphiloma, glioma, etc. The hereditary or familial cerebellar groups need scarcely concern them here. The lad's Wassermann was negative. It was deemed prudent not to make a lumbar puncture. His von Pirquet reaction was extremely doubtful. From these sources, therefore, nothing of positive value had been obtained, but in his history it might be possible to find a number of valuable differentiating clues. He was born after a hard labor, instruments were used which crushed his ears, he came into the world badly asphyxiated. So called bilious attacks, attacks of vomiting had occurred since infancy, a certain amount of convergent strabismus had existed as long as his mother could remember. These data of uncertain value in themselves gained new significance in the light of the past four years. Since then there had developed an aggravation of old symptoms—the vomiting attacks, the strabismus—and the addition of new symptoms, namely, headache, giddiness, diplopia, dysphagia, disturbance of equilibrium and locomotion. It seemed most likely, therefore, that they had to deal with an affection whose roots went back to earlier infancy. As he best conceived the case, the cerebellar substance or its neighborhood suffered a trauma during childbirth. On the basis of this a cyst had been gradually developing. In this way could best be explained also the relative mildness of the general symptoms, as well as the variability of the physical sign from day to day. The localization of the lesion was not a simple matter.

The predominance of cranial nerve signs on the left, albeit though they might be, the greater degree of spasm, the possible slight diminution of corneal and pharyngeal sensibility, the coarser nature of the nystagmus all suggested that the lesion was predominantly left sided. Whether intracerebellar or extracerebellar could not be definitely stated, though the former was by far the more likely.

**Tumor of the Acoustic Nerve Associated with Tic douloureux.**—Dr. J. RAMSAY HUNT presented from the third division a Swedish woman, thirty-eight years of age, with the following history: She married at the age of twenty-four years and had one child; no miscarriages. The menses were always regular and normal. She had a complete deafness of the left ear of eighteen years' duration. This, according to her statement, appeared suddenly and was preceded for some time by severe pain in the left side of the head and face. She stated definitely that at no time had she had any tinnitus aurium nor other subjective sensation, nor any discharge from the affected ear.

Eight years ago she developed headaches, which continued irregularly for two or three years. Very rarely with the headache she had attacks of nausea and vomiting. The pain was localized chiefly in the frontal region, but occasionally it was occipital. After three years the headaches grew less severe, but they had returned from time to time since, especially when she was constipated. During the past seven or eight years, she had also had vertiginous seizures, and these have persisted; but these attacks were mild, and were never so severe as in true Ménière's syndrome. They occurred, especially on bending forward, and she would have to support herself for a few moments until the attack had passed. There was no diplopia, and no faints nor fits of any kind. For the past three or four years she had some disturbance of gait, with a tendency to fall forward and to the left. The left arm and left leg felt awkward and she had not proper control over them. There was no numbness and no pain in the extremities.

Five years ago, supposedly following a blow with the fist over the right eye, she had developed neuralgic pains in the right eye, right side of the brow, and right side of the nose, in the distribution of the first division of the trigeminus. These pains were very severe, typically neuralgic in character, and persisted for several months. During the past five years she had had several attacks of neuralgia, lasting from three to four months, the pain limited to the first division of the right fifth nerve. In the intervals, she had been free from pain. At times there were shorter paroxysms of only two or three weeks. The pains were of the severe lancinating type and were accompanied by lachrymation and reflex spasms of the face on the affected side.

Occasionally, in severe attacks, the pain radiated into certain branches of the second division of the fifth, especially the upper lip: it was always, however, most severe and most constant in the first branch, Patrick's so called trigger zone; i. e., a point from which pressure tended to produce crises of severe pain, was situated on the upper lip near the ala nasi. At this point a very slight touch was sufficient at certain times to bring on paroxysms of pain. There

was no tenderness over the points of exit of the branches of the fifth nerve.

This neuralgic condition was regarded as a pure tic douloureux and etiologically quite independent of the other cerebral symptoms, a view which was confirmed by the absence of sensory disturbances in the right trigeminal distribution and the preservation of the corneal and conjunctival reflexes.

There were no sphincteric disturbances, no girdle sensations, and no lancinating pains in the extremities.

The urine was normal and the Wassermann test of the blood and cerebrospinal fluid was negative. There was no increase of cells in the spinal fluid. Syphilis, therefore, could be safely excluded. The visceral examination was negative. The patient was not intelligent, but there was no evidence of mental deterioration or defect. Articulation was not very distinct. But it was difficult to determine if this was due to the effects of a lesion or to false teeth and a strong Scandinavian accent. On examination, the patient was able to stand with the eyes closed. The gait was uncertain and ataxic, with a tendency to deviate toward the left side. If she lost her balance the tendency was to fall forward and to the left. She complained that the trouble was with the left side, the arm and leg. There was typical nystagmus on looking toward the right and the left; on looking to the left, there was also distinct weakness of the conjoint movements. On looking upward there were also coarse nystagmoid movements. The face drooped slightly in the lower branch on the right side (side of the neuralgia), but no defect of voluntary or emotional innervation was evident. The movements of the face were performed normally, and there was no atrophy of the masseters or temporal muscles. Innervation of the pharynx and tongue was normal. There were no fibrillary twitches of the face or tongue. Phonation was normal. The pupils reacted to light and accommodation and were equal. On the left side there was distinct diminution of the corneal and conjunctival reflexes on comparison with the right side.

There were slight but distinct disturbances of the pain sense (area of hypalgesia and analgesia) in the left trigeminal distribution; the touch and temperature senses were normal. The sensation of the right fifth nerve was normal and the general sensory examination was negative. The tendon reflexes of the upper extremities were present and equal. Plantar reflexes were of the flexor type. There was no disturbance of the gross motor power of the extremities. The left arm showed a distinct ataxia on placing the finger to the tip of the nose; and the successive movements (adiadochocinesis) were diminished on the left side. Doctor Holden found the vision to be 20/30 on the left, 20/40 on the right; the fields and optic discs were both normal.

Both drum membranes were retracted, more upon the left side. There was practically complete deafness on the left side, both to bone and aerial conduction; Weber's test lateralized to the right side. The caloric test of the right ear produced a nystagmus reaction; no response upon the left side.

The case was presented because of the diagnostic

difficulties, and especially the combination of a pure neuralgic condition (*tic douloureux*) upon the right side, in association with symptoms which were referable to a lesion in the posterior fossa on the left side. That the *tic douloureux* was an epiphenomenon, and not a part of the organic disease of the brain from which the woman suffered, seemed probable from the five years' duration without signs of anesthesia or of interruption of the reflex arc of the trigeminus; the periodical character of the pain, with the accompanying spasm and lacrymation, were also in harmony with a pure neuralgic condition. More difficult was the interpretation of the other symptoms; the initial deafness with evident involvement of the nerve, together with left trigeminal hypalgesia, and diminution of the left corneal reflex, lateropulsion to the left; left ataxia and adiadochocinesis, nystagmus with conjoint weakness of the ocular movements toward the left, indicated with a fair degree of certainty a lesion in the left cerebellopontine angle, and probably an acoustic neuroma.

The long history of eighteen years and the absence of optic neuritis, with the improvement or cessation of general cerebral symptoms during the past few years, evidently pointed to a benign or arrested growth. For this reason no operative procedure was contemplated. It was well known that such growths were often multiple or bilateral, so that the question was asked, Could the facial neuralgia on the right side be dependent upon such a formation on the nerve trunk? This was answered in the negative, because of the absence of sensory disturbances. Reference was made to the case of acoustic tumor reported by Weisenberg, which masqueraded for many years under the diagnosis of *tic douloureux*. In this case the neuralgia was on the side of the tumor and was caused by pressure, and there were demonstrable corresponding sensory changes.

#### AMERICAN PROCTOLOGIC SOCIETY.

*Seventeenth Annual Meeting, Held at San Francisco, Cal., June 21 and 22, 1915.*

The President, LOUIS J. KROUSE, M. D., of Cincinnati, Ohio, in the Chair.

*(Continued from page 638.)*

**Fecal Abscess in Pouch of Douglas, after Typhoid.**—Dr. ALFRED J. ZOBEL, of San Francisco, stated that for the past thirty years very few cases of fecal abscess had been reported in the literature. Only one of the more recently published textbooks of surgery gave even brief mention of the subject. A fecal abscess was distinctly different from an abscess in which the pus had been so tainted by a growth of colon bacillus that from the odor it might be mistaken for fecal matter. It might occur in connection with any portion of the intestine, and originate either externally or from within. When it originated without, it might subsequently burst into the gut, empty its purulent content, and have it replaced wholly or in part with fecal matter. A fecal abscess which originated from within the gut usually resulted from a slow, progressive ulceration of the mucosa, due either to general conditions, such

as typhoid fever, dysentery, tuberculosis, or cancer, or to local causes, such as chronic intestinal catarrh, stricture, a hard fecal accumulation, or a foreign body.

The speaker reported a case of fecal abscess which had not only filled the cul-de-sac of Douglas, but also had invaded the tissues between the rectum and the vagina. The patient, a woman of forty-two years, had had a miscarriage eight years previously, and was told at that time that some kind of a swelling could be felt in her rectum. However this gave her no trouble, then or subsequently, and it had been entirely forgotten. When her present trouble began, two and a half months after an attack of typhoid fever, the history of this former condition complicated the diagnosis. On digital examination a large, smooth, immovable, brawny mass, beginning about 2.5 cm. above the internal sphincter, and extending beyond reach of the finger, was felt bulging from the right lateral and anterior sides of the rectum. The mucosa was freely movable over it. No sign of fluctuation could be elicited. No particular pain was caused by deep pressure. The temperature and pulse rate were normal. It had been aspirated through the rectum by her physician, and a slightly turbid fluid had been withdrawn. The mass began to swell into the vagina, and in two days so occluded the passage that it almost prevented the entrance of the examining finger beyond the portal. Slight fluctuation was then felt. There was severe rectal pain. The temperature was still normal; the pulse 90. An exact diagnosis was not made before the operation. An incision was made through the posterolateral vaginal wall. Upon blunt dissection a tense sac presented. When this was punctured the contents gushed out in a thick, sluggish stream which kept flowing for some little time. From its strong fecal odor and brownish yellow, lumpy appearance it apparently consisted wholly of semiliquid, mushy feces, similar to what was found in the lower end of the ileum and cecum. Nearly two pints of this foul material was evacuated. Fecal drainage ceased entirely eight hours after the abscess was opened. The turbid discharge which remained rapidly decreased in quantity, and in less than four weeks after the fecal abscess was evacuated, the wound was completely healed.

Although a fecal abscess was met with rarely, the possibility of it being present should be taken into consideration in the differential diagnosis of obscure intraabdominal tumors. The speaker concluded by quoting from Fenwick: Where there was a localized abdominal swelling, immovable by the respiration or by a moderate amount of pressure of the fingers; whose size and shape altered when diarrhea occurred; in which light percussion gave a tympanitic, and a more forcible stroke a dull sound; or in which an emphysematous sensation was communicated to the fingers, or a gurgling sound produced by percussion; it was probably of fecal origin; and this more probably when there was a history of anything apt to produce ulceration.

**Election of Officers.**—The following officers were elected for the ensuing year: President, Dr. T. Chittenden Hill, of Boston; vice-president, Dr. Frank C. Yeomans, of New York; secretary-treasurer, Dr. Alfred J. Zobel, of San Francisco. Exec-



utive Council: Dr. T. Chittenden Hill, of Boston; Dr. Louis J. Krouse, of Cincinnati; Dr. George B. Evans, of Dayton, Ohio; Dr. Alfred J. Zobel, of San Francisco. The following were elected associate Fellows of the society: Dr. P. Milton Linthicum, M. D., of Baltimore; Dr. William H. Stauffer, of St. Louis; Dr. Wells Teachnor, of Columbus, Ohio. The place of meeting for 1916 will be Detroit, Mich. Exact date and headquarters will be announced later.

### Letters to the Editors.

#### INSANITY AND CIVILIZATION

NEW YORK, September 18, 1915.

##### To the Editors

I read with interest and great pleasure the *Influence of Civilization Upon Insanity*, by Dr. Morris J. Karpas, in the *New York Medical Journal*. Everything that that careful observer writes is worth reading. I regret to say, however, that I find myself at variance with the author's deductions and conclusions.

The statement frequently made, that insanity is on the increase, is to say the least not proven. Reliable statistics are very meagre, and trite as the saying is, it is true nevertheless that statistics can be made to prove anything. The fact that there are now more insane people in the asylums and various institutions *does not* prove that there is a greater number of insane in the population. It simply means that more insane and borderline cases are committed than formerly. Cases that in former years were kept home, or were simply considered queer and eccentric, are now committed to asylums and sanitariums. One might as well assert that there is more sickness in general among the population because more patients, absolutely and relatively, are now treated in the hospitals than there were in former years.

The statement that among primitive and uncivilized people insanity is not as frequent as among the civilized, will also not bear critical analysis. The fact is simply this, that among the savage and primitive races the line of demarcation between the normal and the abnormal is not so sharp and distinct as it is among civilized people. In a highly civilized and cultured nation, the least abnormality is noted, commented upon, and where there is the least danger to either the person's life and health, or to the life and health of other people, the patient is locked up. Not so among primitive races.

Now as to the alleged etiological factors which play a role in the increase of mental disease and insanity. Let us consider each one separately.

The first factor is "the intense struggle for existence." I deny that the struggle for existence is any more intense or acute now than it was fifty or a hundred years ago. On the contrary, I maintain that it is less so; because on the whole it is easier to make a living, to obtain a position, than it was a century ago. And taking the entire population as a whole, the hours of work were certainly much longer and the remuneration was much more miserly fifty years ago than they are today. It is the same old story about "the good old times," which when examined are found to have been anything but good. The entire allegation that our struggle for existence and intense city life are responsible for an increase in insanity falls to the ground when we consider the fact that the farming population, which leads the duller and quietest life, contributes a larger percentage of insane than does the city population.

The second alleged factor is alcohol and other habit-forming drugs, such as tobacco, tea, coffee, etc. There is no question whatever that addiction to alcohol was much more general fifty or one hundred years ago than it is now. The drunkard then was a common, ordinary thing among all classes of society from the lowest to the highest. Now at least we have some classes of society in which the drunkard is considered a disgrace.

The third alleged factor is the neglect of the body: "In the strife and struggle for existence in civilized societies

the actual care of the body is quite often neglected." This is certainly not so, for at no time in the history of mankind was the body so much cared for as it is now. Fifty or a hundred years ago, personal hygiene was an extremely rare occurrence. Only a very few of the *élite* knew about it. And when we think of how the people in the mass lived one hundred years ago, that the vast majority of them never took a bath from the time they were born until they were carried to the grave, we will not put neglect of the body to the debit of civilization.

Fourth, the congested offices, sweatshops, tenement houses, etc. Bad as our sweatshops and tenement houses are now, they are absolute palaces in comparison with the shops and tenement houses of only half a century ago. If anyone doubts this statement all he has to do is to read the description of New York by Dr. Stephen Smith at the time when he was at the head of the board of health. The conditions seem absolutely incredible. Not only would they not be tolerated now for one minute, they are simply unthinkable. There were no tenement house and factory inspectors then!

Fifth, syphilis. Syphilis is one of the great causes of nervous disease and insanity, but there is not the slightest doubt that syphilis is much less prevalent now than it was a century ago. Not only is the treatment incalculably superior to what it was a century ago, but there is one factor which came into operation only recently and was altogether unknown in former years, namely prophylaxis. A century, or half a century, ago neither the male patrons nor the prostitute knew anything about the prevention of venereal disease. Now both, particularly the latter, have become experts in it, and that this prevents an enormous amount of syphilization there can be no question to anyone who has made a study of the subject.

Sixth, sexual repression. That this is an important factor in nervous disturbances is fully granted. But first of all, as a factor in insanity it cannot be considered to play an important role. And second, and this is the most important point, does anyone for a moment think that sexual repression is more prevalent now than it was half a century ago? Everybody must admit that with the throwing off or the loosening of religious shackles, with the cracking of numerous social customs and traditions, there is much greater indulgence in illicit relations than there was formerly.

It will be seen on careful analysis that all those factors which are blamed on modern civilization were operative in a much stronger degree in "the good old times," in the times of the simple life. Rather thoughtlessly we are apt to charge civilization with many sins of which it is entirely innocent. Bad as this world is, it is still the best world that ever was, and Today is better than Yesterday, and Tomorrow will be better than Today.

WILLIAM J. ROBINSON, M. D.

### Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

V. Kaysa. *How to Produce and Interpret Them.* By HAROLD MOWAT. M. D. Edin.; Temporary Lieutenant, R. A. M. C.; At Present Officer to X Ray Department, Meerut Indian General Hospital; Radiographer to Metropolitan Hospital and Royal Chest Hospital. Oxford Medical Publications. London: Hodder & Stoughton, Henry Frowde (Oxford University Press), 1915. Pp. xii-204. Price, \$3.

This is a pleasing book, which has unfortunately not benefited by revision; it was written in exceptional circumstances, for, as the author tells us, he is on service. The book shows some carelessness, but we have not the heart to dwell upon this aspect. It is pleasanter to remark that the plan of the author—to write for those who have little or no knowledge of the x rays—is one that is often professed, but not carried out as sincerely as he has done. He aims at defining the things simply, and here he succeeds, in refreshing contrast to the verbose book makers,

who write portentous volumes of fine print, which we cannot read, for life is too short. Hence we recommend this book to the busy and careful student, who will be enabled to understand in a few hours' reading what the x rays are, how they are produced, the distinction between hard and soft tubes, the methods of taking pictures, the position of the patient, and processes of developing the plates when taken—all those details, in fact, that we often spend many weary days in studying when we have no author at hand who appreciates clearness and condensation. We should like to add that this book is a model of printing and of taste in editing. Why can't we do these things in this country? Our textbooks grow more slovenly every year.

*Praktikum der klinischen chemisch-mikroskopischen und bakteriologischen Untersuchungsmethoden.* Von Dr. M. KLOPSTOCK und Dr. A. KOWARSKY, in Berlin. Dritte, wesentlich umgearbeitete und vermehrte Auflage. Mit 29 Textabbildungen und 24 farbigen Tafeln. Berlin und Wien: Urban & Schwarzenberg, 1915. Pp. viii-392.

By means of this book the laboratory student will be glad to renew acquaintance with technical methods which he has perhaps learned without the aid of such books. This small but complete volume occupies a place midway between the large work of Brugsch and Schittenhelm and Professor Abel's concise volume. In some respects we have found it more useful than the two foregoing books; it is more carefully arranged than the former, more adequate than the latter. We can cite no better examples than the bacteriological examination of the skin, and of the cerebrospinal fluid. It is true that these examinations are probably not the primary object of Abel; still, we must credit the authors of this *vade mecum* with the accomplishment of a great deal in a small volume. The tests are well described; nothing essential is omitted, and the work is evidently that of masters, with the ring of true knowledge and experience that distinguishes the best German writers. We need hardly say that we entirely approve of the professional way of treating the subject of pathological analysis; we mean that it is hardly worth while to burden us with descriptions of tests at second hand, in other words, with tests that have not been seen and tried. The second hand character of many descriptions in books is disclosed at once to anyone who has actually employed the technic. It is the chief merit of this work that all the matter is arranged and written with a sure hand.

*Amnesia and Analgesia in Parturition (Twilight Sleep)*

By ALFRED M. HELLMAN, B.A., M.D., F.A.C.S., Adjunct Attending Gynecologist and Obstetrician Lebanon Hospital, Attending Gynecologist German Hospital Dispensary, Fellow New York Academy of Medicine, etc. New York: Paul B. Hoeber, 1915. Pp. 197. (Price, \$1.50.)

The author has studied the literature dealing with the history and the various phases of Twilight Sleep, and gives his results in this volume. It is essentially a review of the work done and of the opinions of the many who are at present experimenting with this method; the writer not giving any definite expression of opinion for or against. As a résumé of the subject the book is of value.

*Practical Materia Medica and Prescription Writing.* With Illustrations. By OSCAR W. BETHEA, M.D., Ph.G., F.C.S., Assistant Professor of Materia Medica and Instructor in Prescription Writing, Tulane University of Louisiana. Formerly Professor of Chemistry and Professor of Pharmacology, Mississippi Medical College, etc. Philadelphia: F. A. Davis Company; London: Stanley Phillips, 1915. Pp. viii-549. (Price, \$4.)

The author has chosen as his chief authorities books too often overlooked—the *United States Pharmacopoeia*, *Useful Remedies*, *Merck's Index*, the *National Formulary*. How unfamiliar these often are to medical men, even to medical authors, will appear from a perusal of this book. The lesson which the author conveys is that pharmacology is not everything. It is conceivable that a student might know the details of every animal experiment, yet might not be able to frame an intelligible prescription. He must also know how drugs are to be got ready for use, and how they are to be combined; in other words he must be familiar with the practice of pharmacy and therapeutics. This book deals with such problems.

## Interclinical Notes.

Dr. Adolph Meyer contributes the most important article to the *Survey* for September 18, 1915, on Organizing the Community for the Protection of its Mental Life. Much attention is given to medical and hygienic matters in this issue of the *Survey*. Dr. George H. Kirby's remarks on syphilis before the recent meeting of the American Public Health Association, being summarized as an introductory article. Dr. Ebba A. Dederer's paper on the protection needed by laundry workers is condensed from the *American Journal of Public Health*. There are discussions of the health of Cuban babies, of feeble-mindedness among delinquent children, and of the results of the enforcement of the Harrison law.

\* \* \*

What Drives Men to Drink, in the *Literary Digest* for September 18, 1915, is an amusing abstract from the *Illustrated World*, even if the subject is a serious one. "The substratum of disease in the alcoholic" is a telling phrase; some day, the profession at least will understand that the alcoholic is insane, but that alcohol will not make a lunatic of a normal man.

\* \* \*

Did many of our readers know that Sir Charles Tupper, once High Commissioner of the Dominion of Canada, began his career as a practitioner of medicine? This is told in *Recollections of Sixty Years*, a book, as the *Literary Digest* for September 18th truly remarks, over two inches thick. The periodical states with equal truth that the book is a great big octavo and profusely illustrated. It will be seen that the *Digest* is careful not to exaggerate the merits of the book.

\* \* \*

The *Medical Herald* (September, 1915, p. 344), in speaking of the new artificial leg of a great French actress, calls the latter the "Jersey Lily." It is hard to say which of the two ladies, Sara Bernhardt or Lily Langtry, would be the more indignant at this mistake, if it was brought to her attention.

\* \* \*

The *Survey* for September 11th says that there are over two million of mutilated men, soldiers of the European conflict. The Summer School of Scientific Management, made up of professors of engineering, psychologists, business men, surgeons, managers, and superintendents, considers it advisable to help these men by preparing a bibliography of articles on the subject of work by the maimed; by a division of the work of trades into groups of those involving similar or kindred movements of the same parts of the anatomy; by obtaining more records of individual cases of the work men have done for a living when they have been seriously injured; and by a study of the motions used in such cases, showing how the work was done. Teachers, themselves maimed if possible, will be secured and instructed and they, in turn, will instruct others.

\* \* \*

John A. Sleicher, editor of *Leslie's*, in reporting on a trip to Alaska in the issue for September 2, 1915, states that it is believed that the phonograph is responsible for the marked decrease in insanity in recent years among the miners of Alaska; an instrument is to be found in almost every cabin, even a thousand miles from civilization.

\* \* \*

Rupert Hughes starts a new serial story in the September *Red Book*, *The Thirteenth Commandment*; we hope there will be one of Mr. Hughes's accurately drawn doctors in this story. We learned not long ago with much astonishment that Mr. Hughes had never studied medicine and that his fidelity to detail in matters medical was due solely to his accuracy of observation.

\* \* \*

No physician could wish for a more delightful story in his own line than *Dear Enemy*, by Jean Webster, which has its second installment in the September *Century*. It seems to show deep and earnest study on the part of the author, whose heroine assumes charge of a large orphan asylum at the request of the wealthy founders and there meets the Scottish doctor—the dear enemy—who is a sci-

...its larger tips, but in the opinion of the heroine lacks certain human qualities. The orphan children are admirably differentiated and the questions of heredity, etc., are skillfully handled so as not only to avoid boring the reader, but to excite his interest and amusement.

### Meetings of Local Medical Societies.

Meeting of the French-Speaking Academy of Medicine.

**TUESDAY, September 28th.**—New York Psychoanalytic Society; New York Dermatological Society; Onondaga Medical Society, New York; Valentine Mott Medical Society, New York; Washington Heights Medical Society, New York; Medical Society of the County of Chautauqua, N. Y.

**THURSDAY, September 30th.**—Ex-Intern Society of Seney Hospital, Brooklyn; Medical Union, Buffalo.

**FRIDAY, October 1st.**—New York Academy of Medicine (Section in Surgery); New Utrecht Medical Society; New York Microscopical Society; Manhattan Dermatological Society; Practitioners' Society of New York; Corning Medical Association; Saratoga Springs Medical Society; Society for Serology and Hematology, New York.

**SATURDAY, October 2d.**—Benjamin Rush Medical Society, New York.

### Official News.

#### United States Army Intelligence:

*Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the week ending September 17, 1915:*

**Baker, Charles L.**, First Lieutenant, Medical Reserve Corps. Granted leave of absence for six months on surgeon's certificate of disability. **Carswell, Robert L.**, Captain, Medical Corps. Ordered to proceed at once to Texas City, Texas, for duty in command of Ambulance Company No. 5. **Coffey, Albion McD.**, First Lieutenant, Medical Reserve Corps. Ordered to proceed to Fort Sam Houston, Texas, and report to the commanding general, Southern Department, for assignment to temporary duty in that department. **Cushing, Harvey**, First Lieutenant, Medical Reserve Corps. Ordered to active duty and will report in person September 13, 1915, to the surgeon general of the army for duty until September 17, 1915. **Edwards, Daniel B.**, First Lieutenant, Medical Reserve Corps. The assignment to active duty at Fort Screven, Georgia, August 9 to August 27, 1915, inclusive, under verbal orders, is confirmed and approved. **Failing, Brayton R.**, First Lieutenant, Medical Reserve Corps. Ordered to active duty and will proceed to Fort Hancock, New Jersey, and report to the commanding officer for duty. **Fuller, Leigh A.**, Major, Medical Corps. Relieved from duty at Brownsville, Texas, and from duty at Fort Brady, Michigan, and will proceed to Fort D. A. Russell, Wyoming, for duty. **Hall, Horace C.**, First Lieutenant, Medical Reserve Corps. Ordered to active duty and will report to the commanding officer, Ninth Infantry, for duty. **Peed, George P.**, Captain, Medical Corps. Relieved from further temporary duty at the Port of Embarkation, Galveston, Texas, and will proceed to Fort Sam Houston, Texas, and report to the commanding general, Southern Department, for assignment to temporary duty. **Ramsay, George D.**, First Lieutenant, Medical Reserve Corps. Ordered to active duty and will report to the commanding officer, Fort Adams, Rhode Island, for duty. **Ruffner, Ernest L.**, Major, Medical Corps. Upon expiration of leave of absence will proceed to Columbus, Ohio, and take station at that place for duty as inspector-instructor of the fourth sanitary district. **Stallman, George P.**, First Lieutenant, Medical Reserve Corps. Upon the arrival at Benicia Arsenal, California, of First Lieutenant Francis M. Wall, Medical Reserve Corps, will proceed to Douglas,

Ariz., and report for temporary duty. **Talbott, Edward M.**, Captain, Medical Corps. Granted four months' leave of absence to take effect upon relief from his present duties. **Wall, Francis M.**, First Lieutenant, Medical Reserve Corps. Relieved from temporary duty at Douglas, Ariz., and from further duty at Fort Columbia, Washington, and will proceed to Benicia Arsenal, California, for duty.

Each of the following named officers of the Medical Corps will repair to Washington, D. C., and report to the commandant, Army Medical School, on or before September 30, 1915, for the purpose of taking a special course of instruction, and upon completion of this course will return to proper station: Captain Lucius L. Hopwood, Captain Lee R. Dunbar, Captain William S. Shields, Captain Craig R. Snyder, Captain Charles L. Foster. Upon completion of temporary duty at West Point, N. Y., Captain Joseph F. Siler, Medical Corps, will also report to the commandant of the Army Medical School.

### Births, Marriages, and Deaths.

#### Born.

**Scribner.**—In Manchester, N. H., on Thursday, September 2d, to Dr. and Mrs. Frederick P. Scribner, a son.

#### Married.

**Curran—Maloney.**—In Worcester, Mass., on Thursday, September 2d, Dr. John F. Curran and Miss Helen Marguerite Maloney. **Lowell—White.**—In Brooklyn, N. Y., on Wednesday, September 15th, Dr. Walter W. Lowell and Miss Alice White. **McGuire—Wilson.**—In New York, on Wednesday, September 8th, Dr. Frank A. McGuire and Mrs. Delia V. Wilson. **Richardson—Dixon.**—In Brooklyn, N. Y., on Wednesday, September 8th, Dr. Frank Richardson and Miss Clara Louise Dixon. **Roome—Todd.**—In Westfield, N. J., on Wednesday, September 8th, Dr. Clarence T. Roome, of Evanston, Ill., and Miss Elizabeth Todd. **Sproul—Stanley.**—In Haverhill, Mass., on Saturday, September 4th, Dr. John Sproul and Miss Jennie Elizabeth Stanley. **Wesley—Frost.**—In Auburn, Me., on Wednesday, September 8th, Dr. John Willard Wesley and Miss Emma Frost.

#### Died.

**Anderson.**—In Pittsburgh, Pa., on Monday, September 6th, Dr. J. Hartley Anderson, aged forty-seven years. **Coyner.**—In Kendallville, Ind., on Saturday, September 4th, Dr. Albert G. Coyner, aged fifty-one years. **Cragin.**—In Kenwood, N. Y., on Wednesday, September 8th, Dr. George E. Cragin, aged seventy-five years. **Croft.**—In Louisville, Ky., on Tuesday, September 7th, Dr. George W. Croft, aged forty-seven years. **Eckman.**—In Philadelphia, on Wednesday, September 8th, Dr. Phillip N. Eckman, aged sixty-three years. **Fluke.**—In Pittsburgh, Pa., on Monday, September 6th, Dr. George T. Fluke, aged thirty-four years. **Fowler.**—In Brentwood, L. I., on Tuesday, September 14th, Dr. P. Van Benschooten Fowler, aged forty-nine years. **Gillen.**—In Milwaukee, Wis., on Friday, September 3d, Dr. Frederick C. Gillen, aged forty-four years. **Graham.**—In Aegean Sea, on Tuesday, August 17th, Dr. Lorne B. Graham, of Pacific Grove, Cal. **Guenther.**—In Mountain View, N. J., on Sunday, September 12th, Dr. Emil E. Guenther, formerly of Jersey City, aged sixty-two years. **Lehmann.**—In Brooklyn, N. Y., on Tuesday, September 14th, Dr. Henry Lehmann, aged fifty-six years. **Lucas.**—In Walhalla, S. C., on Sunday, September 5th, Dr. Benjamin S. Lucas, aged eighty-two years. **O'Sullivan.**—In Machias, Me., on Thursday, September 2d, Dr. James O'Sullivan, aged forty-seven years. **Ranchouse.**—In Columbus, Ohio, on Monday, September 6th, Dr. Walter E. M. Ranchouse, aged forty-five years. **Sheppard.**—In Brooklyn, N. Y., on Monday, September 13th, Dr. John E. Sheppard, aged fifty-six years. **Sutphen.**—In Morristown, N. J., on Sunday, September 12th, Dr. Frederick C. Sutphen, of Bernardsville, N. J., aged forty-four years. **Taylor.**—In Columbia, Ky., on Friday, September 3d, Dr. Urial L. Taylor, aged eighty-three years.



*A Weekly Review of Medicine, Established 1843.*

Whole No. 1922.

*Method.*—A saline extract of the pulvitic powder. The extract contains a variety of substances, but it has not been possible as yet to determine the precise nature, relative proportion, or pharmacological action of all its elements. Most of these substances are in solution. The extract is rich in a variety of vegetable protein, organic salts, extractive materials, and contains some chlorophyll, chromophyll, and lipoids in an emulsified condition. After standing for some time certain of these substances separate in the form of flocculi from the extract, but by *immersing the syringe in hot water, at 60° C.* for two minutes and shaking vigorously, the separated portions become again distributed through the extract in the form of a fine, smooth emulsion, which is readily injected through a hypodermic needle. It seems probable that further improvements in the preparation of the extract will result in all of the substances being in solution.

The great majority of patients treated since the publication of the preliminary paper have received hypodermic injections of the extract in the subcutaneous tissues of the arm. In other words, the constitutional effects of the agent have produced the changes and improvements noted in the patients whose case histories follow. Some of the critics of our first paper have spoken of the ease with which the superficial lesions may be healed by the use of escharotics and assert that this poultice belongs in that group of agents. The effect, however, is not that of an escharotic and only counterirritation results from its application. It was because we believed that the action of the poultice was of a different character than is usually produced by counterirritation that it was decided to make extractions of the powder for hypodermic injection. That we have to do here with decided constitutional effects, and not with the simple local action of a counterirritant or escharotic, seems to be the natural conclusion, from evidence of which the following example is a type. If a superficial epithelioma on the neck ceases to grow, bleeding stops, pain ceases, and the infection clears up, granulations form and healing ensues after the injection of a medicinal agent into the arm, it would seem that the conclusion can reasonably be only that a constitutional agent is at work. The action of an escharotic in the arm has thus far not been recognized as capable of producing such results. If by the same method of injecting a medicinal agent into the arm a carcinoma of the uterus stops bleeding, the foul discharge is replaced by a thin, serous exudate without odor, pain is relieved, the appetite increases, the patient gains in weight, and the cachectic, toxic condition is relieved, it would seem that a constitutional agent has been responsible for the change. The writer is of the opinion that the evidence offered in these papers is conclusive upon this point.

From this one might not believe that every case of inoperable cancer will respond to this method of treatment notwithstanding the fact that many cases have done exceptionally well and no other method so far devised will hold forth the same hope to the one afflicted with the unfortunate condition of inoperable malignant disease that this method does. The first paper described three patients suffering from superficial epithelioma who were treated with

such favorable results that the patients have remained free from trouble, free from recurrences up to this time, a period of a little more than a year. Since that time similar cases have been treated by the same method with equally favorable results, and it is not recommended nor is it our intention to abandon this method of using the treatment.

*Reaction.* The reactions which follow the injection of autolysin need some description and explanation. The dose is an individual matter with each patient, and only by carefully following each case with reference to the reactions produced can the dose be determined. In general, during the last few months, doses have varied from fifteen to ninety minims of the extract.

The injection is painful, but this varies with the type of individual, the size of the dose, and the length of time the treatment has been given. Ordinarily the sharp pain lasts two to three minutes and is followed by an aching sensation for twenty to forty minutes. This ache may be to some degree relieved by massage. Following the injection the arm tissues may show very little reaction, but with the optimum dose there will develop a marked inflammatory area of varying size and intensity. The whole arm occasionally becomes swollen; the indurated area as a rule, however, is not more than three inches in diameter and generally the reaction reaches its height from seven to ten hours after the injection and then rapidly subsides. The local reaction may be of sufficient moment to require an ice bag or a wet dressing of fifty per cent. alcohol. The indurated area may not cause the patient pain unless roughly handled, but some thickening of the tissues may be noted several days after the injection has been given. Abscess formation does not occur.

In respect to the general reaction following these injections, a variety of phenomena has been observed. The beginning injections as a rule have not been more than fifteen minims, and as a rule very little general reaction is produced. In a few instances, however, the first injection has been followed by swelling of the hands and feet, the skin of the face, and mucous membranes of the mouth, and by patches of erythema over the whole body. These reactions have occurred in persons subject to hay fever. In one instance the patient stated that she had for many years been sensitive to celery and had a similar reaction whenever this plant was eaten. This small injection may cause some general reaction, developing a few hours after the dose is given, manifested by malaise and rise in temperature to 99.5° or 100° F. This phase does not last long, and in twenty-four hours the temperature is again normal.

As a rule, the thin anemic person reacts less locally and generally than the person with fair nutrition and blood conditions. The degree of general reaction and the dose needed to produce it is subject to wide variation. With the larger dose of thirty to fifty minims, the general reaction may simulate the sensations of malaria. Actual chill lasting from ten to thirty minutes may occur, followed by a sharp rise in temperature to 102° to 103° F., with subsequent profuse sweating. When the injection is made directly into a vascular tumor, or if it is given intravenously, either purposely or

by accident, to patients who have had previous treatment, a characteristic anaphylactic reaction develops at once. The patient's skin flushes deeply, particularly about the face. The skin and mucous membranes of the nose and mouth become swollen and itch intensely; as a rule there is a sharp headache and temporary difficulty in breathing. In about fifty per cent. of cases these symptoms are accompanied or are quickly followed by a sharp pain in the lumbar region. The anaphylactic reaction develops almost immediately after the injection has been given, and unless the physician is aware of the possibilities, both physician and patient are likely to be unduly alarmed. These urgent symptoms pass very promptly, and without treatment the patient will quickly be relieved. If, however, too large a dose has been given intravenously to a weak patient, there will be severe cardiac depression requiring prompt attention. In from twenty to thirty minutes after the initial symptoms, the patient will have a moderately severe chill, lasting from fourteen to thirty minutes, followed by fever and sweating. In most instances in which the writer has noted this reaction, the fever and sweating period is followed by refreshing sleep, freedom from pain, and general comfort.

The anaphylactic reaction undoubtedly has its origin in the protein content of the autolysin and is similar in most respects, though of a milder character, to that produced by the injection of alien animal serum into a sensitized subject.

Most of the injections are given at the present time subcutaneously, so that anaphylactic reactions are rare. The possibility of accidentally puncturing a vein and giving a portion or all of the dose intravenously should be borne in mind, however. Conditions which permit the injection to be absorbed into the circulation rapidly, permit an anaphylactic reaction to develop. In only one case has the writer observed a serious depression to follow an anaphylactic reaction.

The dose which is most favorable cannot be determined except by a careful study of each patient. The dose of digitalis is a variable factor with each subject and the skill of an experienced physician is required to determine this point. Doses varying from fifteen to ninety minims of autolysin have been given at daily or at two day intervals during the last few months. The body weight, general strength and physique of the patient, peculiar sensitiveness of the individual are all factors that help to determine doses. Injections into the tumor or by the intravenous method should not be more than half as large as the subcutaneous dose. The skill and experience of the attending physician are needed to determine doses, and these qualities cannot be obtained by reading descriptive literature.

Autolysin is rich in protein, and a portion of the reaction phenomena is undoubtedly due to this factor. After repeated inoculation some degree of immunity or toleration is acquired, which expresses itself in a lessened degree of reaction. The local reaction is less marked and the immediate pain of the injection is not troublesome. The feeling of malaise is decidedly milder and the subsequent rise in temperature is not so high with the same sized dose as in the earlier period of treatment. It is wise

in most cases gradually to increase the dose until the optimum amount for that patient has been reached. In most cases the best results will be obtained by giving a dose of such size that a mild temperature reaction is produced, but it is not necessary to produce a decided reaction in every case with each injection in order to get good results.

By repeated intravenous injections it is possible to reach a condition of immunity of such a degree that the anaphylactic reaction either does not occur at all or is much milder.

#### RESULTS OF TREATMENT

In estimating the effects of treatment the reader should bear in mind that most of the patients treated in New York city, as well as those treated by the other men whose reports will follow, have been far advanced in the disease. Most of them have been through the hands of the surgeon and some have had the limit of x ray and radium treatment. We have been dealing, therefore, with the most hopeless forms of malignant disease, and our results must be judged accordingly. It will be convenient to consider the results of autolysin treatment under the following headings: Pain, odor, improvement in general condition, and diminution in size of tumors.

**Pain.** The relief from pain in cancer is not credited with much importance in determining the value of a method of therapeutics. Relief from pain may be secured, it is stated, by almost any agent given to the patient with a sufficient mental impression accompanying it. It does not signify curative action on the part of the medicinal agent to relieve the pain. However small the significance may be from the standpoint of finding an effective cancer remedy, from the standpoint of the human sufferer it is a matter of the greatest moment. The constant nagging pain and ache of a malignant growth, together with the narcotic drugs used to relieve it, are factors which undoubtedly play a considerable role in undermining health. In some instances a growth may proceed to considerable size without pain. In most of our cases it has been a most urgent symptom and one for which relief is urgently demanded. Relief from pain after autolysin injection may be prompt, i. e., almost complete relief may follow within twenty-four hours of the first injection. It may be slow, requiring from one to three weeks' treatment and, in a small proportion of cases, very little relief may be obtained. In most cases, however, very marked relief from pain may be expected within ten days. The opiates previously used to control it may be very much reduced or entirely suspended. Very few indeed of our patients have needed to continue morphine or codeine after two weeks from the time treatment was begun. In dealing with carcinoma of the mucous membrane of the nose and throat Doctor Miller has found that a dose of 1/100 to 1/150 of a grain of atropine with the injection completely controls pain. With pain relieved, sleep is more natural, and not infrequently patients note a marked improvement in this function within a few days of the beginning of the treatment.

**Odor.** Those who have had much to do with cancer need not be told of the disagreeable effects



upon the patient and upon those who come in contact with him, either in the hospital or at home, of the terrible, penetrating stench of malignant growths which are infected. This one factor often works to the detriment of the patient in preventing his admission to the hospital; the nursing problem is difficult; the unfortunate is often shunned by his relatives and friends, and the medical attendant evades his responsibilities. A variety of local antiseptics and deodorizers have been used to ameliorate this condition, but in most instances they have little value and often are so irritating as to cause increased pain and discomfort. No relief obtained from autolysin injections is more prompt and certain than is found in these conditions. The foul, purulent, putrid discharge from a cancerous uterus will in a very few days give place to a thin serous nonodorous and nonirritating discharge. A stench which formerly filled the whole house cannot longer be detected at the bedside with the patient exposed. Such a relief may not be curative, but it adds vastly to the patient's comfort. The heavy odor from an ulcerating breast cancer may seriously interfere with a patient's appetite and digestion. With relief from this standpoint, the general condition improves. In many instances it would be worth while to give the injections if for no other purpose than to get rid of the awful stench.

*Improvement in general condition.* By this term the writer refers to improvement in appetite, digestion, sleep, bodily strength, and vigor, the gain in weight, and the loss of the toxic, cachectic appearance, with improvement in color and skin appearance. It may be said that these matters are only secondary and have nothing really to do with the decisive effects of a cancer remedy. No therapeutic measure, and in this term are included surgical procedures, will be successful which does not cause beneficial effects in such functions. A restoration to health must be in these directions if it occurs. The improvement in the general condition which autolysin injections may cause, varies with each case. In some instances this relief has been so marked that otherwise helpless, hopeless patients have been restored to a life of useful activity, and are at the present time well persons. Nearly every physician who has examined the treated cases at first hand, has remarked upon the unusually healthy appearance which they show. The improvement is a gradual one and begins within one to two weeks of the inception of the treatment. A large majority of the patients treated thus far were in the most desperate physical condition at the time treatment was instituted, but in many of them there has been a marked improvement so that such life as remains to them has been made more tolerable and certainly in many instances has been prolonged. If the reader will refer to the case histories a much better idea will be obtained of these matters than can be stated in a general summary.

*Change in the tumor mass.* Many of the patients treated have had external growths which can readily be seen, measured, and palpated. In these cases there is no doubt that accurate observations can be made. In the case of internal growths such accurate and satisfying data cannot be obtained. Change in the size of the tumor mass may take place

promptly. Accompanying the change in size there usually is a change in the consistence. The hard epithelioma and carcinoma become softer and less firmly fixed to surrounding structures. The metastatic lymph glands are usually the first portions of the growth to show the effects of treatment. They become softer, more freely movable, and are gradually absorbed. In some cases where the lymph gland metastases have direct communication with portals of entry for infection, such as the growths having origin in the mucous membranes of the mouth and pharynx, the whole mass may soften, become infected, and require external drainage to obtain relief. In other cases the writer has observed such growths, as well as those of the breast, gradually to soften and change to a fluctuating mass which can be aspirated by a needle. The contents so obtained are often sterile and consist of a yellowish serum containing in suspension many leucocytes, broken down cancer cells, and cell detritus. When thoroughly opened, such areas may heal without showing evidence of infection. Changes in tumor size may be evidenced in other ways, such as freedom in swallowing in cancer of the esophagus, and relief from obstruction in cancer of the rectum or prostate. It must not be supposed that every case undergoing treatment shows immediate retrogressive changes in the tumor mass. Such is not the case. There may be obtained marked relief from pain and odor, and improvement in the general physical condition with no change in the total bulk of the tumor. The particular histological type of growth seems to bear no relation to the rapidity in which diminution in size may occur. Such changes are apparently dependent upon individual differences in reaction to the injections. The case histories which follow give a picture of the variability in the matter of tumor change and too few data are yet available to make possible accurate generalizations.

With respect to cure, the writer wishes to state that neither in this paper nor the former one, published in the NEW YORK MEDICAL JOURNAL for May 15, 1915, has he stated or expressed the belief that we should regard this method of treatment as a cure. Many critics have assumed such to be the case, but it is after all pure assumption. The writer does not know whether some patients who are now clinically well will have a recurrence of the growth or not and is confident that no one else has more information on this point than he. If recurrence does not take place, we may ultimately regard them as cured. It is not as a cure that the writer suggests its administration. If the type of relief outlined in the case histories is desirable, the method may be expected to be of service in producing it.

With respect to the relation which this treatment bears to surgery, the writer wishes to say that too few data are as yet available to make accurate statements. It would seem, however, that if decidedly favorable effects are produced upon the growth activities of a cancer in patients who are far advanced in the disease and in bad general physical condition, better results might be obtained in patients who still have a good general physical condition. Practically all the patients thus far treated have been far beyond the operable stage when treatment was begun, and the writer does

not advocate this treatment as a substitute for an operation. It is believed, however, that there is a distinct field of service that this treatment may have in the operable cases, namely, that prior to operation the patient should receive a few injections and that immediately subsequent to the operation the treatment should be resumed. It is believed that such a plan of action will be of distinct service in limiting recurrence. Much the same plan has been advocated by Vaughan with reference to his vaccine methods of treatment. In two instances such a plan has been followed with decidedly beneficial results. In a few instances inoperable growths have been treated with the result that metastases have been absorbed, the primary growth has diminished in size and become so much detached from the surrounding structures as to make operation possible with fair hope of success. It is not easy, however, to persuade a patient who has made such a degree of improvement, when the original condition was inoperable, to submit to operation to remove the remaining portions of the disease. This question has been propounded to a number of surgeons with reference to a cancer of the breast. It is now operable, although at the beginning of treatment operation was declined by three competent surgeons. The primary growth continues to diminish in size, the general physical health is excellent, and the metastases, as far as can be determined, have been entirely absorbed. It has been the judgment of those who have seen the patient to continue the treatment without operation as long as such favorable conditions exist. It may be that growths which have heretofore been entirely inoperable, may become operable, and operation desirable after this form of treatment.

The experience thus far obtained shows that some types of cancer are more resistant than others and demonstrates furthermore that a stage is reached in the disease when the treatment may not be expected to have favorable effects upon the growth itself, and that the most to be expected is relief from the accompanying symptoms. Carcinomas having their origin in the mucous membranes of the mouth and pharynx are particularly resistant, although a few of the most favorable results have occurred in growths having their origin in this region. In most instances the disease has progressed very far before the patient has come for treatment. Growths of the stomach likewise have been difficult to control. In all of these patients, however, the disease has been very far advanced and the general physical condition most unfavorable. Growths in the rectum, uterus, breast, and skin have been much more favorably affected. But the cases of the "alimentary" type seem to be benefited as well, more than by any other measures heretofore emphasized.

With respect to the method by which these results are accomplished, not much can be said at the present time. In some cases it appears that there is a specific effect upon the malignant tissue and in many instances the injection of autolysin into the arm is followed by a decided reaction in the growth itself, manifested by a little fever, increase in pain, swelling and softening of the growth, and in invasion of leucocytes in that area. In a considerable percentage of cases a marked leucocytosis follows

the injections, accompanied by relatively large lymphocytosis. Such a blood change does not occur to a large degree in every patient, but some of the most striking improvements have occurred in patients whose total leucocyte count has gone as high as 20,000 to 30,000 with a relative proportion of thirty per cent. to fifty per cent. lymphocytes. The red blood cells likewise increase in number. There has been a sufficient stimulation of the blood forming organs to produce occasionally the appearance of myelocytes in the blood and in some instances a marked eosinophilia. The writer has seen patients with from six to eighteen per cent. of eosinophiles in a total blood count of 15,000 to 25,000.

It is not possible within the limits of this paper to enter into a discussion of the significance of these changes. Attention is called to the fact, however, that there is in the literature a considerable amount of evidence which tends to support the belief that these changes are of significance and this evidence comes both from the clinical and experimental fields. The lymphocytes, particularly the large lymphocytes, appear to have a decided function in regressive changes in malignant growths. It may be either as a direct agent in furnishing enzymes which interfere with life processes of the malignant cell, or as agents in promoting the disintegration of an already injured cell. It is quite possible that the injected material depends for a considerable portion of its beneficial effect upon small quantities of vitamin-like substances which help correct the disordered cell metabolism. There have been no more interesting discoveries in the domain of physiology in recent years than those which show the remarkable influence of comparatively small amounts of chemical agents classed as vitamins upon the growth and health of the organism. These substances contribute little in energy, but they permit normal life processes, and their absence often results in a pathological condition of function or growth. An increasing number of pathological conditions amounting to a serious stage of diseases are being traced to a vitamin origin.

The writer is aware that many questions may be asked concerning the remedy, its mode of action, and the results produced, which cannot be satisfactorily answered. Such a state of affairs is, however, not altogether unknown in therapeutics. Despite the progress in therapeutics in the last half century, it is still an art to a large degree. We do not know why mercury and iodine have a beneficial effect in syphilis. We know the doses to be used and the various preparations to be employed and the symptoms of overdoses, and some of the limitations of the remedy, but we do not know why the results are obtained. Years of experience have shown that in most cases the patient gets better with such treatment. Elaborate theories have been constructed to show why lemon juice and fresh vegetables act favorably in scorbutus. These theories do not agree and are not a satisfactory explanation of such benefits. The probabilities are that this too is a matter of vitamin origin. The most essential fact in the matter, however, is that their administration results in benefit to the stricken. Perhaps some day a more adequate explanation may be available, but are we justified now in refusing relief to a scorbutic

because the method by which it is obtained is not in all respects an intellectual satisfaction to the physician? No!

Today we know many of the manifestations of cancer, but we do not know why certain cells in the body assume a lawless capacity for growth to the detriment of the organism. We know some of the manifestations of life, but we do not know what life is. In these papers has been described the method of therapeutics by which certain ameliorating effects on the cancer process have been obtained. The results noted by the writer have been confirmed by the observations of experienced, competent physicians. In the face of these experimental facts, shall the method be condemned to disuse because a complete explanation cannot immediately be given as to how and why such effects are obtained? Shall we not use the truth we have, while trying to learn the whole truth?

In arranging these reports for publication, the writer is giving a larger amount of space to the case histories reported by other men than to his own. Many men have used the remedy whose case histories for various reasons are not included. A summary is given of the results obtained by Beveridge and myself in 100 cases which have been under treatment for a period of two months. Approximately 750 patients have had or are now having this form of treatment; many of them being treated a long distance from New York. The case histories of the 100 patients are not given for the reason that it would require too much space at the present time. The case histories which are included in the writer's paper are purposely selected to include those in which markedly favorable effects have been obtained, but the warning is repeated that not all patients may be expected to show the same favorable effects as those cited. The reports from the other four men to be published next week include cases which will give an additional emphasis to this warning.

In the paper published May 15, 1915, were given the case histories of eighteen patients, whose present condition will be briefly described. The first three patients had superficial epitheliomas of the rodent ulcer type. These patients are now well without recurrence. It is approximately one year since treatment was suspended. Cases iv, v, vi, viii, ix, x, and xvi had ended fatally at the time of the first report, which renders additional comment unnecessary. At the time of the first report, Case vii had left the hospital and the last information received was about five months ago, when the condition was approximately that reported in the first paper. Case xi in the first paper, carcinoma of the rectum, had left the hospital and was in good condition at the time the first report was made. For a period of one month this case received no treatment, during which time there was a recurrence of the growth. Treatment was resumed under very unsatisfactory conditions, and information at present available is to the effect that the condition is not good, but details are not forthcoming.

CASE XII. Patient with large inoperable hypernephroma of the right kidney had no recurrence for a period of three months. He is of normal weight, strength, health and as far as can be determined there is no recurrence and no

evidence that he has at present any pathological conditions. He has been hard at work as a mechanic during the last three months and feels better than he has for some years.

CASE XV. Woman with a recurrent, inoperable carcinoma of the breast. Has remained well with no evidence of recurrence at the present time.

CASE XVI. Man with recurrent carcinoma of the left breast following two operations. Has remained well without recurrence.

CASE XVIII. Man with epithelioma of the floor of the mouth. The first report showed a very marked improvement in this patient, very marked gain in weight from 141 to 154 pounds, but it was noted at that time, "while the patient is much better, still there is some induration in the floor of the mouth, and some involvement of the tissues in this region still remains." This patient has had very unfavorable conditions for treatment. There was a development of the growth in the region of the floor of the mouth. He had two severe hemorrhages and has had some difficulty in swallowing, he has lost in weight, and his general physical condition is not good.

CASE I. Man, aged sixty years, had had difficulty with his throat for two years. Had various forms of treatment without relief, and in April, 1914, had tonsils removed. In December, 1914, consulted a throat specialist who treated the condition by local and constitutional means until May, 1915, at which time a growth was discovered at the base of the tongue on the right side, involving to some degree the wall of the pharynx. Sections were removed and the condition was found to be carcinoma. An immediate operation was advised and the patient was referred to a surgeon, one of the most competent in New York city, who confirmed the diagnosis, and stated that an immediate operation was necessary, which operation involved the removal of the entire tongue, with later cauterization of the wall of the pharynx. An operation was refused, and three weeks later the patient applied for treatment. The patient had lost a great deal of weight, had a great deal of difficulty in swallowing, and suffered a great deal of pain. Within one week from the beginning of treatment the pain was relieved and the patient could swallow better. During the first five weeks of treatment, patient gained six pounds in weight, and at the end of six weeks the carcinomatous condition could no longer be discovered. The patient was referred to the specialist who had made the first diagnosis and his findings agreed with ours. The point of the lesion was occupied by a smooth area, without pain or discomfort. The patient has continued to gain in weight and is now receiving treatment once or twice a week. As far as an examination can discover, he is at present well.

CASE II. Woman, aged sixty-two years, had three operations during the last two years. The first for the removal of the left breast, the second two being for recurrences in the scar of the previous operation. Patient had at the time she applied for treatment, June 21st, extensive involvement on the line of the scar with two large conical indurated growths, one just in front of the anterior axillary line, approximately three inches in diameter at the base, and the second at the posterior axillary line, four and one half inches in diameter at the base. The line of the scar across the axilla between these two points was moderately involved. The areas were very painful, the left arm was markedly swollen, and recurrence had been rapid. Treatment was begun June 22d, and has continued up to the present time; injections being given at two to three day intervals. This patient has been rather sensitive to the injections so that the doses have never been larger than twenty-five minims and in most instances fifteen to twenty minims. In about three weeks after the injections were begun, both of the large nodular masses previously described became soft, and the pain had been considerably relieved within the first week. These nodular masses were aspirated and about six ounces of a thick serous fluid withdrawn. This fluid contained some blood cells, a great deal of cell detritus, and leucocytes. The needle puncture healed up promptly, and a second aspiration with similar results was performed a week later. The masses became looser on their base, they shrunk in size until they are now approximately one third in volume since the beginning of treatment, although some drainage still continues. The patient is free of pain, sleeps well, arm is not swollen more than half the size it was at the beginning.



CASE III. Woman, aged fifty-two years; cancer of the right breast of two years' standing. Had had no operations and has been treated entirely by local applications to the growth. She presented a large open ulcer under the right arm, four by five inches in size, with raised indurated edges and a carcinomatous base, covered with a foul smelling exudate. The patient suffered a great deal of pain, had lost twenty pounds in weight. Treatment in this case has been by means of local applications of the poultice to the ulcerated area and by hypodermic injections of the extract into the arm. The foul odor very shortly was completely relieved, the pain was gradually relieved, the raised indurated edges flattened out, healthy granulations formed, and the entire area was healed, with the exception of a small ulcer three fourths of an inch in diameter at about the centre of the former ulcerated area. This ulcer has a clean base, causes no pain, and is slowly healing. The patient has gained in weight, feels well, and no evidence of metastasis has been discovered.

CASE IV. Woman, aged forty-five years, had had throat trouble since childhood, but otherwise well. During the year previous to beginning this treatment, she had various forms of local applications under the diagnosis of acute tonsillitis on the right side. She had a great deal of pain. Examination revealed the fact that she could not separate her teeth sufficiently to enable her to take solid food. The swallowing of liquids was likewise a difficult matter, and in most instances these were rejected from the nose. She lost weight and strength, and her physical condition was not good. It was possible to see that there was a mass occupying the region of the right tonsil, filling the tonsillar space, involving the palate, and entirely closing the right side of the pharynx. Back of the jaw, externally, a small nodular mass could be felt in this area. It has not been possible to obtain a section of this growth. It has the feel of a chondrosarcoma. Possibly it was developed from a portion of the parotid gland. She has been under treatment during the last three months. The pain was very promptly relieved. The tumor has decreased in size to such a degree that the patient now opens her mouth sufficiently to take solid food. She has no difficulty in swallowing and has gained a great deal of weight. She sleeps well all night, and in every respect at the present time speaks and acts like a normal woman.

CASE V. Man, aged forty-two years; sarcoma of the testicle, removed by operation. Diagnosis confirmed by a microscopic section. Abdominal cavity opened at the same time and there was found an extensive inoperable involvement of the retroperitoneal lymph nodes. Abdomen was immediately closed without attempting a further operation. The wound did not entirely heal, a small sinus existing at the lower end of the incision. Three weeks after operation, the patient was admitted for treatment. Large tumor masses could be readily palpated in the abdomen, a particularly prominent mass eight by eleven inches being located just below the border of the ribs on the left side. The patient received daily injections of thirty minims of autolysin, subcutaneously in the arm. He remained for treatment in the hospital for a period of four weeks. The sinus had entirely healed five days after beginning treatment, and the large mass below the border of the ribs had diminished in size two thirds. During the last two and a half months the patient has been at work and is in fairly good health. He has continued to receive two injections of autolysin each week. Considering his unfavorable condition at the time treatment was begun, it appears that some definite therapeutic effect must have been exercised by the treatment.

CASE VI. Woman, aged thirty-nine years; cancer of the right breast. The growth is situated in the upper half of the breast, involving the skin, with three large glands in the right axilla. No glands in the supraclavicular space are enlarged. The patient is in good health. The growth was in the breast, three by four inches in size, adherent to the chest wall. The surgical opinion as to the advisability of an operation differed. Some surgeons advised operation, others advised against it. Through this difference of opinion the patient decided not to have an operation and applied to us for treatment. The chief complaint at the time she entered the hospital was of severe pain in the right breast. Her general health at that time was good. She has been treated during a period of three months and in the first week the pain was entirely relieved, the lymph

nodes in the axilla softened and were entirely absorbed, except a small fragment the size of a bean at the site of the largest gland. Originally this gland was approximately one inch in diameter. The growth in the breast has diminished in size and is freely movable. It is no longer adherent to the chest wall, but there is still a small area of skin involvement. It seems probable that this growth is now in a favorable condition for operation, and such a procedure has been suggested to the patient on several occasions, but she has refused to accept this plan of action.

CASE VII. Man, aged fifty-nine years; epithelioma of the neck, the ulcerated area approximately one and one half inch in diameter. Diagnosis was confirmed by a section, and the growth had a history of two years. The patient was treated entirely by local injections in the arm, while the ulcer was cleaned daily with dilute peroxide of hydrogen. Patient had altogether twenty-one treatments and the lesion is entirely healed.

CASE VIII. Man, aged seventy-two years; multiple epithelioma of the skin. The patient had a large growth, two by three inches in diameter, at the base of the left ear, which had been entirely destroyed by the growth. Several of the glands below the lesion were involved. Several areas of the skin on the face and hands were involved in smaller growths, ranging from one quarter to five eighths of an inch in diameter. The patient had had repeated superficial epitheliomas of the character mentioned, several of which had been removed by operative procedure, without recurrence in the region of the scar, but with fresh outbreaks in other areas. The patient received thirty-five injections of autolysin, varying from fifteen minims to the dose in the beginning, to forty-five minims in the latter period of treatment; injections being given on some occasions at daily intervals and on other occasions at intervals of three days. The pain in all the areas was entirely relieved during the first three weeks, and in three and a half months from the time treatment was begun all the lesions had completely healed and the patient was in much better general health than he had been for some years.

CASE IX. Man, aged sixty-six years; carcinoma involving the dorsal surface of the left side of the tongue opposite the last molar tooth. The lesion was approximately three quarters of an inch in diameter. The patient was suffering considerable pain and had some difficulty in swallowing. In the case of this patient there has to date been no diminution in the size of the growth. He has been under treatment for approximately seven weeks. There has been, however, complete relief from pain and all the symptomatic difficulty which the patient had dependent upon the growth.

CASE X. Woman, aged sixty-four years, went to the hospital for treatment. Examination showed that an inoperable mass involved the lower portion of the rectum and bladder, with the lymph nodes and the right iliac region markedly enlarged. The mass was a recurrence of a primary carcinoma of the cervix which had been removed by operative interference, although complete hysterectomy had not been done. Her general condition was poor. She could not retain urine more than fifteen or twenty minutes at a time. Severe pain in the bladder and rectum. Was markedly constipated and had periods of nausea and vomiting. Was cachectic. No secondary involvement of the stomach was found or of upper portion of the intestinal tract. She was under treatment nine weeks. Left the hospital entirely recovered from a clinical standpoint, and still continues in good health, during the period of two months since she left the hospital.

In the following table is given a summary of the cases which are not described in detail in this communication. It would require too much space to give the details of such a large number of cases and those which are given are fairly typical of the remainder. These cases are classified into three groups, with reference to the effect of the treatment upon them.

One group is described as being clinically well, but this term should not be confounded with the term "cured." By clinically well we mean that the patient is in good health in every respect and, as far as we can determine, free from the growth for

which he was treated. It is obvious that too short a time has elapsed to determine whether or not these growths may not recur, but at the present time the patients are well.

The second group is described as being improved—improved in the sense in which that term may legitimately be employed. In the early portion of this paper the kind of improvement which may be expected by the use of autolysin has been described.

In the third group are patients in whom no decided benefit was produced and, as will be noted in the table, some of these have died.

There are approximately 500 cases that have been treated by a number of men; practically all of them have begun the treatment within a period of two months, and the reports which are being received indicate that results approximately like those given in the table are being obtained. If we consider that these patients have been for the most part a most hopeless type to deal with, it appears that fair results have been obtained from the treatment.

TABLE OF 100 CASES IN WHICH AUTOLYSIN TREATMENT  
BEGUN MORE THAN TWO MONTHS AGO.

| Cases | Type of Case   | Generally |          | No<br>Benefit |
|-------|--|-----------|----------|---------------|
|       |  | Well      | Disposed |               |
| 8     | Squamous epithelioma                                   | 6         | 1        | 1             |
| 26    | Carcinoma of breast                                    | 4         | 16       | 6             |
| 24    | Carcinoma of uterus                                    | 2         | 15       | 7             |
| 21    | Carcinoma of mucous mem-<br>branes of mouth and throat | 2         | 11       | 8             |
| 1     | Carcinoma of stomach                                   | —         | 2        | 3             |
| 6     | Carcinoma of esophagus                                 | —         | 4        | 2             |
| 5     | Carcinoma of rectum                                    | —         | 4        | 1             |
| 5     | Sarcoma  | 1         | 4        | —             |
| Total |  | 15        | 57       | 28            |

Dead 21

In the treatment of the 100 cases mentioned above, it was with the cooperation and aid of Doctor Beveridge that these results were obtained.

1111 SEVENTH STREET.

## THE AUTOLYSIN TREATMENT OF CAN- CER IN THE LIGHT OF THE PROTEO- MORPHIC THEORY.

By HENRY SMITH WILLIAMS, M. D.,  
New York.

AND J. WALLACE BEVERIDGE, M. D.,  
New York.

The one vitally important thing about the autolysin treatment of malignant neoplasms is that, in actual practice, it works. Whether we know *how* it works is a matter of altogether subordinate importance. We would ask the reader of the following attempted explanation of the manner of action of the remedy to bear that vital point constantly in mind. Nothing that is about to be said will add anything to, nor can it detract from, the value of autolysin as a practical remedy in the treatment of malignant neoplasms. The reader may feel that the entire theory herein to be set forth as to the manner of action of autolysin is false, but that estimate should in no wise prejudice his estimate of autolysin as a remedy in the hands of the therapist. Just what this action is in a great variety of cases has been fully set forth in other papers of this symposium. The practitioner who cares only for

clinical results, and is not concerned as to how a remedy operates, may advantageously confine attention to Doctor Beebe's elaborate summary of 700 cases and the summaries given by his associates who purposely confined their remarks rather closely to the clinical aspects of the subject.

In the course of this attempt, we shall not hesitate to introduce theories that are new, in some cases stating very briefly our reasons for presenting them, even though the more elaborate argument that will ultimately be made in substantiation of the theories must, for the time being, be withheld because of limitations of space.

Our reasons for thinking it desirable to theorize somewhat extensively in connection with the observed action of autolysin is, in the first place, that there is to many minds an element of satisfaction in attempting to solve the question as to just how a remedy acts; and, secondly, because we are convinced that a clear understanding of the method of action of autolysin will lead to the application of the remedy in a field far wider than even the comprehensive and important one occupied by malignant neoplasms. This is to say that, in our opinion, autolysin is not merely a cancer remedy; it is a remedy against all protein infections. In our view, cancer in itself is not so much a local condition as a condition of disturbed equilibrium between localized cells and general bodily conditions.

To be specific, one might define cancer, in the light of the present theory, as a systemic condition characterized by the development of neoplastic cells of a somewhat embryonic type, in conjunction with an excess of leucocytes in the blood and a deficiency of red blood corpuscles.

It must further be postulated that the neoplastic cells are of a type susceptible to the attacks of leucocytic enzymes, so that there is a constant tendency to disintegration of some of these cells under the attacks of the white blood corpuscles. Meanwhile, the deficiency in red blood corpuscles makes it impossible for the system to deal adequately with the partially hydrolyzed protein products resulting from the breaking down of some of the new cells under the attacks of the leucocytes. The net result is a condition of protein poisoning or autointoxication which, when fully developed, constitutes the characteristic "cancer cachexia," and ultimately causes the death of the patient.

It should be observed that this new definition of cancer explains the hitherto obscure fact that almost any kind of new growth in the organism may on occasion take on the characteristics of malignancy. A fibroid tumor of the uterus, for example, is not ordinarily "malignant" because its tissues are of a type that the leucocytic enzymes cannot readily attack—largely, perhaps, because of their slow development and firmness of texture. Yet on occasion, as is well known, portions of a fibroid growth may become susceptible to disintegration under the attacks of the bodily enzymes; and in such a case, should the red blood corpuscles fail of their appointed task, a condition of veritable malignancy is attained, and the aforetime fibroid becomes a cancer.

Ordinarily, however, the neoplastic growth is from the outset composed of such cells as are more or less susceptible to the action of the leucocytes;

and, from a pathological standpoint, it is permissible to regard all such growths as nascent cancers. In a vast majority of cases, however, the neoplasm is denied opportunity of considerable growth because of the immediate attacks of the leucocytes, which are backed up by the erythrocytes to such good effect that the neoplastic proteins are completely dissociated and eliminated from the body without producing harmful results, and, indeed, as a rule, without being given any consideration whatever.

It is probable that there are scores of nascent neoplasms that are dissociated and obliterated, for every one that attains mastery over the corpuscular bodily defenders and becomes a tangible neoplasm. It is probable, in other words, that every insignificant lesion of the bodily tissues that calls for the development of new cells in the process of repair, might be regarded as an incipient malignant neoplasm; and is prevented from becoming an actual menace only by the efficient activities of the corpuscles that are normally present in adequate numbers for the bodily defence.

#### A SUMMARY OF THE PROTEOMORPHIC THEORY.

Such a line of reasoning at first sight seems bizarre. Perhaps it may not even be clearly intelligible to such readers as are not familiar with the proteomorphic theory of immunity as set forth by the present writers. It is perhaps desirable, then, briefly to outline the essentials of this theory before proceeding to the explicit task of interpreting the action of autolysin, inasmuch as the interpretation that is about to be offered is based essentially on the proteomorphic theory.

In summarizing the essentials of the proteomorphic theory, we may quote with slight modifications from our original papers in *American Medicine* for October and November, 1914.<sup>1</sup> To summarize a theory of novel character is always unsatisfactory, but as the entire underlying reasoning of the present paper would be scarcely intelligible without at least a general comprehension of the proteomorphic theory, it seems unavoidable to present such a summary here. We may present, then, the essentials of the proteomorphic theory, as it bears on the treatment of cancer with autolysin as follows:

1. The chief immunizing mechanism of the body is the cytogenic mechanism, of which the recognized members are the bone marrow, the spleen, and the lymphatic system. The active agents through which the process of immunization is carried out are the leucocytes and red blood corpuscles generated in the various organs of this system.

2. The prime function of the leucocyte, after it becomes a freely moving cell, is to inaugurate and facilitate protein cleavage or digestion, preparing for assimilation (to the limit of its capacity) all foreign proteins that enter the blood stream. In pursuance of this function, it is provided with digestive enzymes, and with a mechanism for the production of special types of proteolytes to cleave an endless variety of protein molecules; being unable, however, to complete the hydrolysis thus begun.

3. The red blood corpuscle completes the hydrolysis of polypeptide and allied protein products that find their way into the blood stream. It absorbs or counteracts the toxic residual molecules that are not completely hydrolyzed; and it antagonizes the products of bacterial activity, producing

antitoxins. When ultimately autolyzed or destroyed, chiefly in the liver, it gives its protein and enzymes to the blood stream, and its waste products are discharged from the body through the bile duct.

4. The chief work of synthesizing protein out of aminoacids in the organism resides with the mother cells of the cytogenic apparatus—notably the bone marrow and the spleen. But the cells of each specialized tissue—muscles, brain, glands—can on occasion synthesize each its own special type of protein, utilizing the aminoacid building materials. Each tissue can also, on occasion, hydrolyze nitrogenous molecules of the polypeptide order, and give out antitoxic ferments in response to specific toxins. But as a rule, the tissues are shielded by the red blood corpuscles from the necessity of performing these functions.

5. The vast multitudes of red blood corpuscles, with an aggregate bulk of about four pounds in the ordinary human body, their substance having been synthesized by the mother cells out of aminoacids, constitute the chief source of the specific proteins in the blood stream, which proteins on being decomposed (with the aid of the lymphocytes) are the prominent source of bodily energy.

6. Every cell that can unite with a foreign proteid product can produce an "antibody" likely to antagonize that product. The leucocytes and red blood corpuscles are the particular cells that come most in contact with such foreign bodies, and they are therefore the chief source of specific proteolytes and antibodies directed against the invaders. The presence in the blood stream of these specific proteolytes and antibodies, secreted by the leucocytes and red cells, and to a certain extent by the body cells (backed up by the presence of an adequate army of leucocytes and red cells themselves, capable of producing more of the antibodies under stimulus of invasion), constitutes the condition of immunity.

7. Immunization to bacterial diseases is merely a special case of protein assimilation. It has in the past been as necessary to acquire immunization against the dietetic proteins—egg, beef, mutton, chicken, fish—and against "benign" bacteria as against the most virulent bacteria.

8. Protein anaphylaxis of any type (including "serum disease") is merely a special case of protein intoxication, strictly homologous with protein poisoning from the toxins of virulent bacteria. It results when a general proteolytic (leucocytic) enzyme is present in sufficient quantity to hydrolyze the foreign protein partly, while the red cell mechanism is temporarily exhausted, so that cleavage cannot be completed, and the tissue cells are attacked. Protein anaphylaxis is strictly homologous with protein immunization. They are different aspects of the same subject, corresponding respectively to the "passive phase" and the "active phase" of Wright's opsonic index.

9. The activities of the cytogenic system, leading to an increase in the number of blood corpuscles and a stimulus to the activities of the individual corpuscles; and through these to completed protein assimilation and immunization; are governed in part by hormonal stimuli, the internal secretions actively engaged including those of the adreno-thyroid system and secretion from the duodenum.

10. The cytogenic system (including the bone marrow, the spleen, and the lymphatic glands) is a highly important member of the endocrinous system; the detached blood corpuscles are to be regarded as still a part of that system; and the study of the system as a whole offers a fruitful field for discovery of new methods in immunization and the treatment of infectious diseases and of all forms of protein product intoxication.

11. The general theory of the action of the cytogenic system above outlined finds support in clinical observations of disease and in empirical therapy; and the theory itself gives important clues to the scientific application of old and new therapeutic measures, including an extension of serum therapy and vaccine therapy and the development of a new cytotherapy.

It will appear as we proceed that the "new cytotherapy" referred to above finds its best present exposition in the autolysin treatment of malignant neoplasms. Before attempting an explicit interpretation, it will be well to give a résumé of the observed physiological and therapeutic action of autolysin (already detailed in full in Doctor Beebe's

<sup>1</sup>Very considerate readers who have a fuller exposition of the theory, with an outline of the reasoning upon which it is based, we shall be glad to send, upon request, a reprint of the articles, constituting a monograph of ninety-five pages, although in itself presented only as a preliminary outline to a thesis to which we expect presently to give a much fuller exposition.



summary of the treatment of 700 cases), in order that the phenomena to be explained may be kept clearly in mind. We shall follow this with a presentation of the pathological conditions, particularly as concerns the blood count, in cancer cases, as recorded by independent observers. We shall then be in a position to make the interpretation of the action of autolysin in combating cancer along the lines of the proteomorph theory, which, as already explained, is the main purpose of the present paper.

#### THE OVERALL EFFECTS OF AUTOLYSIN, PHYSIOLOGICAL AND THERAPEUTIC.

The direct action of autolysin appears to be directly associated with the stimulation of the organs producing white and red blood corpuscles, as its administration is almost immediately followed by leucocytosis and erythrocytosis. Coincidentally or in immediate sequence enzymes appear to be developed in the bodily fluids, which have the property of causing the disintegration or autolysis of the cells of malignant neoplasms of every type. It is for this reason that the convenient name autolysin has been given to the remedy itself.

The physiological effects of autolysin, when administered hypodermically in full dose, vary with the individual patient. An initial dose of ten or fifteen minims may produce no immediate visible or tangible effect. A few hours later, there may follow a characteristic complex of manifestations, including a more or less violent chill, temperature of  $100^{\circ}$  or  $101^{\circ}$  F., and pulse of 100 or more. In larger doses, or with a patient of greater susceptibility, the chill may be exceedingly vigorous and the usual physical manifestations associated with increased temperature may be manifested. There may even be temporary collapse of the patient.

The symptoms of this characteristic reaction are more sudden in onset and more vigorous when the drug is given intravenously. Very exceptionally, the appearances of toxicity may be so marked as to cause solicitude, but the alarming symptoms soon subside, and there has been no death from the effect of the drug, although it has been administered in nearly 700 cases. Experiments on animals have shown that spontaneous recovery takes place even where relatively enormous doses are given and the reaction is so violent as to seem to threaten life.

The above described reaction (slight chill and rise of temperature) is not to be regarded as a toxic manifestation (unless the symptoms are quite exceptionally severe), but as a physiological effect associated with the desired action of the remedy. They are explicable as due to the bringing of vegetable proteins directly into the circulatory system. When toxic effects supervene they appear to be of the nature of the action usually described as anaphylaxis. This may be in part due to the vegetable proteins introduced hypodermically, but largely to the far more toxic animal proteins liberated into the circulation through dissolution of the cancer cells.

In practice, it is usually desirable to bring about a mild reaction—a chill lasting a few minutes, temperature of  $100^{\circ}$  or  $101^{\circ}$  F.—as an evidence of the therapeutic action of the enzymes in contact with the cells of the neoplasm. There are cases, however, in which chill and fever are absent, notwithstanding the effective action of the remedy.

It is hardly necessary to say that the therapeutic effects of autolysin vary with different cases. There is, however, an amazing uniformity in the modification brought about rather rapidly in the general condition of the patient and in the local conditions in the malignant neoplasm itself. The following modifications may be taken as typical:

1. Entire cessation of pain, sometimes within a few hours after the first administration of autolysin; very generally after three or four successive applications. This is not due to any direct action of autolysin on the nerve centres, since the remedy contains no narcotic principle; but must be explained as a secondary effect of the action on the neoplasm. The result, however, is sometimes almost magical.

2. In addition to the change of expression on the patient's face due to the absence of pain, there is usually a striking modification in general appearance. The patient feels in all respects better, and his looks indicate his feel-

ings. The color begins to return to the ears and cheeks; or in cases where the skin was bronzed, it may take on a more natural color, the bronzing gradually disappearing. The nervous system feels the beneficial effects of sleep. Appetite improves and assimilation is adequate. The patient gains in weight. Associated with these evidences of physical improvement is a sense of mental satisfaction and confidence justified by the favorable progress of the disease.

3. If the neoplasm is a superficial tumor, or an abdominal growth that can be palpated, it is usually found to soften and become less resistant to the touch after a few treatments. It commonly regresses in size, and may disappear altogether in the course of two or three weeks. A much longer period is usually required, however, to make the regression complete; and there may remain a mass of fibrous tissue that obstinately resists further disintegration. If treatment has been pressed, the tumor may break down, and it may be necessary to evacuate its contents, which assume a cheesy appearance. A very notable feature, however, in such case, is that the contents of the tumor usually have no bad odor. Similarly in a case where the neoplasm has partially broken down before treatment begins, presenting a malodorous sloughing sore, it is generally observed that the character of the discharge changes rapidly, and that the offensive odor disappears after a few doses of autolysin are given. All this, it will be understood, applies to the administration of autolysin in the way already suggested—hypodermically into the arm—although the tumor may be located in a distant part of the body. As a rule no particular advantage appears to be gained by direct injection into the tumor, although this method is sometimes resorted to when it is desired for any reason to hasten disintegration.

4. In cases where there are metastatic secondary growths, or where distant glands are involved, these secondary tumors and enlarged glands yield quite as readily to the attacks of the bodily enzymes evoked by autolysin as does the original neoplasm—sometimes even more readily. In a case of inoperable cancer of the breast, for example, where axillary glands are greatly enlarged, these enlarged glands may return to normal size or virtually disappear, while the tumor of the breast, though greatly reduced in size, is still an appreciable nodule.

5. In favorable cases the regression of the tumor, as of all metastatic involvements, continues until all cancerous tissue has seemingly disappeared. In the meantime, the patient's general condition has improved along the lines already indicated, until he or she appears to have regained a condition of average health. The patient returns to his home and takes up his normal duties of every day life. In other words, there is a clinical recovery and at least an apparent cure of the malignant disease.

Whether in any case there is actual cure, in the sense that the patient is placed beyond the danger of recurrence, is a matter regarding which the future must decide. At present it is only possible to say that there has been no symptom of recurrence in any one of the cases treated, and that the theory of action of the remedy justifies the hope that a systemic condition has been produced that renders the subject virtually immune to the development of neoplastic cells.

Among the essential features of the foregoing outline of the physiological and therapeutic actions of autolysin that are particularly pertinent in the present connection are: 1. The observed increase in white and red blood corpuscles; 2, the reaction of anaphylactic character; 3, the softening and regression of the neoplasm; and, 4, the fact that such softening and regression is brought about quite as actively when the injection is made into the arm as when into the actual tissues of the neoplasm itself.

#### BLOOD CONDITIONS IN CANCER.

Before we attempt the application of these facts, and their explanation, let us inquire, What are the pathological conditions present in a case of malignant neoplasm; in particular, What is the condition of the blood? Fortunately there is abundant ma-

terial available for the answer of this question, based on the observations of independent workers quite unbiased by any theory as to the explanation of the facts they observed.

A large number of cases in the aggregate have been tested as to the blood count, and the results are surprisingly uniform. They may be summarized in the statement that, in the vast majority of cases of malignant neoplasms, the white blood cells are found to be largely increased in number, very commonly from 10,000 to 20,000 to the c. mm., and sometimes reaching the enormous figures of 30,000 (Hirschfeld), 45,000 (Sailer and Taylor), and even 120,000 (Kast), though it should be added that about 100,000 have been reported, seemingly, by a single observer only. Many independent observers, on the other hand, report cases in which the white cell count was from 20,000 to 30,000 in the c. mm.

Meantime the same observers record an astonishing diminution in the numbers of the red blood corpuscles. In a certain number of cases, to be sure, the number approximates the normal, or even exceeds it; but in the vast majority of cases we find a decrease that is very notable, and in a very considerable proportion of cases the number falls below three million to the c. mm.; in not a few cases below two million; and in some cases below the million. One practised observer (Frese) records cases in which the red blood count was respectively 800,000, 900,000, and 681,000; another observer (Kurpjuweit) records a count of 718,000. The average of sixty-eight cases of cancer with bone metastases, by thirty-six different observers, as collated by Ward, is 2,870,000 red blood cells to the c. mm.

It must not be supposed that the subject is quite as simple and free from complications as such a condensed summary might suggest. The present writers have made an elaborate investigation of the literature of the subject which will be presented in detail in another connection, with reference also to the differential count and blood analyses in our own series of cases as influenced by autolysin treatment. But for the present purpose it will suffice to quote one or two authoritative estimates.

Here, for example, is the summary made by Cabot, in analyzing the cancer cases studied at the Massachusetts General Hospital: 1. Small, slow growing tumors and the early stages of all tumors may have no effect on the blood appreciable by our present methods of examination. 2. In advanced cases the red corpuscles often become thin, light, and pale, and finally their number may be greatly diminished, counts running sometimes as low as in pernicious anemia. In this respect, as in others, sarcoma seems to injure the blood more than carcinoma. 3. The color index is always below one, but is rarely as low as found in severe chlorosis. 4. Normoblasts and megaloblasts may occur, the former even in the absence of severe anemia. 5. Leucocytosis is present in the cachectic end stages of many cases, but frequently absent in small tumors of slow growth and without metastasis. The polymorphonuclear cells are often relatively increased.

As supplementing this, we may cite Welch's estimate, in *Pepper's System of Medicine*, with regard to the blood in carcinoma of the stomach: "In many

cases profound anemia develops and sometimes to such a degree that the symptoms cannot be regarded as simply coordinate with the other disorders of nutrition, but is to be regarded rather as an evidence of some special disturbance of the blood-forming organs. The blood may present the same changes as are seen in pernicious anemia, such as extensive reduction in the number of red blood corpuscles to 1,000,000 or even half that number in a c. mm. In extreme cases the proportion of hemoglobin in the blood may be reduced to fifty or less per cent. of the normal quantity. Leichtenstern has observed that toward the end of life the relative proportion of hemoglobin in the blood may be increased sometimes rapidly and may even exceed the normal limit. This is due to concentration of the blood in consequence of the loss of water. In such cases the tissues appear abnormally dry and the blood thick and tarry at the autopsy. There is occasionally a moderate increase in the number of white blood corpuscles."

In one case of gastric cancer Welch observed a leucocytosis in which there was one white to twenty red blood corpuscles without enlargement of the spleen. H. Mayer reported a case of medullary cancer of the stomach in which there was one white to fifty red blood corpuscles. The spleen was not enlarged.

Similarly Osler and McCrae, speaking of carcinoma of the stomach, say that: "The red cells are normal or much diminished; sometimes there is marked poikilocytosis. The hemoglobin is diminished. The average red blood count is usually about 2,000,000 per c. mm.; the average hemoglobin is about fifty per cent."

Cunliffe, in the *Medical Chronicle*, 1903, gives a full description of investigations made by him of the blood in malignant diseases. His cases included carcinoma of the stomach, esophagus, rectum, tongue, breast, and cervix uteri, unclassified cancers of the abdomen, and unclassified cancers in various other regions.

In Cunliffe's cases the diminution of red blood cells was not as marked as in those of a good many other observers, and roughly, in a quarter of his cases the red cells were not diminished. In marked contrast to this, however, is Grawitz's statement that the red cells are almost always diminished in malignant diseases. But it is notable that in several of Cunliffe's cases where numerous counts were taken in the course of the disease, that, generally speaking, the progress of the disease was accompanied by decrease in the percentage of hemoglobin, decrease in the number of red cells, decrease in the hemoglobin index, and increase in the white cells, especially in the polymorphonuclear neutrophiles.

On the whole, we may take it as fairly established by the testimony of many independent observers, that a conspicuous aggregate reduction in the numbers of red blood corpuscles is a characteristic feature of malignant neoplasms, at least in their later stages. The increase of leucocytes that is coincidentally observed is doubtless compensatory, yet the net result of such increase, if the present thesis is accepted, is that the organism is thereby further endangered. For just in proportion as the white

cells are able to begin the disintegration of the cancer proteins, will the task of the diminished army of red corpuscles be enhanced and placed still further beyond their capacity; with the result that the organism as a whole suffers from ever increasing toxicity. Whatever theoretical explanation we may advance of the action of the red corpuscles, it is obvious that their diminution, as witnessed in the average case of malignant neoplasm, constitutes a serious menace to the health of the individual, and an important drawback to recuperation.

The fact, then, that when autolysin is administered hypodermically there comes about a very rapid and marked increase in the number of the red blood corpuscles, as has been observed in a large number of cases, to be recorded elsewhere in detail, it is impossible to avoid the conclusion that such increase has a direct causal association with the observed improvement in the general health of the patient and the capacity to deal with the byproducts of the cancer cell metamorphosis and neutralize their toxicity. That the leucocytes are also increased is now salutary, inasmuch as the red blood corpuscles are, in favorable cases, present in sufficient numbers to deal with the cancer proteins which they liberate in a partially disintegrated condition.

We seem fully justified, then, in regarding the increase of leucocytes and red blood corpuscles under the influence of autolysin as an essential factor in the favorable progress observed in a case of malignant neoplasm treated with that remedy.

It remains, however, to explain the rationale of the action through which autolysin brings about this beneficent increase in the armies of leucocytes and erythrocytes. To attempt this explanation necessarily carries us farther into the realm of theory. The effort seems eminently worth making, however, because, if our interpretation is correct, we shall gain glimpses of an entirely new field of therapeutics and shall be enabled to give at least a proximal explanation of the exact manner of action of a remedy, the introduction of which, we believe, constitutes the inauguration of a method that must in future rank with serum therapy and vaccine therapy,—if, indeed, it does not altogether outstrip or totally supplant both these relatively new additions to the equipment of the practical physician.

#### THE ACTIVE INGREDIENT AND COMPOSITION OF AUTOLYSIN.

To gain a clue to the explanation we are seeking, it is necessary to have a fairly clear understanding of the nature of autolysin itself. When the first accounts of the new remedy were given, in Doctor Beebe's paper in the *NEW YORK MEDICAL JOURNAL* for May 15, 1915, a full list of the plants from which the remedy is extracted was introduced, but with no comment as to the chemical nature of the all important extractives.

Inasmuch as the plants named are for the most part familiar herbs that have not been supposed in recent times to have pronounced therapeutic uses,<sup>2</sup> a good many physicians who read the list were led to make skeptical and sometimes would be humorous comment. One physician of supposed author-

ity (who, however, had made no investigation of the subject), was so indiscreet as to declare that the new remedy had neither scientific foundation nor therapeutic action.

Criticisms of something about which one knows nothing are always hazardous, and this particular criticism was peculiarly unfortunate; for it chanced that the therapeutic effects of autolysin may readily be demonstrated to any one who cares to make the test; and we greatly err if any competent critic who will read the ensuing summary of the character of autolysin is not convinced that the remedy has a scientific foundation fully commensurate with its observed therapeutic action.

Of course it is not for a moment maintained that the explanation about to be given clears away in its entirety all mystery in connection with the action of this remarkable substance; but it may unhesitatingly be affirmed that a clearer and more intelligible explanation of the action of autolysin may be given than it is possible to give, according to any accepted hypothesis, of the action of such drugs, for example, as digitalis and morphine and atropine and strychnine and ether or any other anesthetic. On what chemical theory, for example, do we explain the fact that the compound  $C_{17}H_{19}NO_3$ , which we call morphine, contracts the pupils; whereas the compound  $C_{17}H_{23}NO_3$ , which we call atropine, dilates them? Ultimate explanations of the action of any drug cannot be given until we know far more than we do at present of the ultimate life processes; but we believe that a tentative explanation of the action of autolysin may be given that is largely satisfactory.

To understand the line of reasoning on which this suggestion is based, as well as the entire attempted explanation of the action of autolysin in causing the regression of malignant neoplasms, it must be understood that this remedy contains no alkaloid nor other recognized medical agent that has direct effect on any of the vital processes. Autolysin annuls pain, yet it is in no ordinary sense an analgesic to be classified with the recognized alkaloids. The patient using it gains weight, his appetite increases, and digestion and assimilation are promoted; yet it is not in the ordinary sense of the word a tonic. In a word, autolysin performs the recognized functions of various types of drugs familiar to the therapist, and performs them under circumstances when those drugs fail; but its manner of action is so totally different from that of any other medicinal agent hitherto employed that it stands in a class entirely by itself and its action must be interpreted according to an entirely new line of reasoning.

The first essential fact as to the composition of autolysin that must be emphasized and clearly apprehended is that the remedy contains vegetable proteins in solution.

Now vegetable proteins are about the commonest things in the world. We all take quantities of them into our stomachs every day. But taking a protein into the stomach is quite a different thing from having it injected into the circulatory system; and it is believed that the users of autolysin are the first persons who ever introduced a vegetable protein

<sup>2</sup>See *The New York Medical Journal*, for May 15, 1915, and the *Journal of the American Medical Association*, for June 1, 1915, for further details.



into the human system hypodermically for a therapeutic purpose. How the agent acts when thus introduced is a question that we shall discuss in a moment. Meanwhile let it be recalled that the vegetable proteins in question have been extracted from drugs carefully selected because of their nontoxicity. It was desired to get a reaction due to their presence as proteins, unassociated with toxic principles—a highly important fact that was quite overlooked by the facetious critics of the remedy, who amused themselves, but did small credit to their reputation by rushing into print with supposedly humorous comments on its constituents.

Another of the components of autolysin, likewise extracted from nontoxic drugs, is the familiar substance chlorophyll, which, as every one is aware, is the only known agency through which inorganic matter is compounded into organic matter. No one needs to be told that chlorophyll, in the plant leaf, through the influence of sunlight, combines carbonic acid and water to form organic sugars and starch. But no one hitherto has had any conception as to what the chlorophyll might do when brought into the circulatory system of a warm blooded animal. That question also we shall have occasion to discuss presently.

The remaining essential constituents of autolysin comprise organic salts and extractives (perhaps including enzymes of ill defined character) and lipoids—all, of course, of vegetable origin, since vegetable substances only are used in the preparation of autolysin. It is well known that the chemistry of the enzymes and the so called lipoids is obscure, and it may be premised here that no attempt will be made in the present paper to explain in detail the action of these constituents of autolysin. It must suffice to express our opinion that they in some way support or supplement the action of the other agents and have a definite share in producing the general beneficial effect observed.

The same remark may be applied to the chromophyll bodies that are present in suspension. It is not impossible to devise an hypothesis based on the curious relation known to exist between the chromophyll bodies in the nucleus of every living cell and the reproductive division of such cell, but such an hypothesis would necessarily be of a rather visionary character and on a quite different plane, so we believe, from the hypothesis as to the action of the vegetable proteins which it is our chief purpose here to develop, and to which we now turn explicitly.

#### VEGETABLE PROTEINS IN THE PARENTERAL SYSTEM.

It is well known that foreign proteins, of whatever character, when introduced into the parenteral system, constitute antigens that stimulate the body to the production of defensive enzymes, that tend to proteolyze the antigen itself and to neutralize its toxic products. According to the proteomorph theory, the chief agents in the production of these proteolytic and antidotal enzymes are the white and red blood corpuscles, the latter being concerned with the end products of the polypeptide order. According to the theory, large numbers of the red corpuscles themselves are destroyed in the liver, in the

process of eliminating the toxic end products of protein metabolism from the system. This explains, for example, the pernicious anemia that may result from the absorption of toxins of protein origin, as in bothrioccephalus poisoning.

Similar destruction of the red corpuscles, in their attempt to rid the body of toxins, explains, according to our thesis, the pernicious anemia that generally accompanies malignant neoplasms. The animal protein cell does not break down without the production of toxic molecules, and wherever animal proteins of any type are being split up parenterally, such destruction of the red corpuscles must occur, with the result that the cytogenic apparatus may finally be overtaxed and find itself unable to keep up the supply.

It seems probable, however, that vegetable proteins, notwithstanding their chemical similarity to animal proteins, are less likely to produce toxic by-products during disintegration. It is a familiar doctrine that animal proteins rather than vegetable are the source of intestinal putrefactions. There is theoretical warrant, according to the proteomorph theory, for the assumption of the less toxicity of vegetable proteins, in the fact that they doubtless constituted the food of our ancestors for a much longer period than did animal proteins. Probably the remote ancestors of men were eaters of vegetables for millions of generations before they became eaters of animal foods. And, according to the thesis under discussion, the toxicity of any type of protein is directly proportional to the newness, so to speak, or the infrequency with which the organism has come in contact with it. Toxicity is not a thing *per se*, but a matter of relativity. Inherently, all proteins are poisonous to every organism except the one producing them. A few drops of eel's blood injected into the veins of a dog will cause death.

But doubtless there is great diversity among vegetable proteins themselves as to the matter of toxicity; and it has already been explained that the drugs selected for the extraction of vegetable proteins in autolysin were such as are free from any suspicion of harmfulness to the human system. According to the thesis here developed, such freedom from toxicity argues a long established relationship between these particular proteins and the human organism; so it is not surprising that the ones selected include familiar garden plants that have long been under cultivation. Doubtless any number of other plants might have been selected from which vegetable proteins that are effective antigens could have been extracted; but many of them would have introduced, along with their proteins, toxic alkaloids or organic salts or enzymes that would have made them worse than useless.

The result is that the vegetable proteins actually introduced when a hypodermic injection of autolysin is given, are of a type to produce a minimum of toxicity while at the same time acting as vigorous antigens, stimulating the cytogenic mechanisms to the rapid production of white and red blood corpuscles. Doubtless these corpuscles proteolyze the vegetable protein itself, but in so doing the red corpuscles are not destroyed in large numbers, be-

cause they have a minimum of toxic byproducts to deal with.

The large mononuclear leucocytes, which have been shown to produce enzymes that are peculiarly active in the splitting up of cancer cells, are usually found to increase very markedly in the blood. There is also increase of the lymphocytes, which are credited with an active share in the splitting up of animal proteins, and of the eosinophiles. The enzymes by these protein fighters begin the disintegration of cancer cells (which, because of their new development or their embryonic character, are more susceptible to disintegration than are the cells of normal tissues), and the products of such disintegration are liberated into the blood stream, where the red corpuscles, now banded in adequate numbers, continue the work of proteolysis and elimination.

Of course the disintegrating cancer cells liberate toxic molecules, and in dealing with these the red corpuscles are of necessity destroyed in large numbers in the liver. But this temporary reduction in the numbers of the erythrocytes is compensated almost immediately by the stimulative effects of a succeeding dose of autolysin, so that unless the breaking down of cancer tissues goes forward very rapidly, indeed, the aggregate count of red cells increases from day to day. It is not unusual to find the count above five million, after the autolysin treatment is well established. The enzyme-forming capacity of the red cells is probably increased proportionately.

The chill and rise of temperature that mark the characteristic reaction to autolysin, and serve as guides to the clinician, probably mark the period when the cumulative action of the leucocytes has taxed the blood with more polypeptide byproducts than the red cells can for the moment handle, so that the ranks of the latter have been momentarily depleted, and the chill gives warning that the system is feeling the effects of toxicity. But the rise of temperature that supervenes immediately is compensatory, since this in itself stimulates the activity of the cytogenic apparatus, so that in a short time there are usually enough of the corpuscular defenders present to take care of the obnoxious protein products.

If compensation does not take place quickly, the delay serves as a warning to the clinician that he should let a longer interval elapse before giving the next dose of autolysin, or administer the remedy in smaller doses.

#### SECONDARY EFFECTS.

If the foregoing reasoning is accepted, it is clear that we can form a tolerably vivid mental picture of the processes through which the regression of the malignant tumor is brought about under the influence of the vegetable protein antigens that are among the essential constituents of autolysin. The observed phenomenon of the cessation of pain, which is one of the most uniform and gratifying immediate results of the administration of autolysin, is explicable as due to the softening and disintegration of the peripheral cancer cells that have encroached upon the nerve fibrils. The time required for the pain annulling effects to make them-

selves manifest would appear to depend upon the exact site of the cancer, and the extent to which its cells have involved the nerves. As the cancer tissue steadily regresses, it is withdrawn more and more from interference with the nerves, and the cessation of pain is lasting.

There is very commonly experienced a sensation of gnawing or digging at the site of the tumor, which is not exactly agreeable, but which the patient cheerfully tolerates because he regards it, doubtless quite correctly, as an evidence that salutary changes are taking place within the tissues of the neoplasm.

The cessation of odor in superficial ulcerative neoplasms or in the discharge from uterine or other masses, is readily understood, according to our thesis, as due to the activities of the hitherto depleted but now adequate army of red blood corpuscles. The decomposition products that produce the bad odor are precisely of the character of the protein products that, according to hypothesis, the red blood corpuscle deals with habitually. The odor was therefore directly due to the inadequacy of the supply of red blood corpuscles, and it disappears almost as a matter of course when this defect is fully compensated.

But while these general and special phenomena of proteolysis as applied to the particular case of the cancer cell, are thus explicable as due to the activities of the white and red blood corpuscles, it remains to be said that the antigenic action of the vegetable proteins does not in itself sufficiently explain the rapidity of action that is often observed—as, for example, in a case in which pain of the most excruciating character ceases altogether within nine hours after the first administration of autolysin; or in another case in which a carcinoma of the neck regresses so rapidly that the change can be noted from day to day, and the tumor entirely disappears in less than twenty days. Such rapidity of action suggests something more than the mere percentage increase in numbers of leucocytes and red blood corpuscles, even though such increase is very marked. It seems fairly obvious that there are substances introduced along with the vegetable proteins that stimulate the enzymic action of the corpuscles qualitatively, or that themselves directly attack the neoplastic cells.

This inference is fortified by the observation that in some cases the tumor regresses, proving disintegration of its cells, even where the blood count shows no increase or but small increase in the leucocytic count—and in particular of the large mononuclear leucocytes that have been credited with a conspicuous share in bringing about the initial splitting up of the cancer cells.

#### THE ACTION OF CHLOROPHYLL IN AUTOLYSIN.

It would be going much too far to affirm that any one has conclusive knowledge as to which of the varied constituents of autolysin are to be credited with this stimulus to the qualitative action of the bodily enzymes or with direct attack upon the neoplastic cells. It is a matter of observation, however, as made before autolysin was brought to its present stage of development, that the presence of just the right amount of chlorophyll, in association with vegetable proteins and other extractives, is essential to

the best action of the remedy. So it is a fair inference that chlorophyll is at least one of the agents that fortifies and stimulates the antigenic action of the vegetable proteins in the complex compound which for convenience we term autolysin.

Just how the chlorophyll acts is conjectural. Plant physiologists are unable to give us a very clear picture of the way in which chlorophyll operates to bring about the building up of organic matter in the plant leaf. They do, however, supply us with certain information that is at least suggestive.

It would appear, for example, according to the researches of Usher and Priestly, that the chlorophyll function depends upon the cooperation of three agents—the chlorophyll itself, the protoplasm of the chloroplast, and a catalase. The pigment acts as both optical and chemical sensitizer in such wise that a reaction is brought about between carbonic dioxide and water, with the formation of formaldehyde and hydrogen peroxide. These are toxic bodies, but in the plant leaf formaldehyde is immediately polymerized by the protoplasm of the chloroplast, and the hydrogen peroxide is acted on by the catalase and split into oxygen and water.

It would be hazardous to infer that these changes take place precisely in the same way anywhere outside the plant leaf; yet part of them can be imitated *in vitro*, the chief difficulty in continuing the process being that the formaldehyde is not polymerized in nonliving preparations, and so at once destroys the chlorophyll and prevents further action. Meanwhile, when leaves are killed by boiling, hydrogen peroxide and formaldehyde are formed as before, but in this case the enzyme, catalase, is destroyed, as well as the protoplasm, and the hydrogen peroxide contributes to the destruction of the chlorophyll.

It is at least an interesting question whether the protoplasm and enzymes of the cancer cell may not perform the function of the protoplasm of the plant cell to the extent of polymerizing the formaldehyde and decomposing the hydrogen peroxide produced through the catalytic action of chlorophyll; and whether these substances in the transition period may not act effectively upon cancer tissues.

It is possible, on the other hand, that a quite different line of reasoning may explain the action of chlorophyll. In laying the foundation for the proteomorphic theory, we had occasion to call attention to the fact that the white blood corpuscle is essentially a protozoan that has retained the functions and manner of activity of its remote progenitors. Doubtless these remote progenitors, living in stagnant water, came in constant contact with chlorophyll bearing vegetable cells, and ingested these as the most habitual item of their dietary. Under the conditions that obtain in the body, the leucocyte can never come in contact with chlorophyll, inasmuch as this substance, however persistently taken into the stomach, is disintegrated by the digestive fluids and probably rarely or never makes its way unchanged into the circulatory system. Yet the ancestral memory that is everywhere posited as an inherent trait of all living protoplasms (see our original monograph) might very well leave the leucocyte still in condition to respond energetically to the primordial stimulus of chlorophyll; and it may be through this agency that the leucocytes are enabled to make such

rapid and effective attacks upon the cancer cells when autolysin is administered.

We repeat, however, that we put forward any hypothesis as to the manner of action of the chlorophyll only tentatively; and that for the moment we shall indulge in no hypothesis at all as to the particular action of the other extractives, including organic salts and lipoids, known to be present and believed to have important functions in connection with the forced disintegration of the cancer cells under the action of autolysin. We hope in future communications to tell of experiments that possibly throw light upon these obscurities. But in the mean time we feel justified in reiterating that the provisional explanation of the action of autolysin as above given, particularly with reference to the share of the vegetable proteins of nontoxic character in stimulating cytogenesis, enable one to form a picture of the physiological processes involved in the regression of cancer under autolysin treatment that is at least as satisfying as most similar pictures that the therapist can elicit regarding the action of any drugs in his equipment. Assuredly the action of autolysin, as interpreted in the light of the proteomorphic theory, cannot be said to be without scientific foundation. In point of fact, the theory of its action may be said to give substantial support to the confidence of those who have observed with wonderment and gratification its really extraordinary therapeutic action.

But let us not fail, in conclusion, to repeat the warning with which this paper opened. The facts about the action of autolysin are definite and tangible; they are matter of clinical observation lying far afield from the domain of theory. By such clinical observations in about 700 cases, the efficacy of autolysin in the treatment of inoperable cancer has been established to the satisfaction of a large number of competent observers, as the reader of the preceding papers of this symposium is amply aware. Whether or not the theory in explanation of such observed efficient action that we have attempted to put forth is a valid one, is a matter of altogether subordinate importance.

We believe that the theory has plausibility, and that its application and interpretation will lead to an extension of the use of autolysin, or of allied products, in the development of an entirely new order of therapeutics. But as to the validity of this belief, the future must decide; and in the meantime the autolysin treatment of inoperable cancer stands as a demonstrated entity, within the confines of the statements of its originators, in nowise dependent upon any theory whatsoever.

#### 25 EAST SIXTH STREET

**Treatment of Cachexia in Cancer Cases.**—De Keating-Hart, in *Quinzaine thérapeutique* for November 25, 1913, it is stated, estimated the glucose in the blood of cancer patients; it was almost always subnormal. He considers that a large amount of glycogen is used up in the process of growth of the tumor. Many patients were placed on a carbohydrate diet and given injections of glucose solution—up to six ounces (250 grams) per diem. Remarkable results were frequently obtained, the appetite and vigor of the patients increasing.



## INFANTILE ECZEMA.\*

BY H. W. CHENEY, M.D.,  
Chicago,

Associate Professor, Northwestern University Medical School.

In this presentation I wish to impress the fact that the consideration of infantile eczema is a pediatric question and not a dermatological one. I want to make it plain that infantile eczema is principally a nutritional disorder, and that in the great majority of cases the skin eruption is only the external evidence of a disordered metabolism. I am prompted to this by the fact that many of the textbooks on skin diseases or on eczema in children give scant consideration to the nutritional side of the question, and that a discussion of the question at a dermatological society meeting was almost entirely given over to external treatment of the disease, and only a short statement that disorders of nutrition might be a contributing cause.

Considering, first, the pathology, it is unnecessary for me to name all of the varieties, ranging from eczema rubrum to eczema squamosum. In general, we may speak of two forms, the moist or weeping eczema, and the dry or scaly eczema. It may be localized in small areas and mild in character, or may become more or less general and so severe as to endanger life.

In babies we frequently see it first on the face, particularly the cheeks, as a dermatitis, looking as if the skin was chapped from the wind. This becomes more severe and soon serum is oozing through and drying, thus forming scabs. Or we may get something of the same process on the scalp, forming the so called "cradle cap." From the scalp it spreads to the forehead, and soon the whole face and head are covered. The face may be so bad that not only is the skin of the eyelids affected, but an actual eczematous conjunctivitis develops. The inflammation is liable to be bad in the folds behind the ears, and in other folds of the body, like the axilla and groin, where it is known as intertrigo. From these areas it may spread until a considerable portion of the body is covered. More or less superficial infection occurs in the chronic cases, and we find the lymphatic glands involved, particularly those of the cervical region when the head is affected. Itching is most marked, and the little patients are quite uncomfortable, constantly endeavoring to scratch the affected areas.

Coming now definitely to the cause of infantile eczema, we will find that many of the textbooks list a variety of causes, ranging from changes in the weather to teething and heredity. A symptom complex called the exudative diathesis is described by Czerny, of which the eczemas are a manifestation, and this condition may explain a few of the cases, although it is only a symptomatic explanation and does not get at the real cause.

When we say that eczema in the infant is due to digestive disorders, we have not gone far enough, for we find that usually there has not been a marked upset in digestion, such as is ordinarily manifested by vomiting and diarrhea. In fact, a child may acquire an eczema on a food that is apparently agreeing with it. But when we study the cases closely, we

find that most of them are due to *overfeeding*. Either the total quantity of food is much too large, or some of its ingredients, either the sugar or the fat, is in excess. Or the child may have an idiosyncrasy or an intolerance for the sugar or the fat or the salts of the food.

Probably more cases occur in the bottle fed infants, although very severe cases may occur in the breast fed. We so frequently see eczema develop in the large, fat babies, who are gaining perhaps a half pound or a whole pound a week, accompanied by constipation.

The prognosis of eczema is good as regards life, but the severe cases are chronic and long continued, taxing the patience both of the parents and the physician.

In speaking of *treatment*, I would emphasize that external applications are not to be considered first. Our first thought and consideration should be the nutrition of the child, and a careful inquiry as to the food which has been given will give us a clue to proper treatment. If it is a breast fed baby, we often find it has been fed at frequent and irregular intervals, perhaps every two hours, and the mother has an oversupply of rich milk. For such a baby we must endeavor to do two things; first, decrease the abundance and richness of the mother's milk, and, second, cut down the baby's supply. For the mother we should advise more exercise and a lessening of the quantity of food which she takes, omitting particularly milk, cream, and the cereals. For the baby we should prescribe regularity of nursing and long intervals between feedings. The baby should not be nursed oftener than once in four hours, and not allowed to stay at the breast too long. The food can be diluted by giving the baby one or two ounces of water or barley water just before each nursing, partly filling its stomach, and thus it will not take so great a quantity of milk.

Some cases persist after all these trials. They are probably cases in which there is an intolerance for some ingredient in the mother's milk, and for such we may try a wet nurse, or if we can make the baby fairly comfortable we may worry along for a few months until the child is old enough for other food.

For the bottle fed baby we are enabled to vary the food constituents to suit each case. We shall find that most of them have been fed too much fat, due to the practice of using top milk for the baby's food, or of adding cream to the milk mixture. The simple expedient of feeding a skimmed milk mixture for a time will often cure them. In other cases, particularly those with eczema and excoriations of the buttocks, we find the carbohydrates have been fed in excess, perhaps one of the patent baby foods used too generously, or with too much sugar in the mixture. In these, also, the skimmed milk mixtures, with no carbohydrates added, are good for a time, changing to whole milk later.

Then there is a class of cases which still resist all such feeding, and these often can be cured by using the so called albumin milk, or Eiweiss milk, of Finkelstein. Finkelstein advanced the theory that the salts in the milk as well as the sugar poison some infants, and he evolved a method of taking the whey out of the milk, thus ridding it of its salts and

\*Read before the Chicago Medical Society, June 9, 1915.

sugar. Albumin milk cannot be successfully made at home, but must be prepared in a milk laboratory by an expert. However difficult to make, it is necessary in some cases, and will cure the eczema.

I have thus gone somewhat into detail as to the feeding of babies with eczema, because most of them can be improved and many of them cured without any external or internal medication whatever. We should, however, give directions for the care of the baby's skin, and these will insist that no soap and very little water be used. Cold cream or sweet oil can be used for cleansing purposes. We must also protect the child from scratching itself, which it is impelled to do. This we can accomplish by putting splints on the arms so that they cannot be flexed, or by putting protectors over the hands. Ointments are useful because they protect the skin and perhaps hasten healing. Those of a bland and mildly antiseptic nature are the best. One containing starch, zinc oxide, and boric acid in petrolatum is a useful one.

In concluding, I desire to emphasize the following points:

1. Infantile eczema in the majority of cases is the evidence of a toxemia, intestinal in origin.
2. Such cases require primarily the services of a pediatricist to oversee the feeding, and only secondarily advice as to external medication.

25 EAST WASHINGTON STREET.

## REPAIR OF THE FEMALE PERINEUM.\*

BY ARTHUR S. BRINKLEY, M.D.,

Richmond, Virginia,

Associate Surgeon, St. Elizabeth's Hospital.

In presenting this paper on repair of the female perineum I have no new operation to report, but rather a review and reference to operations which seem to approach anatomical and physiological perfection. "To no department of gynecology," wrote Thomas thirty years ago, "does there attach more surgical rubbish which needs a thorough cleaning away, than to perineorrhaphy," and thus we find every now and then some one exploiting a new operation, which in reality is the same reported by one of our predecessors with the addition of some complicated suture or a new architectural design for denuding the mucous membrane; and one will find, just as Sturndorf remarked in a paper read before the New York County Medical Society, February 26, 1912, "the history of perineorrhaphy exemplifies the clinical axiom that multiplicity in methods implies diversity in fundamental conception." In Deaver's *Surgical Anatomy*, vol. II, the following sweeping definition is found: "The female perineum includes all those structures which fill the outlet of the pelvis." Speaking from a broad point of view, this is true. However, when we consider the repair of injuries due to the traumatism incident to labor, the perineum is spoken of in a more restricted sense. Usually our attentions are confined to injuries involving the structures anterior to the posterior margin of the anus, with an occasional exception to this rule in which tears extend partially

around the lower end of the rectum, split the coccygeal ligament, or fracture the coccyx. There has been much discussion pro and con as to whether injuries to the perineum incident to labor should be repaired immediately or be delayed several weeks until all edema and distortion of the parts have subsided. In my opinion, every case of laceration should be repaired immediately, provided that proper approximation of the torn levator ani muscles can be accomplished. To be sure, the operation is very often a failure, but at the same time it is giving the patient the benefit of the chance to escape a secondary operation, and it also closes an avenue of invasion for bacteria. For superficial tears a continuous lock stitch of thirty day tanned catgut makes a very trustworthy closure. For deep laceration interrupted silkworm gut sutures should be employed with merely tension enough to approximate the torn edges snugly. If too tight they will cut through, and if not snug when the edema subsides, they will be too loose. The perineum after repair is given practically the same attention as after normal delivery, with instructions to observe strict asepsis.

Operations for the secondary repair of the injured perineum should be divided into those which involve the levator muscles alone and those which involve the sphincter ani and rectum, a complete tear, as it is termed. In either case the problem we are dealing with is a hernia, the latter with an additional complication of incontinence of feces which requires more patience and skill to repair. Now, this hernia should be repaired along the same general lines as a hernia anywhere else, not only to fill in the gap, but at the same time to restore the physiological function of the levator ani. One reason why so many failures are encountered in repair of the perineum, is that the essential anatomical parts have not been accurately approximated. Especially is this true in operations in which nothing is attempted but to denude the vaginal mucous membrane in some fancy butterfly design and approximate the edges neatly, and trust to luck that the structures have been brought together anatomically. One could not hope to obtain a perfect functional result from such a procedure any more than if he made a very neat skin incision over an inguinal hernia and did nothing else but sew up the skin. The comparative results would be the same; an operation has been done in each instance and the salient factors concerned have not been touched.

For repairing a simple or incomplete tear, I am convinced that Noble and Sturndorf have given us two of the best operations in practice today. I have done both a number of times and obtained excellent results. I believe Sturndorf's the better of the two for large tears, especially where there is a bad rectocele. Noble's operations consist in grasping the labia just opposite the carunculae myrtiliformes on each side with Allis forceps, then a triangular area is marked off on the posterior vaginal wall with the base of the triangle directed to the vaginal outlet. The dissection is started from without by hugging the vaginal mucosa to avoid cutting into the rectum. When the line of cleavage is found, the rectum is stripped off with dry gauze to a point level with the apex of the triangle. The muscle is not dissected

\*Read at a meeting of the South Side Virginia Medical Association, June 8, 1915.

out, but interrupted sutures of thirty day tanned catgut No. 2 are introduced with a large half curved ~~round~~ needle, care being taken to get a good light of the muscle on each side, including the fascia. About three of these are introduced, then the excess of mucous membrane is cut away, and its edges are approximated with a continuous lock stitch of thirty day tanned catgut No. 2. This suture is continued on to skin edges, resulting in mucous membrane and skin being sewed up with the same suture. Three strips of washed iodoform gauze are packed in the vagina forty-eight hours for hemostatic purposes. In this operation there are no deep nonabsorbable sutures which are annoying to the patient, especially when they are withdrawn. The skin is loose and not fixed to the muscular structure beneath. In Sturndorf's operation the retracted levator bands are located on each side by palpating their inner borders where they jut from behind the pubic rami toward the median line under the vaginal mucosa. The mucosa is exposed by a tenaculum or Allis forceps just externally to the lower caruncles and another in the mid line at the mucocutaneous margin. With traction on these hooks or forceps a triangular flap is outlined, which is separated from the underlying tissues up to the crest of the rectocele, but not excised. The base of the triangle is directed inward, the flap is reflected upward, and finger or closed scissors is thrust in the lateral sulcus, which is distinctly palpable on either side between the inner edges of the ramus and muscles, and the latter is bluntly liberated from its fascial and cicatricial surroundings along the whole extent of its outer circumference, preserving its median coverings as far as possible. The mobilization should be of sufficient extent to permit a broad approximation of the corresponding levator bands without tension. Occasionally there is a small branch of the internal pubic artery which needs ligation, but most of the bleeding is venous and can be promptly controlled by pressure. Sturndorf uses from three to four interrupted twenty day chronic gut sutures to catch the muscles and close the intermuscular gap in front of the rectocele, but I prefer thirty day tanned catgut, because very often chronic acid in the gut irritates the tissues and retards healing. The sutures are thrown *around*, not *through* the muscle. In closing the superficial wound no vaginal mucosa is removed. The transverse wound is converted into a vertical slit by properly applied traction and the edges are united side to side by continuous thirty day tanned catgut. From the tip of the vaginal flap to the caruncles the suture includes vaginal mucosa only, while from the caruncles downward each stitch is made to gather the skin and all the fascial layers which are drawn from under the edges of the wound toward the median line. The comb of the vaginal flap is tucked into the vagina and spread out over the interposed levator muscles. The operation is completed by introduction of washed iodoform gauze to absorb the first ooze and to keep the flap of vaginal mucous membrane in apposition. The gauze is removed in forty-eight hours.

For repair of a complete laceration the operation first introduced by J. Collins Warren, in 1878, and later developed and elaborated by Ristine, Howard A. Kelly, and Noble, is probably best. By this

operation, which is called the *apron method*, the lower vaginal mucous membrane, which is cut away in the usual operation, is dissected from above and turned down over the anus, the vaginorectal margin being a hinge. In this way the rectum and anus are shut off from the field of operation. This accomplished, the ends of the sphincter muscle are dissected out and joined together with thirty day tanned catgut sutures, across the apron, but not to it. The wound is then closed as already described, with the exception of the redundant flap which is folded up by a purse string suture, which is tied over a good sized pad of iodoform gauze to keep the flap from retracting into the rectum. The redundant edge of the flap usually sloughs off in from six to twelve days. Three strips of washed iodoform gauze are packed in the vagina for hemostatic purposes and removed in forty-eight hours.

The aftertreatment of any operation on the perineum is a most important factor. In cases of simple repair the bowels are not allowed to move until the sixth day, and in complete cases not until the tenth day. Deodorized tincture of opium is given immediately if any inclination for bowel movement is felt, and repeated every six hours for one or two doses. For a cathartic castor oil is given and at the same time a sweet oil and glycerin enema is given through a catheter, six ounces of oil and two ounces of glycerin. This lubricates the bowel and softens the hardest fecal material in the rectum. The vulva and perineum are bathed twice daily with warm boric acid solution and dusted with boric acid powder. No douches are given until after the sixth day. If there is much discharge, warm boric acid solution is employed once daily. The patient is allowed to leave the hospital in about two weeks after operation for a simple tear, and three weeks after a complete tear.

617 WEST GRACE STREET.

#### BACKACHE.\*

*From the Internist's Standpoint.*

By HARRIS WEINSTEIN, M. D.,  
New York.

Pain in the back may be caused by a variety of local pathological changes; reflexly by organic disease of neighboring or remote organs, and by metabolic disturbances. Organs which receive their nerve supply from the autonomic nervous system, although themselves insensitive to pain, convey stimuli to various regions of the cord which react upon the neighboring centres, and thus bring about sensory, motor, or secretory effects. The efferent nerves, which are essentially functional stimulants, do not produce sensory phenomena. They preside over the functions of the various organs which they supply. Normally, there is a constant current of stimulation, if I may so term it, traveling along the afferent nerves toward the cerebrospinal system without producing conscious effects. In disease the stimulus carried from the particular organ is exaggerated, thus irritating the centres with which the afferent nerve is connected, communicating the irritation to the peripheral nerves, and giving rise to



pain in the region of the body supplied by them. If the stimulus is of sufficient severity, neighboring cells in the cord may also react, the radiation of pain involving larger and more remote areas. Pain, of course, is not the only result produced by stimulation of a nerve fibre, as the cells in the cord react according to their functions. While stimulation of a sensory cell will produce pain, a motor cell will respond by contraction of certain muscles, and a secretory cell by increased flow of its peculiar secretion. It is evident from the foregoing that to trace pain in any part of the body to its original source is a complicated matter, and it would be impossible to do so were it not for the concomitant symptoms of the underlying pathological lesions.

Myalgia of the lumbar muscles, known as lumbago, is of quite frequent occurrence. Its etiology is obscure, although some ascribe it to a rheumatic predisposition. We know, however, that it frequently follows a severe muscular effort involving bending or lifting. The pathological changes are largely confined to the fibrous tissue involving the tendons, the various fasciae, muscle and nerve sheaths, etc. Its onset is sudden and it usually disappears in a few days. The chronic form is of long duration. There is a constant soreness and varying disability, consisting chiefly of stiffness and inability to perform certain movements. Exacerbations frequently occur.

The interpretation of backache as regards lumbago is evidently a simple matter, but its very simplicity is apt to mislead. Under its innocent exterior this very backache is apt to parade a tabes, which will easily be detected on careful examination. Osteomalacia, particularly in the early stage, is extremely difficult to differentiate from lumbago. Its long duration, the constancy of the pain, the periods of exacerbation, and the accompanying disability are misleading. If the probability of an osteomalacia is borne in mind, the more important diagnostic features, such as pain in other parts of the body, contracture or spasm of some muscles, the waddling and uncertain gait, and shortening of the patient's stature, will set us right. The rhachialgia of neurasthenia simulates lumbago, but the etiological features of the latter disease are absent, and there is no aggravation of pain on straining, while there is usually exacerbation under emotion. Myositis, with gradual onset, presents stiffness or rigidity in the extremities and back. The pains are vague for a while, when they take on a more definite character and become localized in various muscle groups. As the muscular involvement rapidly becomes general, skin lesions and edema develop, the true character of the condition is soon appreciated. Malignant tumors of the cord, such as carcinoma, sarcoma, and myeloma, give rise to pressure symptoms, the significance of which cannot long be doubted. As carcinoma in this region is always metastatic, the primary lesion will give a clue to the process in the cord. A few of the more common causes of backache which should be borne in mind and which are outside the range of my paper, are tuberculous disease of the spine, arthritis, sacroiliac joint disease, and neuritis.

In 1889, Gibney called attention to an affection of the spine following or developing at the end of an attack of typhoid fever. The pain in this affection

is usually confined to the lower dorsal or lumbar region and radiates around the body or down both extremities. There may be rigidity and fixation of the spine, difficulty in walking, and inability to bend. The condition sometimes lasts for months. There are various degrees of severity of typhoid spine, the mildest forms presenting backache as the only symptom. In the severer varieties bony changes were proved with the aid of the x ray. For the sake of completeness I will remind the reader of the constant presence of pain at the sacroiliac articulation in Malta fever, and also of the acute sacral pain radiating into the leg, with fever, and increase of pain on pressure, as a premonitory sign of smallpox. Among the many causes of backache, carcinoma of the rectum occupies an important place. I have not observed it in early cases, but when more advanced it is almost always present. Even in benign constriction of the sigmoid, pain in the back is more or less constant, depending upon the presence or absence of stool retention. The pronounced intestinal symptoms are too evident for an equivocal construction. I cannot refrain from citing a case, although not within my province, of backache from an unusual cause.

**CASE.** An elderly gentleman consulted me for a pain in the back of eight months' standing. He gave a history of prostatic disease of twelve years' duration, although he experienced no difficulty in micturition nor, for that matter, did he suffer from any other symptoms beyond backache. Previous to the examination he passed about eight ounces of perfectly clear urine in my office. Nevertheless, his bladder reached to the umbilicus, and withdrawal of an immense quantity of residual urine relieved his backache.

The nerve supply of the bladder is from the upper lumbar region and from the sacral autonomic. An overdistended urinary bladder usually causes pain over the pubis, and in the presence of a stone, also in the perineum and along the penis. The cause of the backache in this case is hard to explain. Whatever the explanation, it demonstrates the importance of a thorough examination, as this patient was treated for lumbago for eight months by a number of physicians.

It is a well established clinical fact that nephritis pursues a painless course, as disease of the kidney structure proper does not evoke any sensory symptoms. In neoplasm and calculus of the kidney, on the contrary, pain is a very prominent symptom. The efferent nerve supply of the pelvis and ureter comes from the inferior mesenteric, spermatic, and hypogastric plexuses. The spinal cord connection is at the level of the lower thoracic and upper lumbar nerves. A calculus in the pelvis or ureter gives rise to pain in the back over the site of the affected kidney. The important feature in these cases is the occasional presence of constant pain with upward or downward radiation long before the occurrence of a typical attack of renal colic.

Splanchnoptosis always gives rise to backache. The patient's habitus and the manifold dyspeptic and nervous complaints will at once attract attention to the abdominal viscera as the cause of the pain in the back. Examination of the abdomen will reveal several well defined conditions. There may be flabbiness of the abdominal walls, deformed appearance of the abdomen, and the hypochondrium will readily yield to compression. This is due to lack of tone of the abdominal walls. In another

group of cases epigastric pulsation, splashing sounds in the stomach, and ptosis of the transverse colon are revealed. With kinking of the large intestine we find a palpable contracted cecum, transverse colon, and sigmoid flexure. Floating kidney occasionally gives rise to vague pains in the flank, but never to distinct backache. It is well to bear in mind that more often it causes no symptoms whatever.

The stomach plays a subsidiary role in the causation of backache. In gastric ulcer pain is frequently radiated to the back. This should not be confounded with the posterior tender spot located two to three cm. to the left of the spine between the tenth and twelfth dorsal vertebrae. In carcinoma of the cardia or esophagus it is localized and constant. A stenosed pylorus often causes pain in the back several hours after a meal.

A gallstone attack with pain radiation to the right scapular region is too well known to require comment. Not infrequently a constant pain in the right shoulder blade is complained of without there ever having been a typical attack of colic. A history of chronic or recurring indigestion which is invariably present in gallstone disease will explain the true character of the pain. If no such history can be elicited, the occurrence of attacks of epigastric pressure with difficulty in catching the breath clinches the diagnosis. An engorged liver due to circulatory failure is also often accompanied by pain in the back.

Mischief in the heart or aorta may manifest itself by pain in the back, shoulder, or scapula, on one or both sides. In aneurysm of the lower thoracic and abdominal aorta the pain is deep seated, boring, and most agonizing. It is increased on exertion, which is not the case in rachialgia of neurasthenia. Tumors of the posterior mediastinum are liable to induce intrascapular pain, as well as neoplasms of neighboring organs which have invaded the posterior space. Finally, backache may occur in diabetes as an expression of peripheral nerve irritation so often present in this disease. Evidently the glycosuria is the cause of this pain, as it is easily relieved on clearing out the sugar.

825 LEXINGTON AVENUE.

## THE ADVANTAGES OF QUININE AND UREA HYDROCHLORIDE AS A LOCAL ANESTHETIC.\*

By J. LEWIS AMSTER, M.D.,

New York,

Associate Professor of Anatomy, P. S. University School of Medicine; Associate Surgeon, Lincoln Hospital; Consulting Surgeon, Home for the Aged.

Local anesthesia has been in vogue since the latter part of the sixteenth century, when Severino, an Italian surgeon, first demonstrated the application of cold locally as a means of relieving pain. The introduction of the hypodermic syringe by Alexander Wood, in 1853, soon awakened the profession to use various solutions hypodermically for the alleviation of pain, but not until cocaine was intro-

duced by Koller, in 1884, was modern local anesthesia carried out successfully.

Every now and then some new local anesthetic crops up, only to be replaced by a dangerous substitute possessing toxic properties. Some men assert wonderful results with Schleich's infiltration of saline, while others would not forsake the use of cocaine. Schleich's infiltration anesthesia consists of flooding the tissues with a 0.2 per cent. solution of saline, and the analgesia thus produced is purely a mechanical one. Cocaine one to 1,000 is sometimes added to lessen the pain of this infiltration process. This method is rarely used now, on account of the extensive edema that is produced, resulting in the impairment of tissue vitality and delayed union. I have recently heard an eminent surgeon remark that he was getting excellent results with a certain proprietary containing cocaine, eucaïne, etc. The only difference that I can find between cocaine and these proprietary combinations, is the difference in the toxic action of straight whiskey and of the various cocktails. We are well aware of the severe toxic symptoms that cocaine sometimes produces; then why tamper with this local anesthetic or a mixture containing cocaine and other dangerous ingredients?

I have had an opportunity, for obvious reasons, of using quinine and urea hydrochloride locally, in a series of 200 selected cases and have had most satisfactory results in both major and minor operations.

The advantages of this method over ether and chloroform narcosis are manifold, and the unpleasant postoperative symptoms that usually follow a celiotomy under general anesthesia are mostly overcome. To obtain the best results, the following requirements are necessary:

The operator should have some experience with other local anesthetics; he should have a practical knowledge of anatomy, especially visceral anatomy, and he must exercise perfect technic in the administration of this solution.

An organ supplied with sensory nerves may possess all the following sensations: 1. Pain; 2, pressure; 3, heat; 4, cold.

In performing a laparotomy under local or conduction anesthesia, the surgeon should know that the abdominal viscera receiving their innervation only from the sympathetic and vagi below the branching of the recurrent nerve, are not sensitive to pressure, heat, or cold, and are insensitive to pain when they are cut, but pain is readily elicited when these organs or their attachments are put on a stretch. The pain produced in this manner is no doubt secondary to the stretching of the sensory nerves contained in the connective tissue of their peritoneal attachments, or in the surrounding connective tissue. This also applies to the heart, lung, brain, arteries, veins, thyroid, bladder, and bone devoid of periosteum. The parietal pleura, parietal pericardium, and the urethra are very sensitive to pain.

The parietal peritoneum, lining the anterior and posterior abdominal parietes and the under surface of the diaphragm, receives its sensory supply from the lower seven intercostal, the lumbar, sacral, and phrenic nerves.

These nerve tracings were first demonstrated by

\*Read before the Bronx County Medical Society, New York, February 17, 1915.

M. Ramström, of Upsala, Sweden, who has proved that the anterior parietal peritoneum is not supplied with end organs for the perception of touch, heat, or cold, and that this serous lining, on the contrary, is very sensitive to pain.

Quinine and urea hydrochloride is a nontoxic double salt of quinine and urea. In other words, it is a carbinated quinine dihydrochloride, containing seventy per cent. of quinine and eleven per cent. of urea. It is readily soluble in water and does not decompose on boiling. It is put up in ampoule form ready for use, but I prefer a freshly prepared solution, 0.125 to 0.25 per cent. strength, which is made as follows: One tablet containing one and one eighth grain of quinine and urea hydrochloride is dissolved in one to two fluid ounces of sterile water, to which is added five to ten drops of adrenaline solution one to 1,000. The operator is at liberty to use as much of this solution as the case may require without causing the untoward physiological or toxic symptoms that are sometimes met with after the local administration of cocaine and other dangerous drugs.

**Technic.** The field of operation is prepared in the ordinary way with iodine. The skin is slowly injected with the solution along the entire course of the desired incision, and the same process is carried out in treating the underlying structures, special care being taken against injuring or cutting nerves. In order to produce conduction anesthesia, the nerves should be carefully isolated, and then thoroughly infiltrated with the quinine solution. This procedure is indicated in operations for inguinal hernia, especially the strangulated type. Ordinarily, complete anesthesia is produced in fifteen to thirty minutes, and may last for an indefinite period. The prolonged anesthesia is explained by the infiltration of the nerves and the tissues with a granular fibrin, and the period of anesthesia depends entirely on how soon this fibrin is absorbed.

Gentle handling of the tissues and perfect technic help to prevent shock. Shock no doubt is the result of tugging and tearing of tissues, which in turn cause a certain amount of unnecessary bleeding. Many patients object to the pain produced by the initial puncture of the hypodermic needle, but this is usually overcome by spraying the skin with ethyl chloride before the anesthetic is introduced. A preliminary injection of morphine and atropine may be given, an hour before the operation, in nervous cases. An assistant or a nurse should always be at the patient's head to distract attention during the entire course of operation, and the patient's eyes should be covered and all unnecessary noises avoided.

Some operators use specially constructed syringes, but an ordinary glass syringe of ten c. c. capacity will answer the purpose. Many men have had excellent results with quinine and urea hydrochloride, while others have apparently been unsuccessful with this method, their objections being sloughing of the tissues, incomplete anesthesia, or healing by second intention.

These poor results may be due to various causes:

1. *Sloughing of the tissues.* Many men have unfortunately encountered this complication, and, after inquiring into their cases very carefully, I was in-

formed by some of them that they had used solutions ranging from 0.5 to three per cent. and they had invariably administered stock solutions instead of using freshly prepared ones.

2. *Incomplete anesthesia.* I personally witnessed the technic of several men who now condemn local anesthesia, and discovered that their unsuccessful results appeared to be secondary to faulty technic, and not to quinine and urea. Instead of first anesthetizing the skin, they promptly injected the underlying tissues without treating the skin, and after a lapse of one or two minutes operation was begun. As a result of this technic, their patients would squirm all over the table and would cry out with pain, so that general anesthesia would have to be resorted to in the end.

3. *Healing by second intention.* In performing operations under local anesthesia, especially minor operations, I have noticed that some men seem to forget the first principles of asepsis, and the care that is ordinarily taken in general narcosis is not followed out in the same degree with this mode of anesthesia. Other men, instead of taking pains slowly to inject the skin and underlying structures, hurriedly infiltrate the tissues, thus forcibly distending them with the solution, and they consequently get an analgesia that is produced by physical means, instead of depending on the action of the fibrin that is slowly deposited by the quinine and urea. A necrosis of tissue often results after such technic and delayed union follows. This series embraces the type of cases where general anesthesia was contraindicated, such as cardiac and vascular diseases, pulmonary diseases, nephritis, profound anemias, senility, minor operations, and patients refusing general anesthesia.

My experience with this mode of anesthesia covers a period of six years, and the results obtained thus far have been most gratifying. Postoperative pneumonia, a dreaded complication of general narcosis, is absolutely unheard of with the use of quinine and urea anesthesia. My group of cases covers a large field of surgery, including inguinal herniotomy, femoral herniotomy, appendicectomy, colostomy, cholecystostomy, salpingo-oophorectomy, suprapubic cystotomy, tenorrhaphy, amputation of fingers and toes, rib resection for empyema, operations for pedunculated submucous uterine fibroid and polypus (vaginal route), laceration of cervix and perineum, urethral caruncle, inguinal and cervical adenitis, thrombosis of the internal saphenous vein, varicocele, hydrocele, enlarged prepuce, gangrene of testicle and epididymis, periprostic abscess, ischio-rectal abscess, hemorrhoids, carbuncle, epithelioma of face and scalp, alveolar abscess, sebaceous cyst of scalp, lipomata, foreign bodies of hand and foot, ingrown toenails, exostosis of tibia and fibula, bursitis, abscess and benign tumor of breast, abscesses in other parts of body, lacerated wounds, etc.

In this series, quinine and urea hydrochloride had been used exclusively, with the exception of an operation for a large ovarian cyst. Here an unusual amount of traction had been used in delivering the cyst, and it became necessary to administer a few whiffs of nitrous oxide. In another case, general anesthesia had to be resorted to for a few minutes in freeing an imbedded retrocecal appendix.



Comparing the unpleasant postoperative symptoms that follow ether and chloroform narcosis with quinine anesthesia, I have observed that the patients operated on with the latter method complained of little or no afterpain, and shock was greatly diminished. This is explained by the blocking of the nerves with fibrin, which prevents the transmission of impulses to the brain centres.

## SUMMARY.

1. Quinine and urea hydrochloride is a safe local anesthetic when general narcosis is contraindicated.
2. The unpleasant postoperative symptoms that usually follow general anesthesia are greatly overcome.
3. There is an absence of afterpain and a lessening of shock due to the blocking of the nerves with a granular fibrin.
4. A prolonged period of anesthesia is produced, varying between a few hours and several days.
5. The absence of toxic symptoms, irrespective of the amount of solution consumed.
6. It does not decompose on boiling and is readily soluble in water.

## REFERENCES.

1. W. CRILE, *Proc. Association*. 2. JOHN A. RODNEY, *Annals Surg.*, 1907. 3. KEENE, *Surgery*, 5. 4. ARTHUR E. HERTZLER, *Journal A. M. A.*, December 5, 1914. 5. A. B. COOKE, *Proc. A. M. A.* 6. P. SAILLER, *American Medicine*, February, 1915. 7. I. G. GUTHRIE, *ibid.*

2055 BATHGATE AVENUE.

## THE MANAGEMENT OF AN OBSTETRIC CASE.\*

### *Some Points To Be Observed.*

BY SAMUEL J. DRUSKIN, M.D.,  
New York.

Professor of Gynecology, Cornell University Medical School;  
Assistant Gynecologist, Cornell University Clinic, Attending  
Obstetrician, Sydenham Hospital, Etc.

I might best discuss this subject by calling attention to what I consider some errors in the management of obstetric cases. These errors are attributable in great measure to erroneous teachings in our medical schools, or simply to lack of sufficient emphasis on the part of teachers of obstetrics on certain details of management.

For simplicity, I shall divide the management of an obstetric case into three periods: 1. Period preceding active labor; 2, period of active labor; 3, lying-in period.

1. *The period preceding active labor* is the time when the physician should acquaint himself, not only with the local pelvic conditions, but also with the general condition of the patient, as evidenced by heart, lungs, kidneys, etc.

To cite one error in connection with the patient's general condition; lesions of the lungs are usually overlooked, and too much stress is laid on the gravity of the heart lesions. With proper care, most of those suffering from valvular lesions of the heart can be carried through pregnancy and confinement uneventfully, whereas in cases of tuberculosis of the lungs unless pregnancy is terminated early, the disease develops rapidly and ends fatally. Lesions of the lungs often originate, and when latent flare up during pregnancy, occasionally first manifesting themselves during the lying-in period.

The importance of urine analysis for the determination of albumin and casts is universally recognized. A common error, however, is that their absence misleads the physician into a false feeling of security. The presence of albumin and casts is only one of the signs of toxemia. Signs and symptoms of equal importance are high blood pressure, edema, hydramnion in a primipara, and in the last months of pregnancy, headache, vomiting, epigastric pain, and eye symptoms. What might be considered another error is that the presence of sugar, which is not at all rare in the pregnant state, is mistaken for diabetes. Sugar without symptoms only indicates a predisposition to diabetes in the more or less remote future, and requires only the mildest precautionary measures.

As to the local conditions, though external pelvimetry determines only one factor in the relations of the fetus to the birth canal, it yet furnishes us with valuable information and should not be neglected. Its value consists, not so much in informing us as to the size of the true pelvis, as is erroneously assumed, but rather in giving us an idea as to its *shape*. That is, the error consists in laying too much stress on the actual reduction in size of the diameters from the normal, whereas the distorted relation of these diameters is the important thing, e. g., a generally contracted pelvis with measurements such as these: Interspinoous, 23; intercristal, 26; intertrochanteric, 30; which bear similar relation to each other as the normal diameters is not likely to cause as much obstetric difficulty as a flatly contracted rachitic pelvis with measurements: Interspinoous, 27; intercristal, 26; intertrochanteric, 33, having a distorted relation compared with the normal. It is needless to add that the shape and size of the pelvis should also be determined as far as possible by internal examination.

2. *Period of active labor.* Having established the two essential preliminaries, namely the general condition of the patient and the character of the birth canal, no further vaginal examination need be made to determine the onset or progress of labor. Frequent vaginal examinations are a mistake, first, because of danger of infection; second, because the progress of labor can be satisfactorily followed from external abdominal and perineal examinations; and, third, because it is needlessly disagreeable to the patient. The abdominal examination shows the relation of the presenting part to the inlet, and the perineal examination shows the relation of the part to the outlet. Further information as to the amount of dilatation, as to whether the membranes have ruptured or are intact, as to the relation of the sutures and fontanelles, can be gained by rectal examination after some practice, with almost equal facility.

Another common error is too hasty interference. Just as in the stage preceding active labor, one would not interfere with the course of Nature unless distinct indications arose, so in the active stages one must avoid interference unless clear indications, either on the part of the mother or fetus, demand it. To set a time limit for labor, beyond which interference is called for, is one of the worst fallacies. Rather should one be guided by the pulse and temperature of the mother and the fetal heart sounds, especially after the membranes have ruptured. These are rational bases for action. A policy of

watchful waiting appears to be a wise alternative to interference.

Another mistake is to attempt to preserve an inelastic perineum by means of perineal support, when a simple episiotomy would facilitate delivery and save the situation. This simple procedure will avert an extensive and ragged tear of the pelvic floor and give a clean cut and limited wound.

The practice of holding the fundus for an hour after birth is another superstition. Normal physiological action of the uterus consists of alternate contraction and relaxation. This action occurs, not only in the preplacental, but also during the placental stage. Massage of the uterus to overcome relaxation is not only unnecessary but unphysiological. It interferes with normal action. During the placental period interference is bad, unless it is made necessary by some distinct indication, such as hemorrhage or shock. The rule as to time limit which is taught and practised is also mischievous. Expulsion of the placenta should not be attempted before its complete separation. The placenta separates from the uterus by the formation of a retroplacental clot. Before separation, any effort to expel the placenta tends to atony and increased bleeding and prevents formation of the retroplacental clot, thus defeating its own purpose.

3. *Lying-in period.* Keeping the patient in bed too long is another fallacy that needs to be exploded. One would expect inasmuch as childbirth is a natural process, that its interference with the bodily functions and natural inclinations of the mother would be a minimum. The practice therefore, to say the least, is unreasonable to require the mother to lie motionless and flat on her back for hours after childbirth and confine her to bed for days until her muscles tend to atrophy and she becomes debilitated. Our practice has been to permit the mother to move about freely in bed soon after confinement, to allow her to sit up within twenty-four hours, to leave her bed at the end of the third day for fifteen minutes, and gradually increase the time at intervals of twenty-four hours until the patient is discharged.

A few words as to the child. The practice of producing artificial respiration or causing the child to cry immediately after its birth is a mistake. It is better first to remove the mucus from the mouth, throat, and nose of the child by means of an aspirator. Not only is this the simplest and mildest method, but also the most effective in dealing with asphyxia. It also tends to prevent bronchitis and aspiration pneumonia in the newborn.

I think it a mistake to feed the newborn during the first twenty-four hours, first, because it appears to be unnecessary, and, second, experiments have shown it to be injurious. It takes twenty-four hours for the normal intestinal flora to develop, upon which perfect digestion depends. Experiments on newly born calves fed with sterilized milk, have demonstrated that gastrointestinal hemorrhages result from too early feeding. Likewise, I think, too frequent feeding is bad. Our babies are fed no oftener than every three or four hours, instead of the usual two hour period, and we find the results beneficial to mother and child.

## RADIUM IN RHINOSCLEROMA.\*

By JOHN GUTTMAN, M. D.,

New York.

Since the increase of immigration from certain European countries, rhinoscleroma is not as rare in this country as it was. Its occurrence, however, is not frequent enough not to warrant the reporting of this case.

CASE. J. M., aged twenty-six years, the mother of two healthy children; family history negative. She knew of no one suffering from a similar affection. Native of Hungary and came to this country eight years ago. Her present illness dated back sixteen years. She had been operated upon by different physicians in different dispensaries without the slightest improvement. She came under my care about six weeks ago, and then showed almost complete occlusion of both nostrils by a mass of hard fibrous connective tissue. The nasal apertures were replaced by openings barely the size of a pin. The alae nasi were considerably harder than normal. In the pharynx in the region of the posterior pillar there was a hard white patch. Postnasoscopic examination showed considerable purulent secretion, probably due to impeded drainage, anteriorly. The laryngeal surface of the epiglottis was covered with a small white patch. The superficial cervical glands were indurated on both sides. Wassermann negative. A section removed from the introitus naris showed Mikulicz cells containing a few diplobacilli of Frisch.

For four weeks Mrs. J. M. has been treated by Dr. J. Levin with radium, with a marked improvement. Rhinoscleroma is a disease of endemic nature and is confined to localized regions, mainly to southern Russia and northern Austro-Hungary. A few cases have also been reported from Central and South America. Up to 1908, Dr. E. Mayer (1) was able to collect sixteen cases reported in North America. From 1908 up to the present, seven more cases have been reported.

Although rhinoscleroma in its developed state shows a well defined clinical picture which cannot be mistaken for any other disease, still as far as its etiology, pathology, and therapy are concerned nothing definite is known. The characteristic Mikulicz cells are considered by some authors to be a product of degeneration. Some authors believe the diplobacilli of Frisch to be identical with Friedlaender's pneumobacilli and to be considered only an accidental finding. The infectiousness of the disease is also questionable, and whereas Gerber (2) and others demand quarantine for these cases, others, like Kaposi, do not believe the disease to be contagious. Our patient does not know of anyone in her family or among her acquaintances afflicted with a similar disease. There has lately been made some advance in the treatment of this malady. Fittig (3) was the first to advise x ray treatment. Later Kahler (4) reported cases treated successfully with radium. In our case the treatment with radium also proved to give some relief. It seems, however, that to obtain a complete cure, the treatment with radium will have to be continued for several months.

### REFERENCES:

1. *Ann. Otol. Rhinol. Laryng.*, 1908, 17, 1, 102.
2. *Verh. d. Patholog. Gesellsch. Wien*, 1908, 10, 1, 102.
3. *Arch. f. Klin. Chir.*, 1908, 10, 1, 102.
4. *Arch. f. Klin. Chir.*, 1908, 10, 1, 102.

60 ST. MARK'S PLACE.

\*Presented at the Academy of Medicine, Section of Laryngology and Rhinology, February 28, 1901.

## PITUITARY EXTRACT IN OBSTETRICS.

By L. J. FRIEDMAN, M.D.,  
New York.

THE EXTRACT OF THE HYPOPHYSIS CEREBRI was originally recommended more than a half a century ago, by Bell and Hick as a uterine stimulant, but it is only in the last few years that the profession became cognizant of the efficiency of this remedy. Withal, this preparation is quite strange to the minds of many physicians. It is not at all surprising to notice that in 1912 the knowledge of its precise action was very meagre. Parisot and Spire were using the extract of the whole gland in their experiments, and have remarked that they were then engaged in research with the extract of the posterior lobe of the hypophysis. As recently as September, 1914, J. O. Arnold wrote that he was answering a few hypothetical questions which are frequently asked by physicians. S. W. Bandler has recently written a very instructive article, in which he states that in pituitary extract we have the greatest aid introduced in the obstetrical field in twenty years.

In my practice of obstetrics I have had no need of forceps in the past two years, and I am sure that I should have had to resort to them a number of times were it not for this drug. Needless to say, that forceps have occasional indications, but these should fall to a minimum with so wonderful a remedy at our command.

Madill and Allen have reported 147 cases, and J. K. Quigley fifty in which no untoward results, such as hemorrhage and asphyxia, were noted. E. A. Officer states that he has never had a case of retention of urine after using pituitrin. On account of its action on the unstriated muscle fibres it diminishes the necessity of post partum catheterization.

According to most writers the ideal time to inject the extract is in the second stage. I have used it, methodically, in the first as well as the second, and have not seen any ill effects. P. A. Hendley emphasizes the fact that it is a valuable aid in shortening the long and often exhausting first stage of labor. It is also true that the third stage of labor is considerably shortened.

Pituitrin should, of course, not be used in typically normal cases, nor when such contraindications exist as obstruction, nephritis, or high blood pressure suggesting an impending eclampsia.

Another good use of pituitrin is in the differentiation of pregnancy and labor as pointed out by Huthin and Bandler; "injection of hypophysis extract will start uterine contractions if pregnancy has reached term, but if not the effect is transient, and additional doses will have no effect." Since the drug can be used only to sensitize the uterus and not to stimulate contractions, it is quite easy to understand its action in such a procedure. In using this method as a test, it would not be wise to inject a full dose, since 0.33 c. c. will serve the purpose.

The addition of pituitrin to the obstetrical armamentarium has robbed the complication of placenta prævia of its horrors and diminished its risk as a bad omen in the third stage of labor. Hanah and Meyer, Madill and Allen reported good results in a number of cases of placenta prævia. In my case

of placenta prævia lateralis, the events of all the stages of labor simulated those of a normal one.

I report three cases which are of particular interest from a few viewpoints, namely, in the second stage of labor to increase irritability; in the first stage as a diagnostic test; and in a case of placenta prævia.

CASE I. D. B., aged twenty-four years, primipara. When I arrived she had been in labor about six hours, having only occasional weak pains. Physical examination revealed a resistant vulvar ring, a narrow pubic arch, head engaged in left occipital anterior position, and a pseudodry labor; the little amniotic fluid which would find its way in front of (or below) the head, would be instantly sucked back with each pain. The cervix presented two fingers' dilatation.

After labor had lasted for nine more hours, I found the head in the middle strait, moulding quite marked, but the distance to the vulvar outlet was considerably longer than normal, on account of the additional excursion necessary for the head to make downward, due to the narrow pubic arch. The pains at this time appeared very strong, about every three to five minutes, but were beginning to decrease in strength and appear at longer intervals. The cervix was fully dilated. I began injections of pituitrin at this time with an initial dose of 0.5 c. c. and repeated the same dose within a half hour. I noted an increase in the quality and quantity of pains within six and eight minutes respectively. One hour after the last injection I administered one c. c., and twenty minutes later the head was born.

The puerperium was uneventful, except for a retention of urine for ten hours, after which time the patient voided spontaneously. According to the action of the pituitary extract in this case, we may rightfully name this drug the "medicinal forceps."

CASE II. S. R., aged twenty-three years, tertipara. This patient was 265 days in pregnancy according to the most conservative figures. After a strenuous day of housework she began to "stain" at about 10 p. m. and complain of pain in the lumbar region. I saw her that night at about 12 p. m. and found on external examination a large and tense uterus in which the fetal head formed the lower pole. Careful auscultation for the fetal heart sound proved negative. On questioning the patient, she told me that at 9 p. m. she felt some unusually vigorous fetal movements, which ceased very soon.

Vaginal examination revealed a large fetal head presenting in the left occipital anterior position, and fairly well engaged. Immediately above the internal os, on the right side, a boggy mass could be felt which proved to be the placenta. The cervix was dilated to the width of one finger.

Next day at 11 a. m., Dr. S. W. Bandler saw this case with me and naturally concluded that the baby was dead; he noted the presence of a placenta prævia lateralis. The pains at this time were very weak and occasional. I now began the subcutaneous injections of pituitrin 0.33 c. c. every twenty minutes, giving in all fourteen injections. A dead baby, weighing six and one half pounds, was born at 4 p. m., which appeared normal in every respect. A few large blood clots were expelled in the third stage of labor, and the puerperium was otherwise uneventful.

The two points of importance in this case were that the small doses of pituitrin just supplied the necessary amount of stimulus that the patient's own hypophysis cerebri apparently lacked; and, immediately after the third stage, the uterus became almost tetanically contracted, thereby preventing post partum hemorrhage.

CASE III. B. B., aged thirty years, tertipara. This patient was having occasional pains for twenty-four hours. Examination revealed a full term baby, presenting the vertex in the right occipital anterior position. The cervix was dilated to the width of one and a half finger.

After waiting an hour to notice the character and frequency of the pains, during which time she experienced only two insignificant ones, I started her on pituitrin 0.33 c. c. at 4 p. m., and thereafter after every twenty minutes until four doses were administered. At 4:05 p. m. she had the first real pain since the beginning of labor. Thereafter, the pains appeared every three to four minutes, and later more often. She was delivered at 6:50 p. m., just two hours and fifty minutes after the first injection of the



extract. In this case I tried Batum's test for the presence of actual or false labor.

The few points to be remembered are these:

1. Small doses of pituitary extract act better than large ones.
2. Large doses are harmful, producing supersensitization of the uterus, thereby causing the danger of extensive laceration of the perineum and rupture of the uterus.
3. It is an excellent oxytocic, especially in placenta prævia, and atony of the uterus.
4. Lastly and most important is that it is the "medicinal forceps," acting as a *vis a tergo* instead of a *vis a fronte*.

#### BIBLIOGRAPHY.

- Standardization of Pituitary Extracts, New York, Medical Journal, March 7, 1915. 2. PARISOT and SPRE: Hypophysin Extract in Obstetrics, *Revue*, Jan. 27, 1912. 3. J. O. ARNOLD: Pituitary Extract in Labor, *Penn. Med. Jour.*, Sept., 1914. 4. S. W. BANDLER: Pituitary Extract in Obstetric Practice, *Medical Record*, Jan. 9, 1915. 5. MADILL and ALLEN: Use of Pituitary Extract in Labor, *Surg., Gyn., and Obs.*, August, 1914. 6. J. K. QUIGLEY: Pituitary Extract in Obstetrics, *Journal A. M. A.*, April 10, 1915. 7. E. A. OFFICER: Practical Points on Pituitrin in Labor, *Australian Medical Gazette*, Sept. 13, 1913. 8. P. A. HENDLEY: Pituitrin in Labor, *British Med. Jour.*, April 25, 1914. 9. W. RUTHIN: Pituitary Extract in Differentiation of Pregnancy and Labor, *Am. New York Medical Journal*, May 18, 1915. 10. E. HANAH and L. MAYER: Pituitary Extract in Obstetric Practice, *Am. New York Medical Journal*, May 8, 1914.

232 FIFTH STREET.

## GENERAL MILIARY TUBERCULOSIS WITH UNUSUAL SPINAL FLUID FINDINGS.

By JOSEPH ROBY, M. D.,  
Rochester, N. Y.

AND ALBERT KAISER, M. D.,  
Rochester, N. Y.

This case is reported on account of the unusual cytology of the spinal fluid, which was so misleading as to cause a mistaken diagnosis.

CASE. A colored woman, aged twenty-six years, was admitted to the hospital, March 6, 1915, with meningitis probably tuberculous. The family history was negative except for a luetic infection in one of her sisters. There was no history of tuberculosis in the family. Patient had always been well until the present trouble.

Patient had been in bed at home for one week before entrance. For three or four weeks previously, she had complained of frequent headaches and general malaise. During the week in bed her chief complaint was headache and tired feeling. Her appetite was poor and she was said to have had a slight fever. Not until the day of her admission to the hospital did she show any typical meningeal symptoms. On that day there was marked rigidity of the muscles of the neck and slight retraction of the head. The pupils were equal, but reacted sluggishly to light. Kernig's and Brudzinski's signs were present. Knee jerks were absent. Patient was semistuporous and apparently in great pain. Pulse was 100 and temperature 102° F. on entrance. A tentative diagnosis of tuberculous meningitis was made. These symptoms remained the same during the first day of stay in the hospital. Except for a few scattered rales, the chest appeared normal, the heart sounds were fair, ears negative, and the abdomen showed slight tenderness on pressure.

March 6th, lumbar puncture, 40 c. c. clear fluid under greatly increased pressure, 165 cells to the c. mm. Albumin and globulin positive. Polynuclear leucocytes 90 per cent., lymphocytes 10 per cent. in 550 cells. No pus organisms nor tubercle bacilli found; no growth. White cells 12,300. Polynuclear leucocytes 79 per cent.; lymphocytes 21 per cent. Red cells 3,840,000. Smear normal. In urine a trace of albumin, no casts, but numerous pus cells. Blood pressure 120, diastolic 80.

March 7th, headache less severe; less rational than previous day. Temperature and pulse the same. Lumbar puncture, 30 c. c.; clear fluid under normal pressure; 160

cells to the c. mm. Albumin and globulin positive. Polynuclear leucocytes 78 per cent., lymphocytes 22 per cent. in 665 cells; no pus organisms nor tubercle bacilli.

March 8th, predominance of polymorphonuclear leucocytes and the absence of organisms in the spinal fluid made the diagnosis of tuberculous meningitis seem improbable. Patient more irrational and tried to get out of bed. A slight asymmetry of the face was noticed. Lumbar puncture findings similar to those of preceding examinations.

March 9th, definite right facial paralysis, involving all branches. A weakening of the muscles of the right arm was noticed. No change in the reflexes. Patient weaker. No lumbar puncture.

March 10th, more marked facial paralysis. Unable to grip with right hand. Temperature 103.5° F., pulse 140 to 160. Apparently growing weaker. Eye grounds negative. Wassermann on blood negative. Wassermann on spinal fluid double positive. Colloid gold chloride test on spinal fluid reported as nonleucitic meningitis.

March 11th, pupils unequal. Pulse 140 to 160. Blood pressure 140. No change in the appearance of the spinal fluid. Blood count 14,900. Polynuclear leucocytosis 88 per cent. Owing to the paralysis of the face and arm and spinal fluid findings in the absence of other symptoms except scattered rales in the chest, a decompression was advised with the idea of exploring for a brain abscess to which the meningitis was thought to be a secondary infection.

March 13th, decompression operation over the left fissure of Rolando. There was apparently increased cerebral pressure, otherwise there was no evidence of a brain abscess or tumor. The condition rapidly grew worse and the patient died eighteen hours after operation.

At the autopsy, the brain was normal except for a few scattered tubercles. No tubercles could be found to account for the paralysis. The lungs showed a diffuse miliary tuberculosis. The heart was normal. The liver, spleen, and kidneys showed countless tubercles. The peritoneum was studded with tubercles. Our anatomical diagnosis was, acute general miliary tuberculosis.

#### CONCLUSIONS.

1. A high percentage of polynuclear leucocytes in a clear spinal fluid is possible in tuberculous meningitis. With the exception of Wood's, all the textbooks describe only the lymphocytosis which exists in most cases, but mention nothing of an increase in the polynuclear leucocytes in an early tuberculous meningitis.

2. The blood may show, not only an increased leucocyte count, but also a predominance of the polymorphonuclear cell in miliary tuberculosis.

3. Acute miliary tuberculosis may give symptoms simulating those of brain abscess.

234 CULVER ROAD.

301 ALEXANDER STREET.

Treatment of Hyperchlorhydria.—L. Pron, in *Revue de thérapeutique médico-chirurgicale* for July 15, 1914, states that to decongest the gastric mucous membrane, especially in cases with a rheumatic tendency, the following combination is ordered:

I.  
R Tincturæ iodi, ..... 5ss (15 grams);  
Mentholis, ..... gr. xv (1 gram).  
Solve.

II.  
R Chloroformi, ... 5ss  
Iodi, ..... gr. xv (1 gram).  
Solve.

Where paroxysms of pain between meals, with or without vomiting, are severe and do not yield to the antacid combination, recourse may be had to hot local applications and codeine.

## Our Prize Discussions.

Questions for discussion in this department are announced at frequent intervals. So far as they have been directed upon the following questions are as follows:

CLXV.—How do you treat the effects of excessive smoking? (Closed.)

CLXVI.—How do you treat pernicious anemia? (Answers due not later than October 15th.)

CLXVII.—How do you treat tetanus? (Answers due not later than November 15th.)

CLXVIII.—How do you treat ophthalmia neonatorum? (Answers due not later than December 15th.)

Whoever answers one of these questions in the manner most satisfactory to the editors will receive a prize of \$25. No importance whatever will be attached to literary style, but the award will be based solely on the value of the substance of the answer. It is requested (but not required) that the answers be short, if practicable no answer to contain more than six hundred words; and our friends are urged to write on one side of the paper only.

All persons will be entitled to compete for the prize whether subscribers or not. This prize will not be awarded to any one person more than once within one year. Every answer must be accompanied by the writer's full name and address, both of which we must be at liberty to publish. All papers contributed become the property of the Journal. Our readers are asked to suggest topics for discussion.

The Prize of \$25 for the best paper submitted in answer to Question CLXI has been awarded to Dr. Melville A. Hays, of New York, whose article appears below.

### PRIZE QUESTION CLXI.

#### THE TREATMENT OF SYNCOPE.

By MELVILLE A. HAYS, M.D.,  
New York.

Syncope is a fainting or loss of consciousness from fall of blood pressure, and consequent cerebral anemia. It may be due to cardiac weakness or cardiac disease, hemorrhage, shock from fright, as the result of some general disease, etc.

Regardless of the cause, the patient should be placed at rest in the recumbent position with the head lowered. When due to hemorrhage, the quantity of the blood must be restored by transfusion of normal salt solution, while direct heart stimulants must not be used until the source of the hemorrhage is ascertained and the bleeding checked.

General measures are cold affusions to the face and chest; inhalation of amyl nitrite or ammonia (the former being used very carefully); direct stimulation of the heart (except in hemorrhage) by the hypodermic use of atropine, strychnine, brandy, aromatic spirit of ammonia, etc.

Impending syncope may often be warded off by frequent small doses of tincture of nux vomica, or the administration of brandy or aromatic spirit of ammonia.

Cardiac affections and general diseases which are liable to be complicated by syncope, must receive the necessary treatment for the general condition.

It is an interesting fact that some of the older medical dictionaries make the statement that "syncope is a simple affection of little importance," while modern knowledge shows that it is usually an indication of serious trouble.

Dr. Arthur I. Blau, of New York, writes:

The therapeutics of this condition consists of the treatment of the attack and the subsequent care.

**Treatment of the attack.**—The patient should be reclining with the head low, the clothing loosened, and, if he is still unconscious, ammonia inhalations from smelling salts or aqua ammoniac should be administered. Ordinarily these procedures are sufficient to resuscitate the patient. Should the fainting spell still continue, however, and the heart become more irregular and feeble, a hypodermic injection of strychnine, grain one thirtieth, or atropine, grain 1/150, is to be given.

When the syncope is due to an existing cardiac lesion, myocarditis or dilatation, proper stimulation with digitalis, camphor, or strychnine, should be resorted to. Camphor is very valuable. It is preferably given by hypodermic injection, grain one half in fifteen drops of sterile olive oil.

The syncope from hemorrhage is often conservative, being nature's effort to control the bleeding. The weak heart action and the more or less atonic vessel wall facilitate thrombus formation, the only means of stopping the hemorrhage where the bleeding point cannot be reached. Hence when the syncope is due to internal hemorrhage, stimulation is contraindicated, except when life is immediately threatened.

**Subsequent care.**—This depends on the cause of the attack, with the idea in view of preventing its repetition and a possible serious or perhaps fatal culmination. In all cases the pathological condition responsible for its occurrence should be ascertained, and suitable treatment instituted.

Dr. McW. B. E. Sutton, of Brooklyn, N. Y., observes:

The treatment of syncope as a symptom, irrespective of the cause, consists in:

1. Laying patient flat on back, head lower than body.
2. Loosening all constrictions.
3. If possible, shading patient from light on recovery.
4. Keeping crowd away.
5. Sprinkling cold water on face and chest.
6. Rubbing extremities toward heart.
7. Stimulation: Causing inhalations of ammonia; if patient is conscious, give one dram in two ounces of water and repeat, as required.

If the attack is severe,

1. Rub spine with ice.
2. Mustard plaster over cardiac area.
3. Internally, hot black coffee, no sugar.

If much hemorrhage, bandage extremities.

If due to mental excitement, no cutaneous stimulation; give opiates. Chloral is not advisable.

Dr. H. Rabinowitsch, of New York, remarks:

**Treatment of accidental syncope; prophylaxis.**—In hemorrhages the physician should act as quickly as possible; in venesection the condition of the patient should be carefully watched not to let more blood than his condition allows. In the re-

removal of serous fluids from any cavity, great care should be taken not to remove too quickly or too much at one time; the patient should be watched and if syncope is threatening, energetic measures should be taken at once, such as lowering the patient's head, camphor hypodermically; as a rule, the patient recovers. Cardiac diseases, pericarditis, acute indigestion, diarrhea, etc., should be properly treated.

*The treatment of the attack.*—If, notwithstanding all these measures, an attack occurs, the patient's clothes must be loosened and the room ventilated; lower the patient's head to allow a larger blood supply to the brain. Try slight skin irritations as by sprinkling cold water on the face or rubbing the temples with aromatics, such as vinegar or eau de cologne; hot applications to the body and lower extremities may be necessary. A little wine or strong hot black coffee is often of good stimulating value; camphor, ether, or strychnine hypodermically, and in grave anemia an injection of a physiological salt solution may be required.

*The treatment of habitual syncope* may be divided into the treatment of the attack and the general treatment. Prophylactically the patient should avoid everything that is liable to cause a fainting spell, as indicated above. He should avoid psychic excitements of any kind, overheated places, overstraining, too long walks, etc. The ordinary attacks, as a rule, do not endanger the life of the patient; the loss of consciousness is usually transient and the recumbent posture alone may suffice to restore the patient to consciousness with or without the aid of slight superficial skin irritations as indicated above. His clothes should be loosened and a little wine or hot black coffee may be given.

The general treatment has to consider the predisposing cause and may be divided into hygienic, dietetic, and drug treatment. Plenty of fresh air is an important hygienic factor. In chronic indigestion the diet and medication should be according to the trouble, etc. In the overwhelming majority of cases general anemia is the predisposing cause. Milk, eggs, and meat (ham, sandwiches with scraped raw meat and salt and pepper to taste, etc.) should form the main part of the patient's diet.

The medical treatment consists mainly in the administration of tonics. Iron, quinine, arsenic, and strychnine are the drugs.

*Dr. Robert E. Coughlin, of Brooklyn, New York, writes:*

The treatment of syncope resolves itself into the treatment of the attack and a consideration of the conditions which occasion the attack.

During the attack the head must be lowered, even lower than the rest of the body if this is possible. Fumes of ammonia or smelling salts should be placed near the nostrils and allowed to be inhaled. A little brandy or whisky may be given to quicken the circulation as spirits are known to congest the brain. Champagne or any kind of wine acts in the same manner and if it is within reach, should be administered. About an ounce of the brandy or whisky would be the proper amount, while if the wine is given, a large wineglassful or two ounces will be sufficient. A drink of cold water and cold

water externally by sprinkling may be resorted to, to increase the respirations and stimulate the circulation. These means will probably suffice if the syncope is the result of a psychological condition, but if the fainting is caused by some constitutional disease, such as heart or kidney lesions, other remedies may have to be employed. Inquire if the person has ever been ill or has ever fainted before. If there has been no illness and the patient has fainted before, the chances are that we are dealing with a "fainter," as generally termed. "Fainters" as a rule are very sensitive and inclined to be emotional, and the condition of syncope under these circumstances is generally psychical. The prognosis in "fainters" is always good. That is, they will always recover from the attacks, but as regards recovering from the tendency to faint, this is uncertain. If our patient is afflicted with kidney disease, the pulse will be irregular and intermittent and the tension will be found high. The artery at the wrist and over the temporal bones, especially on the left side, will be easy to feel, rolling under the finger and not compressible. These patients will at times have attacks of syncope and no alcoholic drinks should be given because of the irritating action on the kidneys. Instead give aromatic spirits of ammonia in teaspoonful doses in cold water. The three tinctures of strophanthus, nux vomica, and digitalis, of each ten minims in one dose, may be administered. The strophanthus will act quickly, while there will be a slower but strong action from the digitalis and the nux vomica. Both the strophanthus and the digitalis are diuretic. If a fresh infusion of digitalis can be procured at once, give one half ounce at one dose.

If the syncope is due to heart disease preceded by symptoms of angina pectoris, amyl nitrite fumes may be brought into use. Hypodermic injections of strophanthin, digitalin, and caffeine are useful for prompt action. In many anemic cases syncope is produced by a fall in blood pressure while the patient is in the vertical position. A careful blood pressure reading will show that instead of a rise in the systolic and diastolic pressure readings when the patient assumes the vertical position, there is actually a fall, with a condition called vasomotor ptosis as the result. These patients should be kept in bed and fed on good nourishing food. Iron in some form should be exhibited. The head should be kept low, no pillow being allowed. When the hemoglobin has been increased, readings may be made in both the horizontal and vertical positions. When there is a rise in both the systolic and diastolic readings on assuming the vertical position, with no tendency to syncope, we know it is safe to allow the patient to sit up and later get out of bed.

The age of the patient we should keep in mind. Syncope in a young person with regular pulse and good heart action, without symptoms of diseased constitutional state, is quite different from syncope in middle age or later with soft heart sounds, irregular and intermittent pulse, accompanied by profound anemia, which may be the result of a serious constitutional condition after a prolonged period of illness. Indeed in these patients fatal syncope may be the result.



## Therapeutic Notes.

## Treatment of Grave Forms of Erysipelas.—

*Décèscent, in Bulletin et mémoires de la société centrale des hôpitaux de Paris*, May 6, 1915, reports results obtained in one hundred cases of grave facial erysipelas with intravenous injections of mercury cyanide. The treatment was based on the septicemic aspect of these cases and the favorable effects sometimes obtained with these injections in puerperal sepsis. A moderate dose of the drug was introduced intravenously each day whenever the temperature rose to a high level and the general symptoms became severe. In most instances the treatment exerted a distinct influence on the temperature, which rather rapidly descended to normal. The effect on the local disease process was not always the same. In some instances the erysipelatous patch grew pale and the phlyctenular lesions dried up; in others, on the contrary, the local process continued in spite of the drop in temperature and marked improvement in the general state. The number of injections given ranged usually from two to four. Injections of colloidal metals were given in some additional cases, but the results were not as good as from the mercurial injections. There were no deaths in the large series of cases treated. While the treatment is not regarded by the author as infallible in severe erysipelas, the results witnessed lead him to recommend it as a routine measure in such cases.

## Transplantation of Fascia lata in the Radical Treatment of Difficult Hernia Cases.—A. T.

Mann, in the *Annals of Surgery* for October, 1914, urges the use of transplanted fascia for the purpose of adding strength to the tissues, where necessary, and supplying defects in the radical treatment of ventral and inguinal hernias. Both experimentally and clinically, the author has assured himself that transplanted fascia, held taut, heals and preserves its strength in its new situation. Illustration of the value of the procedure was afforded in a case of extensive ventral hernia through the scar of an old abdominal incision. At operation the impossibility of closing the opening between the recti muscles by direct suture was readily seen, and a plastic operation in which the rectal sheaths were used was performed. After union had taken place, the hernial site still seemed thin and fascial transplantation was decided upon. An incision seven inches long was made in the outer aspect of the thigh and two strong strips of the iliotibial band taken, one below the other, three inches long, and a little over two inches wide, beginning just below the insertion of the tensor vaginæ femoris. These strips were sutured side by side transversely across the area of previous repair. The transplants healed firmly and an effectual closure of the abdominal wall was secured. The thigh wound quickly healed, and no loss of function in the leg or local bulging of the muscles followed.

In inguinal hernia fascial transplantation is deemed by the author of distinct profit in some of the most difficult cases. In adapting the procedure to the Bassini operation, the author modifies the technic; he sutures the internal oblique and transversalis and the conjoint tendon to the lower part

of the shelving portion of Poupart's ligament and passes the sutures so that the knots lie on the outer aspect of the ligament. A fascial transplant an inch and a quarter wide is now removed from the iliotibial band and sutured along its lower margin to the upper surface of the shelving portion of Poupart's ligament, with its outer end close up against the internal ring and its inner end reaching over the rectus sheath to near the midline of the body. The top border is sutured to the surface of the internal oblique and inward to the rectus sheath. The two points of chief recurrence—at the internal ring and opposite the external ring—as well as the entire suture line between, are thus greatly strengthened. Finally, the cord is lodged between two flaps made by splitting the fibres of the aponeurosis of the external oblique, the outer flap being sutured to Poupart's ligament. After this procedure, the tissues at the site of repair seem thicker and more resistant than after the usual Bassini operation. The fascial transplantation appears especially useful where the conjoint tendon and the muscles near it are unusually thin and weak.

Treatment of Scarlatina.—Chichkine, in *Gaceta*

*Méica Catalana* for January 15, 1915, it is stated, has obtained good results in scarlet fever by means of hypodermic injections of quinine bihydrochloride. A sterile solution of thirty per cent. strength was used, the dose being sixteen minims (one c. c.) in children one or two years of age, twice this amount in children of three to four years, etc., with an increase of sixteen minims (one c. c.) for each year of age. A single injection, administered under the skin of the arm, is frequently sufficient, according to Chichkine's experience, to bring about a rapid drop in the temperature and to render the entire subsequent course of the disease a milder one.

## Treatment of Tuberculous Osteoarthritis.—

Morestin, at a meeting of the Société de chirurgie, Paris (*Presse médicale*, February 11, 1915), presented two cases of severe white swelling of the wrist; recovery occurred in a few months after a series of injections of formaldehyde solution into the diseased tissues. In both cases, motor function at the wrist almost completely returned, although mechanical cleansing of the lesions had been performed before the injections, and may have contributed largely to the results. Morestin is convinced that, without the formaldehyde injections, no permanent benefit could have been procured. Formaldehyde not only destroyed fungous tissues but improved in a remarkable degree the condition of all the periarticular structures.

## Treatment of Infected Corneal Ulcer.—Eperon,

in *Revue médicale de la Suisse romande* for May, 1915, recommends cauterization of the ulcer with a twenty per cent. solution of zinc sulphate:

R. Zinc sulphatis, ..... 5i (4 c. c.);  
Aque sterilisate, ..... 3v (20 c. c.).  
Ft. solutio.

This procedure was carried out by him in about 150 cases, as well as by other observers in an additional number of patients, apparently always with better results than those obtained with other methods.

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CHARLES E. DE M. SAJOUS, M. D., LL. D., Sc. D.  
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## THE DECLINE OF CLINICAL TEACHING.

We fear that in the noise and press made by laboratory tests and novelties, an art of great importance to physicians is likely to be passed over entirely. We refer to the art of auscultation and percussion, and to the decline of teaching in this respect. Students, for example, of laboratory science, in four years become so saturated with specialism that they are practically incurable. They are crammed with tabloid doses of the various experiments and tests. From such teaching, in which auscultation and percussion are ignored for the vicious influence of fleeting experiment, there is apparently no escape. We think a student will never be able to put down skillfully the diagnosis of any disease unless he is fully acquainted with the art of interpreting the physical signs. At present students seem to hope that laboratory calculations are some wonderful exact science that they can suddenly acquire. They are highly conscious of the exactness of their blood counts and stomach analyses, and pathetically assured that this often unrelated possession renders the study of real clinical phenomena obsolete or needless.

The art of auscultation and percussion is only superficially studied; it will soon be lost, for there will be nobody to teach it. The fact is patent. Skill in this art is rare among physicians, perhaps only less rare than skill in action, which we attribute to

the finest surgeons. Auscultation and percussion which occupied the generation of Auenbrugger and Laennec so effectively, have been studied with small variation by later physicians. When applied by Stokes, Latham, Piorry, and Skoda these arts were used in their incorrupt and original form. Unfortunately they call up today ideas of slipshod improvising and arrangement such as Sahli's in his monstrous work, *Untersuchungsmethoden*. There is really no reason why this elaboration should be, for a modern writer, Gee, was able to write concisely and comprehensively on the same subject. The plethoric book of Sahli has been imitated by what are now called "internists." They have no qualms about space or time or the value of their opinions. The clearness, the almost classical precision of Latham do not appeal to them in the least. We may safely say that the following passage from his *Lectures on the Diseases of the Heart* is a test of knowledge both of phenomena and man. Of the sounds of bronchial breathing, he says: "The sounds can only be learnt by the practice of listening to them. It is useless to describe them. They are simple perceptions of sense, which no words can make plainer than they are, when the ear has once become familiar with them. I must leave you to be your own self-instructors, and recommend you to be constantly practising auscultation for the purpose." When practice fails, the teacher must be there to train the pupil's senses, for this skill depends upon the knowledge of the instructor; in our schools he is usually young, without much experience. This almost incredible neglect is productive of the worst mischief in medical education; the professors eschew the long laborious route of teaching, at the end of which lies knowledge of diagnosis, and troop out as inventors of new signs and tests. These dry bones they describe in books, in which they are all for the cloudy distinction, the prolix statement, trying to create equivalents for the terms of Laennec.

A MEDICAL RESERVE CORPS FOR THE  
NATIONAL GUARD.

The medical military officer must understand military evolutions thoroughly in order to carry out the orders given him and in turn give proper orders to those under him. It is therefore necessary that the State should train as many medical officers as possible so as to have a substantial medical reserve to fall back on should the guard be called into active duty. We therefore suggest that the State follow the United States in providing for a reserve medical corps and that arrangements be made for the instruction of members of such a proposed corps by the State in cooperation with the national Govern-

ment. It is true that members of the medical reserve corps of the United States army are now given an opportunity to attend a course of instruction in military medicine at the army military school in Washington, but such attendance requires an extended absence from daily duties which is not within the reach of many young men who would gladly devote several hours a week to the study of military medicine, but who cannot afford to take the time required at Washington.

As the question of military preparedness now occupies so large a place in the public mind, it seems advisable for the State to provide special instruction in military medicine as part of a postgraduate course at some one of the medical schools in the State, attendance on which will be open without charge to physicians who may apply for enrollment in the reserve medical corps of the National Guard and who can pass a satisfactory physical and professional examination. One fact which has been brought out by the European war is that trained officers are essential to military success. By establishing a medical reserve corps of the National Guard, and providing special instruction for the members, the State of New York would be taking a long step toward an invaluable provision for military preparedness.

### THE PHYSICAL NAPOLEON.

On the eighteenth of June, a hundred years ago, was fought the battle of Waterloo, and had the present European upheaval not proved distracting, this centenary would be marked by a flood of literature on the event which marked the downfall of Napoleon. It needs not, however, a centenary to arouse interest in this mighty man, for he is a perennial wonder. A being who was so remarkable in mental traits must have been remarkable physically, and the rise and fall of his star of destiny must have been influenced to a large extent by his bodily state. That such was the case is evident from a study of his physical biography.

Of many great men the father has been robust; the mother frail. Such was not the case with Napoleon; his father was not of heroic mould, and died at thirty-nine years of age of cancer of the stomach. The mother of Napoleon was wonderfully strong and of great beauty. Beside enjoying the best of maternal nutrition, the infant Napoleon had for a wet nurse a strong peasant woman. Like many other men of powerful physique, Napoleon was not the product of a school of muscular training; indeed he seems rather to have neglected systematic exercise, for at school he spent his leisure over books rather than over games, and he would have made a sorry candidate for an athletic team.

His lot fell in schools where the boys were housed with Spartan plainness, but where feeding was of first importance, with hard and long hours of study as body stimulus. With his artillery regiment at the age of sixteen years, he added to routine toil extra hours of study, doing twelve to fifteen hours of work a day. At eighteen years he acquired a fever, probably malarial, which impaired his health and which stuck to him, for, at twenty-five, he was "remarkable for his extreme thinness and the almost yellow tint of his visage." Nevertheless he was tireless in labor. As commander of the revolutionary forces he was still "of sickly hue," and on his return from Egypt he was described as "very meagre, and very yellow, his eyes sunken, his shape perfect, though rather slender . . . his teeth were very white and very good, and there was perfect regularity and beauty in all his features. He was five feet three inches in height . . . his neck was rather short and his chest large." At thirty-five years his figure had rounded into a fullness that indicated abounding health and vigor and his mental activities at the same time reached their acme. Such power for work has apparently never been possessed by any other man. He himself said that he was conscious of no limit to the work he could accomplish. Even his enemies declared that his capacity for work was equal at least to that of four men in one.

He slept from six to eight hours a day, but, when aroused, was at once in perfect possession of his mental powers, and could sleep again at will. When compelled to remain awake for long periods he always made up for the loss, sleeping on one occasion for thirty-six hours at a stretch. His digestive powers were perfect. He preferred plain dishes, his meats cooked brown, and rarely spent more than from seven to twelve minutes at the table. He drank very little wine, and but two cups of coffee a day. He was fond of ices and chocolate, and often had these served while at work. He used snuff only to trifle with, and declared that smoking was "good for nothing but to entertain idlers." He was very careful of his person and had himself vigorously massaged after his daily bath. His pulse was slow—between fifty and fifty-seven. He suffered without some outdoor exercise daily, though this was comparatively small in amount. He was extremely sensitive to cold and to bad odors and sickening sights, yet when with the army he could be callous to all manner of discomfort. Such was Napoleon as he climbed to the pinnacle of his fame.

As emperor, surrounded with every luxury, with leisure and with his ambitions largely fulfilled, Napoleon did as many another "successful" man—he paid too much attention to eating, to consideration



of bodily comfort, and too little to exercise. He was becoming obese with all that that may mean to internal decay. At forty he first mentions lapse from perfect health. The decline of his physical powers had begun and the decline of his grasp on the world was beginning. He was always temperate in the use of alcohol, but he was becoming in-temperate with meat. He had no serious ailments, but minor ones, hemorrhoids—not a new complaint—and possibly some bladder trouble became annoying, and for these he spent hours in steaming hot baths. He was becoming slow in his movements and had periods of great lassitude. His mental powers, when active, seemed to be as great as ever, but he postponed military operations on account of his health, and prostrating attacks of indigestion are said to have had much to do with his incomplete victory at Borodino, and with his defeat at Leipsic. From the secrecy with which these attacks were surrounded, arose the rumor that they were of an epileptic character. Waterloo was planned with consummate brilliance, but Napoleon was not at his best physically; he suffered greatly from fatigue, and the outcome of the battle can be largely attributed to his incapacity personally to attend to details.

At St. Helena he was still Napoleon in his capacity for mental labor, though for four years he refused to stir abroad and suffered severe digestive derangement from his sedentary existence. His health declined gradually, but he retained extraordinary vigor to the last. He suffered in his last months from symptoms of cancer of the stomach and died of that disease only a month after his condition was considered serious, at the age of fifty-two years. At autopsy the stomach alone showed trace of disease and the body, "far from being emaciated from prolonged inability to take food, was remarkably stout."

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#### THE ASSOCIATED CEREBRAL SYMPTOMS IN BILATERAL CORTICAL HEMIANOPSIA.

The lesions causing destruction of the internal aspect of the occipital lobe of the centre of vision, are generally extensive, so that it is only exceptionally that cortical blindness exists as a single symptom. Far more frequently it belongs to a group of more or less complex cerebral symptoms; the neighboring cerebral centres, either motor or sensitive, being usually involved as well.

As a rule, when only a unilateral homonymous hemianopsia from a lesion of the cortical centre exists, it is exceptional to find any concomitant cerebral disturbance, and out of a total of fifty-eight

cases of cortical hemianopsia collected by Rochon-Duvigneaud, forty-nine presented various associated cerebral symptoms, particularly a hemiplegia often combined with hemianesthesia and sometimes with aphasia. Consequently, cases are very uncommon in which there are two cortical hemianopsias combined, without simultaneous cerebral disturbances. For this reason there may be paralysis, usually of the monoplegic type, in patients with cortical blindness, or hemiplegia with or without hemianesthesia, or there may be disturbances of speech, word blindness, agraphia, or psychic blindness.

The intelligence is often weak, and occasionally cerebral disorders acquire such intensity that dementia supervenes. Other patients retain an almost perfect intelligence, there is no paralysis and apparently no mental disturbance, while the memory likewise is intact or nearly so, because it is uncommon not to discover some little lacunæ, often of topographical memory, which result in disturbances in orientation. The loss of this sense is a common phenomenon in bilateral cerebral hemianopsia. Thus, the patient of Magnus was unable to describe a road that he went over for several years, and he could not point out the usual places for the various articles of furniture in his room. In the same way the patient of Foerster and Sachs could not direct his steps around his room four years after the onset of his malady; having lost his geographical memory, he could not locate the various European countries, although he had been in the postal service. Other similar instances have been recorded by Laqueur and Chaineaux.

In conclusion it may be said that the characters of bilateral hemianopsia of cortical origin are an ophthalmoscopic integrity, a normal state of the pupils, and a perfect preservation of the reflexes to light and accommodation; a complete loss of peripheral vision and frequently also of central vision, and the coexistence of disturbances of cerebral origin. In other words, it is a blindness with preservation of the pupillary reflex to light.

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#### THE OCHSNER TREATMENT OF APPENDICITIS

Dr. Everett S. Hicks explains in the *Canadian Medical Association Journal* for October, 1915, why he was favorably impressed by the method of treating appendicitis carried out at the Ochsner clinic in Chicago. Out of 200 cases without a death, there was no surgery during the acute attack in sixty-four; 136 were operative, and of these, forty-nine being acute, were operated in as soon as seen. Twelve were pus cases, of which eight were treated by the draining of an abscess, four had abscess

large and appendectomy, while eighty-four were chronic and were operated in after the acute stage had passed. Other treatment comprised the prohibition of food, cathartics, generally even of water; there was lavage, rest in bed, and mild heat applied locally.

Patients who were willing were operated upon in the first forty-eight hours if seen early enough, and a few had the operation on the third day. All others, from the fourth to the ninth day, were treated medically and had to await a safer day. As the cases came from all possible sources, Doctor Hicks believes this showing to commend the Ochsner method as a safe outline for guidance.

### STUDIES IN NOMENCLATURE.

F. J. Allen, of Cambridge, in a letter to the *British Medical Journal*, published September 11, 1915, maintains that the root of *nocere* is not *nocui*, but *noceui*, and he states therefore that Doctor Crile's discovery should have been called *nocuassociation*, the obvious and most euphonious form. Why not *noxassociation*? Mr. Allen takes occasion to suggest correct forms for two other common words, viz., *chemiotaxis* and *ptomine*; should not the latter, however, be *ptomatine*? Will men of medical science ever recognize the necessity of consulting a philologist when they require a name for a theory, a drug, an operation, or any discovery?

### A NEW VOLUME OF THE INDEX CATALOGUE.

The twentieth volume of the second series of the Index Catalogue of the Library of the Surgeon General's Office, United States Army, has just been issued. It is hardly necessary for us to add to the encomiums that have been passed on this unique and, to medical editors, indispensable work. This volume comprises 4,566 author titles, representing 2,263 volumes and 3,517 pamphlets. It also contains 4,151 subject titles of separate books and pamphlets and 2,977 titles of articles in periodicals. It includes titles from V to Water works.

### News Items.

**Changes of Address.**—Dr. R. J. E. Scott, to 307 West Seventy-ninth Street, New York.

Dr. S. Silverberg, to 1080 Bryant Avenue, New York.

Dr. Edward Wadsworth Peterson, to 525 Park Avenue.

Dr. Rufus Peabody Hubbard, to 33 West Fifty-first Street.

**Southern Tuberculosis Conference.**—This conference will be held in Columbia, S. C., on October 8th and 9th.

**American Relief for Belgium.**—Dr. F. F. Simpson, of Pittsburgh, treasurer of the Committee of American Physicians for the Aid of the Belgian Profession, announces that contributions amounting to \$52 were received during the week ending September 25th. Of this amount the Norfolk, Va., County Medical Society contributed \$28, the Carroll County, N. H., Medical Society, \$10, and the Muscogee County, Ga., Medical Society, \$14. The total amount collected by this committee amounts to \$7,866.84 and there is a balance on hand of \$556.80.

**The American Association of Railway Surgeons** will meet in annual session in Chicago, October 13th, 14th, and 15th, under the presidency of Dr. George F. Beasley, of Lafayette, Ind. Dr. Louis J. Mitchell, of Chicago, is secretary of the association.

**New Officers of the American Röntgen Ray Association.**—Dr. A. W. Crane, of Kalamazoo, Mich., was elected president of this association at the annual meeting held in Atlantic City last week. Dr. William A. Bowman, of Los Angeles, was made vice-president, Dr. W. F. Manges, of Philadelphia, was reelected secretary, and Dr. William A. Evans, of Detroit, treasurer. Dr. D. K. Bowen, of Philadelphia, was elected a member of the executive committee.

**Faculty Changes at Harvard Medical School.**—Among the numerous faculty changes which went into effect at the opening of Harvard University on Monday, September 27th, are the following in the staff of the medical school: Dr. John L. Morse, associate professor of pediatrics; Dr. Frederic T. Lewis, associate in embryology; Dr. John Warren, associate in anatomy; Dr. John L. Bremer, associate in histology; Dr. Francis W. Peabody, assistant professor of medicine; Dr. Herbert S. Langfeld, assistant professor of psychology.

**Typhoid Fever in New York.**—In the year 1914 the typhoid fever death rate for the city was 6 in 100,000 of the population, the lowest in its history. The figures for the second quarter of the year 1915 compare favorably with the corresponding period for 1914, there being 272 cases and 39 deaths as compared with 382 cases and 64 deaths. Pasteurization of milk, chlorination and careful supervision of the water supply, attention to the carrier problem, and immunization are some of the measures which may be considered as accounting for the reduction in 1914 and 1915.

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Monday, October 4th, Wills Hospital Ophthalmic Society, Academy of Surgery, Philadelphia Clinical Association; Tuesday, October 5th, Aid Association of the County Medical Society (directors), Philadelphia Laryngological Society; Wednesday, October 6th, Physicians' Motor Club (directors), College of Physicians, Lebanon Hospital Clinical Society; Thursday, October 7th, Obstetrical Society; Friday, October 8th, Northern Medical Association, Southeast Branch of the County Medical Society.

**Pediatric Societies to Meet in Philadelphia.**—A joint meeting of the Philadelphia, New York, and New England Pediatric Societies will be held in Philadelphia, Monday and Tuesday, November 8th and 9th. A series of clinics is being arranged for the visiting pediatricists and an invitation is extended to the members of the American Association for the Study of Infant Mortality, representatives of affiliated societies, delegates from other organizations, and visitors to attend these clinics. Complete information may be obtained from Dr. Joseph S. Neff, chairman of the committee of local arrangements, 801 Weightman Building, Philadelphia.

**Doctor Wolbarst's Genitourinary Clinics.**—The third winter series of public genitourinary clinics, held by Dr. Abr. L. Wolbarst at the West Side German Dispensary and Hospital, 328 West Forty-second Street, New York, will begin on Thursday, October 7th, at 8:30 p. m., and will continue throughout the winter every Thursday evening. A similar course of clinics will also be held every Tuesday afternoon at 3 o'clock, at Beth Israel Hospital (dispensary), Jefferson and Monroe Streets, beginning Tuesday, October 5th. Physicians and medical students are invited. Interesting cases may be brought for diagnosis and conference.

**Vermont State Medical Society.**—The 102d annual meeting of this society will be held in Burlington Thursday and Friday, October 14th and 15th, under the presidency of Dr. W. W. Townsend, of Rutland. The program includes addresses by Surgeon General William C. Gorgas, United States Army; Dr. R. W. Lovett, of Boston; Dr. I. C. Bloodgood, of Baltimore; Dr. W. B. Cannon, of Boston; Dr. J. H. Blodgett, of Bellows Falls; Dr. E. R. Ross, of St. Johnsbury, vice-president of the association; Dr. E. H. Hannan, of Montpelier; Dr. J. P. Cochrane, of East Dorset; and Dr. Charles H. Deane, of Salisbury. Clinics will be held by Dr. Smith Ely Jelliffe and Dr. J. C. Bloodgood. Dr. J. M. Hamilton, of Rutland, is secretary of the society.

**American Electrotherapeutic Association.**—At the annual meeting of this society, held in Atlantic City, September 13th, 14th, and 15th, the following officers were elected: President, Dr. J. Willard Travell, of New York; second vice-president, Dr. Frank B. Granger, of Boston; third vice-president, Dr. William L. Clark, of Philadelphia; fourth vice-president, Dr. Sidney A. Twinch, of Newark, N. J.; fifth vice-president, Dr. William Martin, of Atlantic City, N. J.; treasurer, Dr. Emil Heuel, of New York (re-elected); secretary, Dr. Bryon Sprague Price, of New York; registrar, Dr. Frederick M. Law, of New York.

**Private Physicians to Cooperate with the Health Department in the Examination of Cooks and Waiters.**—Health Commissioner Goldwater has decided that hereafter private physicians may conduct the physical examination of cooks and waiters. Heretofore all such examinations have been conducted at the occupational clinic of the department, and in order to secure harmony of method and maintain the standard of the clinic's examinations, the Division of Industrial Hygiene will exercise supervision over all examinations undertaken by private physicians. At present about eighty-five private physicians have received authorization from the department to engage in this work.

**New York City's Death Rate.**—According to figures just issued by the Department of Health there were 1,236 deaths with a rate of 11.11 last week, compared with 1,323 deaths and a rate of 12.36 for the corresponding week of last year. This difference of 1.25 point in the weekly rate is equivalent to a saving of 139 lives. The following diseases showed a decrease: Diphtheria, cerebrospinal meningitis, heart disease, Bright's disease, digestive diseases, pulmonary tuberculosis, lobar pneumonia, and bronchopneumonia. The only noteworthy increase was in the number of deaths from diarrheal diseases in children under five years of age. This increase was due to the warm and humid weather, which caused almost an epidemic of gastrointestinal disturbances among young children. The death rate for the first thirty-nine weeks of 1915 was 13.43 compared with a rate of 13.90 for the corresponding period of last year.

**Association of Military Surgeons.**—At the twenty-fourth annual meeting of this association, held in Washington, D. C., on September 13th, 14th, and 15th, under the presidency of Colonel Jefferson R. Kean, Medical Corps, United States Army, the following officers were elected: President, Surgeon General Rupert Blue, United States Public Health Service; first vice-president, Medical Inspector George A. Lung, United States Navy; second vice-president, Colonel Henry Allers, Medical Corps, National Guard of New Jersey; third vice-president, Colonel H. P. Birmingham, Medical Corps, United States Army; secretary, Lieutenant Colonel Edward L. Munson, United States Army; treasurer, Dr. J. Harry Uhlrichs, Medical Corps, National Guard of Maryland. The association before adjournment passed resolutions of thanks to the chairman of the committee of arrangements, Colonel Charles Richard, United States Army, and to the chairmen of subcommittees and the members of the committees for their indefatigable efforts to make the meeting a success. Next year's meeting will be held in Chicago.

**Military Maneuvers at Van Cortlandt Park.**—Approximately ten thousand troops of all arms of the National Guard of the State of New York, stationed in and around this city, took part in the maneuvers held in Van Cortlandt Park on Saturday, September 25th. An interesting feature of the drills which occupied the morning was a demonstration by the Third Ambulance Company, under Captain Leander H. Shearer, of the establishment of first aid stations, the application of bandages by members of the company, privates, not medical men, and the transportation of the wounded in ambulances to a field hospital which had been established in another part of the field under the command of Major J. S. Dunseith. After the morning's drill the sanitary troops returned for luncheon to the camps which they had occupied on Friday night in another section of the park. After this they broke camp and took part in battle maneuvers in which the whole ten thousand troops were engaged. The governors of Massachusetts and New York, and General Wood and Mayor Mitchel were among the 125,000 spectators.

**Examination for Tuberculosis Hospital Superintendent.**—The Civil Service Commission of the State of New York announces that an examination will be held, on October 30th, for the position of superintendent of the Fulton County Tuberculosis Hospital, salary \$750 without maintenance. The examination is open only to men and residence in the State for at least three months immediately preceding the examination is required. Applicants must be physicians, licensed to practise in New York State, and have had at least three years' experience in active practice. The superintendent will be required to visit the hospital three or four times a week, and oftener if necessary, the institution being under the immediate charge of a woman as head nurse.

**Clinical Congress of Surgeons of North America.**—The sixth annual session of this organization will be held in Boston during the week of October 25th, and it is expected that 1,500 surgeons from all over the United States will attend. The mornings will be devoted to clinics by local surgeons at the leading hospitals and medical schools of the city, and at the evening sessions scientific papers will be read and discussed. The officers of the congress are: President, Dr. John B. Murphy, of Chicago; president elect, Dr. Charles H. Mayo, of Rochester, Minn.; vice-president, Dr. George E. Armstrong, of Montreal; first vice-president elect, Dr. Herbert A. Bruce, of Toronto; second vice-president elect, Dr. Robert L. Dickinson, of Brooklyn; treasurer, Dr. Allen E. Kanavel, of Chicago; secretary general, Dr. Franklin H. Martin, of Chicago, and general manager, Mr. A. D. Ballou, of Chicago.

**New Officers of the Pennsylvania State Society.**—The following officers were elected at the annual meeting of this society, held in Philadelphia under the presidency of Dr. J. B. McAllister, of Harrisburg, September 21st, 22d, and 23d: President, Dr. Charles A. E. Codman, of Philadelphia; first vice-president, Dr. J. Torrance Rugh, of Philadelphia; second vice-president, Dr. Edgar M. Greene, of Easton; third vice-president, Dr. W. Albert Nason, of Roaring Spring; fourth vice-president, Dr. Meyers W. Horner, of Mount Pleasant; secretary, Dr. C. L. Stevens, of Athens (re-elected); treasurer, Dr. George W. Wagoner, of Johnstown (re-elected); trustees and councilors, Dr. I. J. Meyer, of Pittsburgh; Dr. James Johnson, of Bradford; Dr. John B. Lowman, of Johnstown, and Dr. J. B. F. Wyany, of Kitaning. Dr. David Riesman, of Philadelphia, was elected secretary of the section in medicine, and Dr. J. Wesley Ellenberger, of Harrisburg, chairman; Dr. Levi J. Hammond, of Philadelphia, was elected chairman of the section in surgery, and Dr. John T. Atlee, of Lancaster, secretary; Dr. C. M. Harris, of Johnstown, was chosen chairman of the section in eye, ear, nose, and throat diseases, and Dr. George B. Johnson, Jr., of Franklin, secretary. Next year's meeting will be held in Scranton.

**The Harvey Society Lectures.**—The following program has been arranged for the eleventh course of Harvey Society Lectures to be given under the auspices of the New York Academy of Medicine: October 16th, Professor C. W. Stiles, Hygienic Laboratory, Washington, D. C., Recent Studies on School Children, with Special Reference to Hookworm Disease and Sanitation; November 6th, Professor A. J. Carlson, University of Chicago, Recent Contributions to the Physiology of the Stomach; November 27th, Dr. Eugene F. Du Bois, Cornell University, The Respiration Calorimeter in Clinical Medicine; December 18th, Professor Florence R. Sabin, Johns Hopkins University, The Method of Growth of the Lymphatic System; January 15th, Dr. Donald D. Van Slyke, The Rockefeller Institute for Medical Research, The Present Significance of the Aminoacids in Physiology and Pathology; February 5th, Dr. Hideyo Noguchi, Rockefeller Institute for Medical Research, Spirochetes; February 26th, Professor Warfield T. Longcope, Columbia University, The Susceptibility of Man to Foreign Proteins; March 11th, Professor Henry A. Christian, Harvard University, Some Phases of the Nephritis Problem; March 25th, Dr. R. T. Woodratt, University of Chicago, A Conception of Diabetes; April 8th, Professor Stanley R. Benedict, Cornell University, Uric Acid in Its Relation to Metabolism; April 29th, Professor William H. Welch, Johns Hopkins University, Medical Education in the United States. Dr. George B. Wallace is president of the society, Dr. Edward K. Dunham is treasurer, Dr. R. A. Lambert is secretary.



## HEMADENOLOGY:\* A NEW SPECIALTY

THE INTERNAL SECRETIONS—THEIR FUNCTIONS AND BEARING ON DISEASE AND THERAPEUTICS

BY CHARLES C. D., M. S. JACOBS, M. D., LL. D., SC. D.,  
Philadelphia.

(Seventeenth Communication.)

## THE DUCTLESS GLANDS AND INSANITY.

OUR preceding communication (NEW YORK MEDICAL JOURNAL, September 18, 1915) closed with the statement that the present article would present a summary of the functions of the various ductless glands and their stigmata, preparatory to a study of the relations of these organs to the various forms of insanity. In carrying out this purpose, I must frankly emphasize the fact that my own views differ from those of other workers in the same field in that *they do not*, as Professor Halsted, of Johns Hopkins, has well said of the prevailing views, breed the "greatest confusion on the subject of the functions of the glands of internal secretion." This is not intended as a reflection upon the work of the physiologist, who has labored on this problem over three generations, particularly in view of the vast aggregate of valuable data he has garnered during this period. I have long held, however, and now more than ever hold, that the vast aggregate of physiological data available have not contributed as they should have done to the progress of clinical medicine because the physiologist has failed to utilize the vast resources of synthetic reasoning. His attempt to discern the functions of any organ by a single set of more or less perfect experiments has in most instances been unproductive, because a conclusion based on so narrow a foundation has not one chance in one hundred of being sound—as is amply demonstrated by the multitude of erroneous conclusions in physiological lore. On the other hand, it is self evident that, say, fifty sets of experiments (not conclusions) and clinical observations, *all pointing in the same direction*, will afford a clearer insight into the truth than the single set of experiments referred to, and suggest deductions more likely to stand the test of time. It is because of this method of utilizing the vast and valuable array of data contributed by physiologists, histologists, pathologists, clinicians, and other workers in fields germane to medicine, zoologists, for instance, selecting in the aggregate those data which normally harmonized not only among themselves, but also with all other aggregates of facts bearing directly or indirectly on the same subjects—undertaking only such experiments as were needed to confirm a doubtful point, or complete, where possible, a chain of evidence—that my own views have gained in strength gradually as scientific data have been added to those upon which they had originally been based.

These critical remarks would not be incorporated herein, were we not dealing with scientific labors which bear directly upon human suffering. I do not hesitate to say, in fact, that in many directions it is

*because of the prevailing faulty methods of utilizing investigation that much human suffering is being perpetuated.* An example of this is afforded by the knowledge available to the general practitioner on the functions of the thymus—an organ which, as we have seen, is of cardinal importance in bodily functions. And yet, in spite of enormous labor devoted to this organ by physiologists, in not a single available work on physiology is it possible to obtain an inkling of its role, while the more recent works on the ductless glands content themselves with a recital of experimental data, with here and there a guess vouchsafed by some experimenter. As to the relationship between the thymus and the various forms of idiocy reviewed in *thirty-seven columns* of this journal during the last three months, it is almost a consolation to see the subject referred to, at least, in a recently published work to the extent of *three lines*, stating: "Aplasia of the thymus gland seems very frequently to be associated with other malformations, and especially in developmental defects of the brain (Winslow, Bourneville, Katz and others)." And yet, this refers to papers which, as we have seen, showed the *absence* of the thymus in twenty-eight mentally weak children (Bourneville, Katz) and in seventy-five per cent. of 408 similar cases studied by Morel, etc.—a group of facts which with the mass of experimental and clinical data available should long ago have commanded the greatest attention. The fact that hundreds of thousands represent the aggregate of feeble-minded in this country alone—to say nothing of the still greater sufferers, the parents—should sharpen our wits if we are to do our duty as humanitarians.

A still greater field of human suffering that is being perpetuated in a great measure through the same neglect of analytic and synthetic reasoning in the present connection is that of insanity, to which attention will now be drawn.

We have, in my opinion, in the ductless glands the most potent lever, probably, that science has ever evolved for the elucidation of the pathogenesis of several mental disorders and particularly at their incipency—when organotherapy may still in many instances arrest the evil trend. In dementia præcox alone, we are told, we have the precursor of twenty-five per cent. of all our asylum cases! Here, again, the thymus plays a more or less important pathogenic role, while in other mental disorders it lies practically dormant and other glands assume the principal part. It is because of this fact that a summary of the functions of the various ductless glands and their stigmata is necessary in the present connection. Thus only will it be possible to discern in the various forms of insanity, those clinical phenomena which among the many witnessed, belong specifically to the field of these organs, and to utilize intelligently what

\*Hemadenology, from the Greek, *hema*, blood, and *adeno*, gland.

resources organotherapy may add to present methods of treatment.

#### THE THYMUS IN INSANITY

The functions ascribed by physiologists to this gland have been variously as follows: 1. It is the mother tissue of all lymphoid tissue; 2, it fits out the leucocytes for their various functions; 3, it is in some sort of relationship with the reproductive glands; 4, its internal secretion is an antecedent of that supplied by the reproductive organs when these are fully developed; 5, it prevents the excessive accumulation of acid in the body, phosphoric acid in particular; 6, it has an antagonistic action to that of the adrenals and thyroid; 7, it produces red corpuscles in early life; 8, it supplies nucleic acid; 9, in hibernating animals it stores fat for the maintenance of combustion during the winter sleep. While these nine theories are based on experimental evidence, the fact remains that any attempt to explain through them, singly or collectively, the phenomena witnessed after thymectomy, or any of the morbid conditions attending hyperplasia or aplasia, or any abnormality in fact of the organ, proves fruitless. Not one of these conclusions can, therefore, be accepted as the physiological function of the thymus.

Conversely my own interpretation of the function of this organ explains not only the effects of thymectomy, aplasia and hyperplasia, atrophy, etc., recorded, but also the nine experimental conclusions recited above, each of which had been thought to represent a function. Moreover, it enables us to trace the relationship between the thymus and certain diseases of the cerebrospinal system of which mental disorder is a feature.

For the convenience of the reader I may recall that from my viewpoint the function of the thymus is to supply through the agency of its lymphocytes, the excess of nucleins which the body, particularly the osseous, nervous, and genital systems, requires during its development and growth, i. e., during infancy, childhood, and adolescence, or later if need be, to construct the nuclei of its cells. This function will be found to explain the various experimental and clinical phenomena that have been recorded—doubtless as severe a test as any to which a scientific conception can be subjected.

#### HYPOTHYMIA.

Under this term are grouped all morbid conditions of the thymus which inhibit its functional activity, pathological or operative, thymectomy in infants as well as in suckling animals being followed by a similar symptom complex, that of *cachexia thymipriva*. This symptom complex and its pathogenesis as explained through the function I attribute to the organ, is as follows:

*Ossseous system.* Hypothyemia is attended by changes in the bones recalling those of rachitis, marked in proportion as the pathogenic factor is of prenatal origin or occurs early or late in infancy. The earlier the thymus is morbidly influenced, the greater—all things being equal—will be the degree of defective development in the skeleton. Thus, a lesion, such as hemorrhage in the thymus occurring as a result of some infectious disease in a child, say, six years of age, will produce morbid phenomena in the thymic field far less severe than it would in

a nursing. In the latter, for instance, thymectomy (to relieve dyspnea) has produced severe rachitis. Nearer puberty, the postthymic normal sources of nucleins are more nearly developed and able more or less efficiently for a time, to carry on this function, the child then showing perhaps defective growth of the long bones, prolonged retention of the milk teeth, mental backwardness, and other evidences of delayed development. Those deformities of the skull, ears, jaws, etc., known as "stigmata of degeneration," should be looked upon as pathological conditions, even when congenital, hypothyemia and its morbid effects being transmitted to offspring, as is the case with debilities of other organs. Thus interpreted, hypothyemic osseous and cartilaginous deformities, when detected early in the child's life, are brought within the field of corrective therapeutics.

Clinically, when severe, these deformities, beside those of the head, recall, as stated, those of rachitis, even the rachitic rosary being present; the long bones are soft and flexible, yield readily, causing the bow legs or bandy legs so often witnessed in poorly fed children (especially in the colored race) in whom the thymus fails to receive sufficient nucleins to carry on its functions adequately. The gait of hypothyemics, when the gland is markedly atrophied, may be waddling or straddling; the epiphyses are abnormally large; the development of the teeth is delayed, and the milk teeth are retained longer than usual. The implantation of thymus in thymectomized animals causes resumption of skeletal growth; the internal use of thymus gland does the same in children in whom rachitic phenomena and stunted growth are due to hypothyemia.

Explained in the light of the function submitted, thymic deficiency gives rise to these morbid phenomena by depriving the bones, more or less, according to the degree of that deficiency, of the excess of phosphorus in organic combination which is supplied by the thymic nucleins to build up the 51.04 per cent. calcium phosphate that bone contains.

*Nervous system.* Loss of intelligence follows thymectomy in animals when the operation is performed soon after birth. Compared with controls of the same litter, the animal appears crushed, fails to respond to the attendant's voice, to realize the meaning of a friendly or threatening gesture, or to recognize its sleeping place. It is incapable of distinguishing food from other articles, munching corks, wood, cotton, even its own limbs as well as meat or bones. There is no evidence of satiety, the animal eating incessantly articles placed before it. The animal is absolutely passive and indifferent to everything. In children, beside the large number of nonmyxedematous idiots found post mortem to possess no thymus, by Bourneville, Katz, Morel, and others, the last named observer refers to various cases reported by Lange and Dieher, Garré, Lampé, and others, in which inexplicable idiocy was found post mortem to be due either to absence or aplasia of the thymus, all other glands being normal. The connection between this gland and the various forms of amentia has been reviewed in preceding communications and need not be repeated. We have also seen that the nervous system *in toto*, as in amaurotic idiocy, and the various special senses when undeveloped in mental defectives have also

been shown to belong to the domain of the thymus acting in conjunction with the products of other endocrine glands.

Thymic deficiency produces these morbid effects in the light of the function submitted, by depriving to a corresponding degree the neurons of the entire nervous system of thymic nucleins which take part in the building up of the phosphorus laden myelin, the basal functional substance of all nerve cells and their nuclei. The role of these nucleins being, in conjunction with other glandular products, to produce nervous energy (as explained in the *NEW YORK MEDICAL JOURNAL* for June 20, 1915), any deficiency of this substance causes a corresponding inhibition of all functions, sensory, motor, and mental, which the nervous system, including the brain, carries on.

**Metabolism.** Hypothyria, experimental and clinical, is attended by more or less hypothermia, a lowered oxygen intake and carbon dioxide output, a reduction in the volume of blood, of the number of red corpuscles and lymphocytes, and of the percentage of hemoglobin. When the hypothyria is marked in very young subjects, there is also emaciation, asthenia, trophic disturbances of the skin, with loss of hair, edema, and pallor.

Viewed from the standpoint of the functions I have attributed to the thymus these phenomena are produced in the following way: The excess of nucleins supplied by this organ taking part in the functional processes of all tissue nuclei, the dynamic activity of all tissues is impaired in these tissues according to the degree of hypothyria present, which means a corresponding slowing of metabolism. It is important to recall in this connection that, as previously shown in these communications, the hypothyria may be due to deficient food intake, the proteins ingested being then inadequate to enable the thymus to elaborate the nucleins it requires, as in infantile marasmus. Or it may be due to the use of foods deficient in nucleins. The poor, for example, who often show marked evidences of hypothyria, owe it in many instances to the use of foods deficient in these bodies. Thus, polished rice, which, by losing its pericarp during the milling process, is deprived of a phosphorus pentoxide employed by the thymus in the elaboration of the nucleins its lymphocytes carries to all tissues, may thus produce hypothyria with impaired metabolism in all body structures as a result.

**Sexual glands.** Castration is followed by hypertrophy of the thymus, while the same operation on cattle is known to stimulate growth of the body at large by delaying the involution of the gland. Conversely, thymectomy or inhibition of the functions of the thymus through local changes, leaves the sexual organs undeveloped, a fact which accounts for the experimental phenomenon, noted by Soli and others, that thymectomy may produce a reduction in the weight of the testicles. Explained in the light of the function I have attributed to the thymus, these puzzling phenomena assume a normal aspect, the thymus being the source of nucleins used by the organism to develop, not only the system at large, but also the reproductive system.

## Pith of Current Literature.

MEDIZINISCHE KLINIK.

August 15, 1915.

**Treatment of Ulcus molle with Autogenous Serum or Blood**, by Walther Treupel.—Koenigsfeld, Ziegler, and Betke showed that injection of autogenous serum had favorable effects in various infectious diseases; Treupel extended this method to the treatment of soft sores. Two cases are reported, showing the prompt curative action of repeated injections of the patient's own serum in amounts ranging between ten and forty c. c. at intervals of two or three days. Local treatment was not employed in these two cases. In addition to receiving his own serum, the second patient was given an injection of 100 c. c. of his own blood and the results were the same as with serum. Febrile skin disease such as infectious erythema and eczemas also recovered promptly under intravenous injections of autogenous blood or of autogenous serum in amounts up to 200 c. c.

**Mixed Infections in Typhoid**, by Harry Koenigsfeld.—Fifty cases were discovered in the literature showing certain evidence of a mixed infection. Seventeen of these showed streptococcal infection in addition to typhoid, and cases with staphylococci, pneumococci, colon bacillus and *Micrococcus tetragenus* were also observed. To these the author adds two new cases; the first in a wounded soldier from whose blood both typhoid bacilli and streptococci were cultivated. The isolation was accomplished directly from the blood by cultures on bile media, which showed only typhoid organisms, and others on blood agar which revealed the streptococci. Streptococci were also cultivated from the discharge of the wound. The second case showed a simultaneous infection with *Bacillus typhosus* and *Bacillus paratyphosus* B. The blood of this patient agglutinated the typhoid bacilli in a dilution of one in 40 and the paratyphoid in one in 80. The latter organisms were also cultivated from the stools, during convalescence. Two other patients were seen in whom mixed infection was probable, as indicated by agglutination tests. Both cases ended fatally after running a very severe course.

**Diabetes insipidus after Cranial Injury**, by F. Kleeblatt.—The patient, a young man, received a wound on his head extending backward for twelve cm. from the glabella and to the left of the middle line. A considerable injury to the skull occurred in the course of the wound. A few months later he came under observation with a typical case of severe diabetes insipidus, but without other ailment. Various observations made upon the functional power of his kidneys and to determine the cause of the diabetes showed that there was a very marked reduction in the total osmotic power of the kidneys. When his fluid intake was restricted or when he was given large amounts of salt, no increase in the specific gravity of his urine resulted, although some capacity for excreting salt and phosphates was still retained by the kidneys. The administration of hypophyseal preparations had no effect on his general condition but led to a transitory increase in the osmotic functions of the kidneys. The administration of sodium



chloride led to temporary hydremia, and the opposite condition resulted from withdrawal of the salt. With restriction of fluid intake, the excretion of fluid exceeded its intake and blood concentration resulted.

**The Blood Picture in Variola**, by J. Falk.—Several observers have stated that the blood picture is characteristic from the very earliest stages of the disease; there is a great increase in the proportion of large mononuclear leucocytes, with myelocytes and normoblasts appearing at the onset of pustulation. Three cases coming under the author's care were examined and, while it was found that there was a marked relative lymphocytosis, this typical picture did not appear until so late that a certain diagnosis could be made on clinical grounds alone.

#### BERLINER KLINISCHE WOCHENSCHRIFT.

May 17, 1915.

**Cardiac Disturbances among Soldiers**, by S. Korach. Among sixty men returned from the field on account of cardiac incapacity, Korach found that twenty were quite capable of performing their duties. The subjective symptoms which led to the retirement of the men comprised precordial pain, palpitation, dyspnea after exertion, slight respiratory embarrassment, vertigo, and in some a tendency to faint. The cases could be divided into two groups according to the objective symptoms: A small group with organic and a larger one with nervous heart affections. Displacement of the apex impulse to the left for a distance of three or four cm. when the patient lay on his left side was common in the absence of any other sign of hypertrophy or dilatation and seemed attributable to an abnormal mobility of the heart in neurasthenic persons. A systolic murmur in the second left interspace was very frequently discovered but was regarded as being merely functional in origin, probably due to some pressure on the pulmonary artery. This tended to disappear when the patient lay on his left side, whereas the systolic murmur of organic disease was found often to appear when the patient lay down, being absent when he was sitting or standing. The presence of a ringing second pulmonic sound, enlargement of the liver, and a concentrated scanty urine were found of great value in establishing the existence of an organic heart affection. A concentrated scanty urine was the most valuable single early indication of organic disturbance, often appearing before any other sign of cardiac insufficiency. Some degree of cardiac dilatation, involving either the right heart alone, or the whole organ, was frequently discovered and attributed to a diminished tone of the musculature in neurasthenia. On the other hand a fully normal heart might become dilated as the result of excessive prolonged exertion. An arrhythmia was very often discovered. This was most often a respiratory or sinus arrhythmia which was of no serious significance. Premature contractions also occurred in some cases and these seemed indicative of a more serious involvement of the cardiac musculature. Various suggested tests to differentiate between organic and functional disturbances were tried, but most proved unsatisfactory. It was found, however, that premature systole when associated with persistent reduced systolic blood

pressure usually indicated functional disturbance, whereas organic disturbance was the rule when the systolic blood pressure remained above 160 mm. Hg. Also blood differences exceeding twenty mm. between standing and lying indicated a reduced functional capacity of the heart.

#### BULLETIN DE L'ACADÉMIE DE MEDECINE

**Antityphoid Vaccination**, by L. Landouzy.—Six hundred preventive injections were given; in each case four injections of Vincent's vaccine were given at weekly intervals; the successive doses were 0.5, one, 1.5 and two c. c. Men free from cardiac or renal disease, aseptically vaccinated, and warned to avoid unusual exertions and the use of alcohol, suffered little or no inconvenience. Local pain, malaise, chills, and fever, where they occur, are of brief duration. In one instance, syncope took place, but this soon passed off. Skin irritation, lymphangitis, abscess formation, or crysipelas was never observed.

**Hepatic Cancer above the Gallbladder**, by A. Gouget.—This special type of cancer of the liver may be mistaken for an affection of the gallbladder. A firm, rounded, more or less voluminous mass is found in the region of the latter organ, cholelithiasis or malignant disease of the gallbladder being thus strongly suggested. Differentiation from cholelithiasis is especially important. Nodules in adjoining portions of the liver would exclude all doubt, but in the author's cases these were not present, and the masses were quite regular and smooth. Under these conditions, ligneous firmness of the mass and a more or less advanced age of the patient, together with rapid emaciation, are the sole remaining differential features. The course of the hepatic disease may be rapid, only six weeks in one of the author's cases. The condition may be ascribed to irritation of the overlying liver tissue by stones in the gallbladder, which were found present at operation in both cases. Distention of the gallbladder, by the contained stones dragging on the liver, may also be a factor. Metastasis may take place in the liver itself, in adjacent lymph nodes, or in the pancreas.

**Tetanus**, by Castueil and Ferrier.—Fifteen cases of tetanus were treated with chloral hydrate, eighteen grams a day; potassium bromide, six grams a day, and large intraspinal injections of antitetanic serum, administered with the patient in the inverted position, as recommended originally by d'Hotel. Four patients of the fifteen succumbed, but in two of these the treatment had been begun very late. The writers strongly recommend the intraspinal route of serum introduction. A favorable depleting action is exerted, the serum reaches to the medulla owing to the inverted position, and improvement or disappearance of the grave symptoms constantly follows the injection. The fluid obtained by the spinal puncture affords, moreover, upon analysis information which permits of confirming the diagnosis, following the several stages of the disease process, and almost certainly indicates the outcome of the case. Excess of sugar and urea in the cerebrospinal fluid was found constantly in the thirty-seven specimens examined.

## RIFORMA MEDICA

Vol. 10, No. 10

**Pathogenesis of Oxaluria**, by E. U. Pittipaldi.—Oxaluria is but the expression of an overproduction of fecal oxalic acid; oxaluria and is the result of the union of the fecal oxalic acid with urea. Oxaluria has a double relation to intestinal fermentation, directly by intestinal hyperproduction of oxalic acid and indirectly by association with indoxyl, a product of an entirely different type of fermentation. Oxalic acid is formed by the action of a large group of bacteria, of which, however, such well known organisms as the colon bacillus, the lactic acid bacillus, and *Bacillus lactis aerogenes* are not members. Cystinuria seems to be a process analogous to oxaluria.

**Clinical Aspects of Antityphoid Inoculation**, by G. Oliaro.—Two thousand members of the Italian army were inoculated under the supervision of Oliaro; the vaccine was prepared according to the method of Vincent in which the bacilli are killed by ether. Three inoculations were given in the infraclavicular space one week apart, the first of 500,000, the second of 750,000, and the third of one million bacilli. Local reaction such as redness, glandular swelling and tenderness were seen in only one third of the cases, more marked after the first, less so after the second, while the third injection ordinarily was quite free from any local signs. In such cases there were also sometimes seen neuralgia and pain. These local signs seldom lasted more than two or three days. The systemic signs in five to six per cent. were severe enough to render the subjects quite ill, the temperature rising after inoculation with malaise, headache, and sometimes vomiting. Two men manifested a true typhoid condition after the first injection, but it was of only ten to twelve days' duration without either intestinal symptoms or rose spots. Oliaro concludes that antityphoid inoculation is accompanied by mild and transitory symptoms, and attributes unfavorable results, especially in Germany, to the method of preparation of the vaccines, especially where heat is used to kill the bacilli, a process which frequently liberates bacterial toxins. The Widal reaction is present after inoculation in the same percentage of cases as in true typhoid and therefore this test, as well as the test for the presence of typhoid bacilli in the blood, is taken away from the means of diagnosis of febrile conditions arising after inoculation.

## REVISTA DE MEDICINA Y CIRUGIA PRACTICAS

**Hemorrhoidal Conditions**, by D. J. Rosado.—Anatomical factors in the causation of hemorrhoids are the scarcity of valves in the veins and the situation of the hemorrhoidal plexus, unprotected during defecation, and also the dependent position of the parts. Obstruction to the venous return whether from pregnancy, pelvic tumor, constipation or morbid processes in the heart, intestines and liver, thus easily produces hemorrhoidal masses. A very efficient and safe means is the use of suppositories of bismuth and resorcin with zinc oxide.

**A Foreign Body in the Cornea**, by R. R. Amerigo.—This was a case in which a foreign body,

a piece of steel, had remained firmly imbedded in the inferior part of the cornea of the left eye for one month without causing more than the mildest degree of irritation, with no corneal infection and no disturbance of vision. The foreign body was so fixed in its position that it required considerable force and dissection to remove it.

## LANCET.

SEPTEMBER 4, 1908

**Phantom Aneurysms**, by Samuel West.—Pulsating abdominal aorta is not infrequently encountered and often gives rise to phenomena which make it difficult to differentiate from a true aneurysm of the vessel. Such a condition is a nervous functional affection and is typically transitory in character. Although the condition has not infrequently been described as affecting the abdominal aorta, West has not been able to find any recorded observation in which other vessels were involved. He cites a case in which a definite, transitory aneurysmal dilatation was discovered involving the subclavian artery, and eight in which the axillary artery was affected. In half of these cases, the condition was unilateral, in the other half one side was more affected than the other. Seven of the patients were men. In all there was a murmur when the dilatation was present, in five there were dilated veins on the affected side, six had a thrill, and one had a difference in the radial pulses. In all, the signs were temporary and the condition was easily produced by excitement, and in most of them position did not affect it. West has also found a similar condition in the innominate and in the carotid arteries, and once in the arch of the aorta. In no case did the aneurysmal dilatation become permanent. West suggests the name, phantom aneurysm, for the condition.

**Quinine in the Treatment of Experimental Gaseous Gangrene**, by Kenneth Taylor.—Quinine was selected for study because the activity of *Bacillus aerogenes capsulatus* seemed to be associated with the elaboration of an active ferment. It was found that quinine hydrochloride in a concentration of 0.075 per cent. inhibited the growth and gas formation in cultures of this organism grown in liquid media. When grown on agar, inhibition resulted from a concentration of 0.1 to 0.125 per cent. When grown in pus, the inhibiting concentration was also 0.1 per cent.; 0.225 and 0.5 per cent. concentrations were required under the same conditions to kill the colon bacillus and the pyocyanus respectively. While 0.075 per cent. of quinine hydrochloride inhibited the gas bacillus growing in broth, nearly two per cent. of phenol was required. From the results of these and other tests *in vitro*, it was evident that quinine had a powerful effect on the gas bacillus. Inoculation experiments on guineapigs were undertaken and showed that the simultaneous or subsequent injection of relatively small amounts of quinine hydrochloride was of decided curative value. Only forty-one per cent. of the infected animals which were injected with quinine died, while death occurred in 100 per cent. of the controls. In some of those which died in spite of the quinine, life was considerably prolonged over that of the controls. Amounts of quinine were used which were without

harmful effect on the tissues, and which produced no evidence of intoxication.

**Agglutination Reactions of the Blood of Soldiers Inoculated against Typhoid Fever**, by D. I. Dukevne.—Two hundred and eighty men were observed who had received one or more inoculations during the preceding year. Definite agglutination resulted in over eighty per cent. of the cases, and slightly over sixteen per cent. gave no reaction. Men inoculated twice seemed to evolve and retain agglutinating power greater than those inoculated only once. The power of agglutination gradually declined and the loss was especially marked after the eighth month. Only one of nineteen cases examined within one month after inoculation failed to show agglutination. The history of the severity of the reactions following inoculation was correlated with the result of the agglutination test in this series of cases and it was found that the severity of the symptoms could not be relied upon as an index of the probable development and retention of agglutinating power. Slight agglutination reactions were obtained in nine cases against Paratyphus B and against *Bacillus enteritidis* in seven.

**Brain Lipoid as a Hemostatic**, by Arthur D. Hirschfelder.—On the basis of the chemical similarity or identity of the so called fibrin ferment and the brain lipoid, cephalin, the author prepared a dried ethereal extract from ox brain and determined its coagulating powers. It proved exceedingly active *in vitro*, hastening the clotting of fresh blood. Animal experiments showed that its application in small amounts to freely bleeding surfaces, even where fairly large arteries were severed, led to prompt clotting and the formation of a much firmer clot than occurred spontaneously. It was also effective in hastening the control of free hemorrhage from a large artery if this lay near the bottom of a deep wound so that a clot might form above it before it should be washed out mechanically. It was tried clinically to check the hemorrhage following the excision of tonsils and was found very effective when applied upon gauze. Cheapness and ease of preparation, combined with efficiency recommend this preparation as a hemostatic.

#### BOSTON MEDICAL AND SURGICAL JOURNAL

September 9, 1915.

**Late Results of Operations for Correction of Foot Deformities Resulting from Poliomyelitis**, by Herman W. Marshall and Robert B. Osgood.—In twenty-six selected cases the average time since intervention was four years and ten months. All simple tenotomies or plantar fasciotomies, and all recent cases were discarded in making the selection, and only the more complex ones of longer duration retained. Twenty-three were distinctly improved, in four the results were excellent, in ten good, in six moderate, and in three slight. One of the unsuccessful results may be explained in part at least by the patient's neglect and failure to have post-operative supervision. In this series there were no overcorrections of deformities following tendon transplantsations.

**Carnivorous and Herbivorous Types in Man**, by John Bryant.—An attempt is made to show a few angles at which this type theory comes into

close contact with actual every day life, particularly as regards the educator, the employer, the life insurance actuary, and the doctor. It puts at the disposal of the educator a means of insight into the mental and physical make-up of his pupil that cannot be so easily acquired in other ways, and offers almost limitless opportunities for helpfulness. Employers already know, without being able to explain it, that the one type is proficient in overcoming obstacles in field work, while the other is better in the office to work up the data obtained by the former. The actuary attributes great importance to the blood pressure, and here is one of the most characteristic points of difference between the two types. Assuming the normal systolic pressure to range from 110 to 140 in healthy adults, the mean may be given as 125. The carnivorous will usually be found to have a pressure below, the herbivorous above this figure. A reading of ninety-five or of 155 must be interpreted according to type. In disease, pressure tends to fall in the carnivorous, to rise in the herbivorous; high pressure is more suggestive of serious trouble in the carnivorous, low pressure in the herbivorous. In other words, a pressure of 155, which may be said to be fifteen mm. above the upper normal limit, is so only for the herbivorous; for the carnivorous it is an increase of thirty mm., corresponding to a reading of 170 for the herbivorous. A reading of ninety-five is only fifteen mm. low for the carnivorous, but thirty mm. low for the herbivorous, corresponding to a drop to eighty mm. in the carnivorous. Certain drugs produce a given action in some persons, the contrary in others, and it has been found experimentally that a drug may be a vasodilator in the carnivorous, but a vasoconstrictor in the herbivorous. Regarding the doctor, it is maintained that the laboratory worker who conducts his investigations without regard to type, leaves them open to criticism. Subjects of the two types react differently to a given diet in metabolism experiments. Doubtless in this fact lies a possible suggestion for the solution of certain discrepancies reported by various laboratories working upon a given problem. As regards appendicitis it is asserted that the carnivorous may have a chronic appendicitis for years, but the chances are more than ten to one that it will not kill him, while if the herbivorous ever gets appendicitis, it is likely to be primary, fulminating, apt to flood the peritoneum with pus, and to cause sudden death. This is the natural result of rather constant anatomical differences in the shape of the appendix. In the carnivorous, it is conical with the base of the cone at the orifice, making obstruction improbable, while in the herbivorous it is shaped more like a tube with a blind end, parallel sides, and a tendency to stricture at the orifice.

**Pneumococcic Arthritis**, by James Warren Sever.—The methods of infection in Sever's six cases were: 1. From the mouth by way of a tooth infection; 2, by trauma without previous known pneumonia; 3, by a previous pneumonia followed by an otitis media; 4, by trauma followed by pneumonia and involvement of the joint in nine days; 5, following several attacks of bronchopneumonia and immediately after an acute attack of otitis media;



of involvement of the joint two weeks after an acute attack of lobar pneumonia.

#### JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

**Nitrous Oxide Analgesia in Obstetrics**, by Carl L. Davis. So soon as the uterine contractions of the first stage of labor become painful three or four deep inhalations of nitrous oxide and oxygen are given and this is repeated throughout the first stage at the first indication of the onset of a contraction. As the severity of the pains increases, the proportion of the gases is altered so as to secure greater analgesia. The method requires individualization to secure the best results; it is wholly without danger to mother or child and can be easily carried out through the entire course of labor, including the second stage; it seems to shorten the first stage by permitting the better use of auxiliary forces and preventing the inhibition due to fright and suffering. Its disadvantages are two: First the need for a good mechanical mixing apparatus to supply any desired proportion of gases and secondly, the expense of the method due to the cost of nitrous oxide. The cost is less than might be anticipated, being below \$1.50 an hour, and is more than outweighed by the absolute safety of the method.

**Treatment of High Blood Pressure**, by Arthur C. Allen. Cases of high blood pressure can be grouped clinically under five heads: 1. Those with secondary or symptomatic high pressure. 2. Neurogenic cases. 3. Essential high blood pressure. 4. Nephritic cases. 5. The high blood pressure of heart failure. The first group is associated with such conditions as increased intracranial pressure, aortic insufficiency, asthma and emphysema, hyperthyroidism, uterine fibroids, diabetes, syphilis, etc. In this group the treatment of the primary etiological factor is the most important and usually yields fairly satisfactory results except in the case of syphilis. The second group is produced by a number of causes and the removal of the cause usually gives relief. The prognosis is good. The term essential high blood pressure is used to denote those cases of persistent high pressure in which no renal or other cause can be proved. In this group the prognosis is relatively good. In the nephritic cases the outlook is much less favorable, the pressures average much higher, and death from heart failure, uremia or apoplexy is very likely. When the systolic pressure ranges above 200 mm. Hg, uremia or apoplexy is more likely than heart failure. A persistent elevation of diastolic pressure points in the same direction. The blood pressure of heart failure is seldom so high as that of nephritis and the heart failure may occur either with a falling pressure or with a rising one. In the treatment of these cases, it should be borne in mind that the high pressure is a part of a compensatory mechanism and efforts should not be directed solely to its reduction. Proper adjustment of diet, particularly the amount of food taken, efficient elimination by purgation or sweating, and attention to personal and mental hygiene are the most valuable aids in combating the underlying causes. In the spastic cases and for the immediate relief of severe symptoms the nitrites are of great

value and for prolonged use the iodides seem to give the best results. Phlebotomy is indicated in certain plethoric cases. It is often impossible to foretell the onset of uremia by clinical observation, but the repeated use of the phthalein test of renal function has furnished the best basis for anticipating and preventing uremia. The cases of cardiac failure require digitalis in addition to other measures, and its administration should be begun before the failure is marked and kept up so long as required. The intravenous use of strophanthin is demanded in serious cases of failure, to be followed by digitalis.

**Infantile Scurvy**, by Alfred F. Hess.—Neither the symptomatology nor the pathology of this condition is restricted to the bone changes and hemorrhages; enlargement of the heart, specially the right side, and tachycardia are fairly constant. The extravasation of blood and the presence of nonpitting edema are due to a change in the vessel walls and not to an alteration in the coagulability of the blood. Careful study suggests that scurvy is etiologically a deficiency disease, that an exclusive diet of pasteurized milk will produce it and that the feeding of cereals retaining the pericarp will cure it. The pain is attributed in part to a peripheral neuritis and the analogy between scurvy and beriberi is very close.

**Trachea Position**, by Gerald B. Webb, A. M. Forster and G. B. Gilbert.—In many cases of pulmonary tuberculosis, the trachea was drawn toward the side of the lesion. Pleuritic adhesions had a similar effect. The displacement may produce loud tubular breathing at one apex. When it is drawn far to one side it is probable that the pleural adhesions present will prevent a successful artificial pneumothorax. The displacement of the trachea is a valuable diagnostic sign of pulmonary tuberculosis.

#### MEDICAL RECORD

September 18, 1913.

**Syphilitic Arthritis**, by H. C. Stein.—Syphilis is the cause of about twenty per cent. of joint diseases. The clinical varieties are: Epiphysitis; with secondary joint involvement; hydrops; arthralgia; synovitis; arthritis deformans type; chondroarthritis and mixed infection. The diagnosis must be made from rheumatic arthritis, arthritis deformans, tuberculous joints, acute rheumatism, gonorrheal rheumatism, traumatic synovitis and malignant disease. It depends on personal and family history, concomitant signs of syphilis, as general adenopathy, keratitis, retinitis, iritis, Hutchinson's teeth, etc., on the Wassermann and luetin tests, the x ray, and the therapeutic test of specific treatment. Syphilis produces every form of arthritis and it may be primary in the joint or secondary to involvement of the adjacent bone. Pain as a rule is not severe and is worse at night, while limitation of movement is not so marked as appearances would indicate. Finally, the possibility of syphilis should be considered in every case of joint disease of doubtful origin.

**Early Diagnosis of Tuberculosis**, by James S. Ford.—There is something radically wrong with the diagnostic ability of a large percentage of men in the practice of medicine when they are not able to recognize pulmonary tuberculosis, not only in its incipient stage, but even when it is moderately ad-

vanced, especially in view of the fact that this is the most common disease in existence today. The blame partly lies with the medical schools for their somewhat haphazard teaching of tuberculosis. Abrahams attributes it to an incomplete examination in most cases, which in turn is frequently due to the haste with which physicians work. Frequently, too, the patients themselves object to thorough examination, especially to the removal of their clothing. In 1,000 cases 1,940 physicians were consulted, of whom fifty-five per cent. made a physical examination only, while six per cent. examined the chest and took the temperature, but did not make a sputum examination. Only seven per cent. made a chest examination, took the temperature and examined the sputum, and 10.2 per cent. made no examination of any kind.

**Bromine Therapy in Epilepsy**, by E. S. Brodsky.—Bromide treatment of epilepsy is still considered the best, although this treatment should be individualized. The regulation of the amount of sodium chloride in the diet is important. A condiment composed of sodium bromide, sodium chloride, vegetable albumin and condiments may be added to the food on the table without the use of any salt in cooking. All cases of idiopathic epilepsy represent two groups: Patients who are mentally and physically intact and strong, and those who are mentally and physically defective and debilitated. In the first group we should give fifteen grains of bromide a day, allowing the usual food except soups, or preparing them without salt. In from one to three weeks the bromide dose should be doubled and so continued for a long period. Only exceptionally is it necessary to resort to three, four or five grams of bromides a day. The amount of sodium chloride frequently has to be reduced very gradually, and, to avoid bromism, Fowler's solution should be given in doses of two to six drops twice daily after meals. Bromide ulceration of the skin, although rare, requires careful treatment with arsenic internally and compresses of sodium chloride solution externally.

**Primary Mastoiditis**, by Charles B. Broder.—In reporting two cases of this condition, Broder lays stress on the importance of a careful examination of all postauricular cases which have no local symptoms indicating middle ear disease.

**Tetanus, with Recovery**, by James Murphy.—In this case, tetanus followed traumatic amputation of the middle and ring finger of the right hand. Tetanus antitoxin was administered in the dose of 22,500 units, part of which (6,000 units) was given intraspinally, together with the subcutaneous injection of ten minims every two hours of a ten per cent. solution of carbolic acid until the urine became smoky. In five weeks the patient was discharged cured. The period of incubation was rather long, nine days, which favored the prognosis, and the slow development of the symptoms was another favorable point.

**Gout**, by Max Strunsky.—In eight years' work in a hospital for bone and joint diseases, Strunsky has been struck with the fact that in all the thousands of cases treated he has so far failed to see a single one corresponding to the classic syndrome of gout. Many cases formerly diagnosed as gout have

been found to be due to syphilis, gonorrhea and intoxication from pyorrhea alveolaris. Flat feet have very frequently been diagnosed as gout, also hallux valgus, hammer toes and bunions. Deposits of calcium salts are not now considered to be a cause of the disease. There is no evidence to show that deposits of urates around the joints give rise to violent pain and local circulatory disturbance. Gout has never been reproduced experimentally in animals by the injection of uric acid although the experiment has been tried many times. Furthermore, the toxicology of uric acid differs from the symptoms of gout, while the presence of tophi and Heberden's nodes is no longer looked upon as pathognomonic.

#### LANCET-CLINIC.

September.

**Hysterectomy**, by W. D. Haines.—It is pointed out that at present, with good technic and proper preparation of the patient, the mortality from hysterectomy, formerly large, should not exceed five per cent. The author holds that in regard to removal of the uterus in gonorrheal infections, the profession has become too conservative; operation during the quiescent stage of the disease, with removal of the tubes, ovaries, uterus and infected vaginal glands, is advised. Hysterectomy is also recommended for the relief of prolapsus uteri. In a number of cases in women long past the climacteric, removal of the protruding uterus, suture of the ends of the round and broad ligaments together, closure of the peritoneal rent, and completion of the operation by the performance of such plastic work on the vaginal walls as the cases required, yielded very gratifying results.

**Salvarsan in Syphilis**, by A. Nelken.—Salvarsan was administered 661 times and neosalvarsan 417 times—a total of 1,078 injections—in 420 patients, without a fatality or serious complication. A protest is made against the practice of giving a patient with a doubtful initial lesion just enough salvarsan to cause healing of the sore and mask the later evidences of the disease. No suspected ulcer should be pronounced not specific until after three months of frequent, careful observation of the patient, with local examination for *Spirochaeta pallida* and Wassermann tests. In early cases where there is hope of aborting the disease, Nelken gives first two doses of salvarsan and then two or three doses of neosalvarsan, the first two injections a week apart and the remainder at fortnightly intervals, together with a course of mercurial inunctions lasting from three to nine months. In about forty cases thus treated no relapse has been witnessed, during observation for from two to five years. Nelken's experience leads him to believe that the only serious contraindication to salvarsan is advanced renal disease.

#### AMERICAN JOURNAL OF ORTHOPEDIC SURGERY

**Second Report of the Committee on the Treatment of Structural Scoliosis to the American Orthopedic Association**, May, 1915, by Albert H. Freiberg, David Silver and Robert B. Osgood.—Six previously untreated cases of scoliosis (structural

types were selected by each orthopedic surgeon whose work was being reviewed, and complete records made of each case by the committee. At the end of six months these cases were all reexamined to ascertain the results obtained. The committee found no case of overcorrection; the amount of correction obtained by method of Forbes was far from satisfactory; while in the milder types of structural scoliosis considerable correction can be obtained by the method of Lovett, Abbott and by means of Kleinberg's brace; extreme force is not justifiable. They recommend that all records be taken with the patient in the upright position.

**Direct and Muscular Neurotization of Paralyzed Muscles.** by P. Erlacher.—From successful experimental studies the author proves that a healthy nerve can be transplanted into a paralyzed muscle; if a nerve is not available a flap of healthy muscle from the body can be used for the neurotization, a good functional result being obtained. Owing to success in one case of his own and in several of Gersuny's and von Hacker's, he recommends the use of this operative procedure in selected cases.

**Direct Neurotization of Paralyzed Muscles.** by Arthur Standler.—Following operations, of experimental character, on dogs and in three cases of infantile paralysis, the writer concludes that the transplantation of a healthy nerve into a paralyzed muscle and the fixation of a healthy muscle to a paralyzed one, with some resulting function, is quite possible.

**Operative Treatment of Osteoarthritis.** by E. G. Bradley.—The writer discusses the advisability of operating in certain types of cases of osteoarthritis, i. e., those cases in which there is a fairly good working joint with localized overgrowths; and those in which the joint is considerably damaged with numerous overgrowths. In the first type of case, he advises removal of the overgrowths; and in the second type a partial resection or an arthrodesis. In all these cases the disease process must be inactive and but one joint involved.

**Local Treatment of Painful Nontuberculous Joints.** by Gwilym G. Davis.—The author suggests that the fixation treatment of these joints be given a good and thorough trial. He states that it invariably relieves pain and does not cause an ankylosis. Pain is an indicator of the activity of the condition and rest is therefore essential.

**Treatment of the Convalescent Stage of the Infectious and Atrophic Types of Arthritis.** by Charles F. Painter.—A brief summary of the etiology, pathology, treatment and prognosis of these cases is given. The author does not advise prolonged fixation, but careful and gradually increasing passive motion in the early convalescent stage. The operative treatment is applicable only in a few selected cases.

**Osteoarthritis in Its Relation to Mouth Infection.** by Joseph David.—The author discusses the cleansing and care of the teeth and thoroughly emphasizes the importance of this treatment in cases of mouth infection, which is often the causative factor in cases of osteoarthritis.

**Anatomical Specimens of Unusual Clinical Interest.** by Arthur W. Meyer.—Presentation of three specimens of coracoclavicular articulations and five specimens of destruction of the tendon of the

long head of the biceps muscle. All the specimens were obtained from the dissecting room with no accompanying history, but in all probability they were the result of an osteoarthritic process of some type.

**Osteitis deformans (Paget's Disease).** by F. J. Gaenslen.—The history, etiology, symptoms, signs, prognosis, etc., of the rare and clinical entity are discussed. The author presents the complete records of one case and believes that the etiology is of a chronic focal infective nature.

## CHINA MEDICAL JOURNAL

July, 1918

**Anaphylactic Shock.** by S. Z. Hyui.—A boy three months old was given 700 units of diphtheria antitoxin hypodermically. Two years later a prophylactic dose of 700 units of diphtheria antitoxin was given hypodermically. Five minutes after this last injection, an erythematous rash appeared all over the body and soon became urticarial. At the same time the child was very restless. The hands gradually became cold and the face cyanosed. In a few minutes he was unconscious. Pulse was almost imperceptible at the wrist. While the child was in this state the urticaria disappeared. Rectal temperature remained normal. After a short while the cyanosis disappeared, the pulse became stronger, and the child fell into a sleep; had an involuntary stool and vomited as the cyanosis was clearing up. The attack was over in three hours. The night was uneventful. There was a macular and papular eruption over the body in the morning. A week later he showed symptoms of "serum sickness."

## Proceedings of Societies.

## NEW YORK NEUROLOGICAL SOCIETY.

*Regular Meeting, Held at the Academy of Medicine, June 1, 1918.*

Dr. WILLIAM M. LESZNSKY, in the Chair.

**Suture of Musculospiral Nerve after Extensive Destruction.**—Dr. R. H. M. DAWBARN and Dr. JOSEPH BYRNEL presented this patient, aged thirty-four years, a cloth cleaner, married, with two healthy children, no history of venereal disease. Seven and a half months ago he fractured his right humerus in the middle of the shaft. Either then, or from subsequent unfortunate manipulation, the musculospiral nerve was divided. The radiograph showed very poor apposition of the fragments, and other means failing, Lane plating was performed. The scar of the incision could be seen. It was hoped that the nerve might have only been bruised, not wholly divided, and time was given hoping for an improvement in the inability to use the muscles supplied by the posterior interosseous or arch of the musculospiral. After five months, and about two and a half months ago, another operation was performed; the musculospiral was exposed in its relationship above the external condyle, and traced backward to its groove, where it was found severed, and above the point replaced by scar tissue for at least two inches. Dividing the ends until normal nerve tissue was reached, increased the gap to



about three inches. This interval was bridged by plastic neurotomy. The nerve was split at a low point of its distal portion, and the long graft thus made was swung backward into the gap, and its sheath sutured to that of the divided proximal end with finest linen thread. Primary union was obtained. No other nerve was injured so far as could be judged during this operation. An apparatus was worn to avoid a tendency to overflexion of the hand by the unopposed activity of the group of muscles and the limb was treated by electricity and massage.

Doctor BYRNE added that, after the plating operation, the patient had pain if the arm was moved or the site of injury touched. This pain radiated down the arm to the back of the hand and thumb. Since the nerve was sutured, the patient had suffered from slight occasional "jags" of pain referred to the site of operation. He was first seen by Doctor Byrne on April 15, 1915, that is 146 days after the operation of plating, and seventeen days after nerve suture. Examination showed atrophy of the long extensors, with dropped wrist, some atrophy and fibrillation of the first dorsal interosseus. The scar of the skin wound half an inch long lay over the space. No pain was felt unless the arm was jarred or the site of the wound touched. There was loss of all forms of sensibility over the radial portion of the back of the hand and wrist and extending over the radial area on the thenar eminence and dorsum of thumb. On the back of the hand the ulnar limit for light touch and heat at 152° F. roughly corresponded to the extensor tendon of the ring finger. The ulnar boundary for prick loss was one quarter inch less than that for light touch loss, while the boundary for prick at twelve and for ice corresponded roughly with the tendon of the middle finger. The area of loss for all forms of sensibility included the radial area on the thenar eminence, but that for prick loss at twelve was represented by a space one inch wide by two and one quarter inches long, lying between the metacarpal bones of the index and middle finger, extending up to the level of the web of the thumb and index finger, where it tapered off like a night cap, inclining over into the middle of the first interosseous space.

Light touch was preserved in four different small areas on the dorsum of the hand. One of these was three quarters of an inch in diameter and situated over the second interosseous space and metacarpal of the middle finger at the level of the web of the first interosseous space. Similar smaller patches one quarter inch or less were found. In the study, April 19th, similar small islands were found, in all of which sensibility for cold, ice, etc., was preserved. The location of these areas did not correspond with any of the similar areas of preserved sensibility for light touch. The indentation seen in the boundary for cold loss on the dorsum of the hand, gave a clue to the meaning of these islands of preserved sensibility. Later observations rendered it almost certain that at a slightly earlier period there existed an island of preserved sensibility for cold, which was not discovered at the examination of April 15th, because inexact methods were employed.

The operators' conclusions were: 1. Division of the musculospiral nerve in the upper arm gave an area of loss for all forms of sensibility, epicritic and protopathic, over an area that roughly extended over the dorsum of the thumb, the thenar eminence, in part, and the radial half of the dorsum of the hand and lower wrist. Head and Sherrin (*Brain*, 28, 116, 1905) denied this, insisting that in order to get other than epicritic loss in the dorsum of the hand after section of the radial nerve at the wrist, section of one of the branches of the external cutaneous was necessary. The operators' conclusion here did not fairly controvert the statement of these authors as the circumstances responsible for lesion of the musculospiral in their case might well have caused lesion of the external cutaneous or of one of its branches. There was no evidence of loss of sensibility on the forearm, beyond slightly impaired sensibility on a very small area for the weak faradic current and this was doubtful. There was no loss for light touch, after shaving, compasses were perfect, and there was no evidence of a line of change for a dragged pin point. 2. Pain referred to the arm and hand disappeared when the nerve was sutured. This observation had an important bearing in the light of the speaker's theory (*NEW YORK MEDICAL JOURNAL*, May 1, 1915) of the mechanism of neuralgic and all forms of paroxysmal pain caused by injury or disease of the nerves. The prime cause of all such pains was interference with normal conduction along the nerve paths. This resulted in a storing of potential in the cells of the sensory root ganglia, with consequent overflow, centrally spontaneous or otherwise, causing the paroxysms of pain. When the ganglion cells became exhausted of their stored potential, the pain disappeared until a reaccumulation of potential occurred. The anesthetic and manipulations incidental to the operation, suturing the nerves, thoroughly exhausted the sensory neurone bodies of their stored potential. This, and not the restoration of anatomical continuity, caused the immediate disappearance of the paroxysms after operation, and under such circumstances it took some time, usually days or weeks, before the potential had time to reaccumulate in the ganglion cells. Meanwhile protopathic sensibility had returned to some extent and this, which was itself in the main caused by storing of potential in the ganglion cells, prevented that continued storing of potential which ultimately manifested itself in pain paroxysms. Paroxysmal pains of neural origin always resulted from defects in conduction, especially in the pain and temperature paths as demonstrated. This held good for all the true neuralgias, and this hypothesis explained the results, good and bad, obtained by diathermy, nerve sections, electricity, etc., as well as the spontaneous cures. 3. The dissociation areas observed proved clearly that in the peripheral system separate and distinct sets of fibres conducted impulses for, *a*, light touch with possibly a separate set for compasses; *b*, prick, and, *c*, for each of the various forms of heat and cold, although the speaker had as yet only seen one or two instances in which epicritic sensibility for cold was apparently preserved where sensibility for ice was lost. 4. The irregular mode of regeneration with the ap-

portion of several areas of returned sensibility, with consequent indentations in the boundary of lost sensibility, made them ask the question. How much of this was due to the procedure employed at operation, and how much to the peculiarities, overlapping, of the nerve supply of the region?

Head, after experimental section of the radial nerve at the wrist and both branches of the external cutaneous, in his own arm, found an area of dissociated sensibility. His area was in the region of the tabatière, and on the dorsal aspect of the wrist. The question arose, Was the external cutaneous injured in their case at the time of plating the bone, and if so, were the areas of dissociation existent from the time of operation, and not the result of regeneration? Experiments seemed to indicate that these islands were the results of regeneration, possibly in areas supplied by the external cutaneous nerve that had been injured but not severed. But with this they had the unusual return of epicritic sensibility for light touch before the return of that for prick and for heat and cold. Head's area would be relevant here but for the fact that there were found other areas in their case—those of loss for prick and for gross heat and cold. The conclusion was that the irregular form of regeneration was due in part to the form of neuroplasty, and partly to injury without severance of the external cutaneous nerve, and partly to the peculiarity, overlapping, of the nerve supply of the areas affected. Even this guess left much to be desired, and a fruitful field invited further research into the normal mode of regeneration in nerves.

**Excision of Brachial Portion of Ulnar Nerve for Multiple Neurofibromata.**—Dr. R. H. M. DAWBARN and Dr. JOSEPH BYRNE also made this presentation. The patient, a young German, aged twenty-six years, cook, single, had no venereal history nor trauma. Apparently there spontaneously developed, beginning six years ago, a long swelling over the region of the ulnar nerve, extending from high in the axilla to a point well below the elbow; involving, in fact, the entire brachial portion of this nerve. This was accompanied by considerable and steadily increasing tenderness of the diseased area, for which condition he asked relief. The tumor mass was in places as large as the fist, and was translucent. The muscular power of the hand, where supplied by the ulnar nerve, while not wholly lost, was largely so, with obvious wasting of the interossei muscles and of the thenar and hypothenar eminences. Electrical reaction (faradic) was absent or greatly impaired compared with the normal side. The muscles involved left no doubt as to which nerve was involved in the neuroma. One curious anomaly was observed, namely, that even immediately after the excision was performed he was still able to extend his terminal phalanges fully. One would have expected extension of the first and second, and flexion of the last phalanges, in this condition, but Doctor Byrne thought it not unlikely that the gradual loss of control of the finger ends by the ulnar led to a gradual resumption of more complete control by the common extensors (posterior interosseous nerve). The condition must, Doctor Dawbarn thought, be very rare. In operating in this case, in order to do bloodless work and yet get

abundant room in the axilla, Wyeth's pins, back and front, were used with rubber cording above them. The tumor was followed to its ending in normal ulnar nerve tissue. This was in the highest part of the axilla, above and one inch distal to the internal condyle below. A second and separate incision, the scar of which could be seen, exposed the median nerve high in the forearm. Next the healthy lower end of the divided nerve was tucked through a slit made beneath the pronator and flexor group of muscles and so brought into easy apposition with a strand split off from the exposed median nerve. Sutures of the finest linen thread were used to unite the sheaths. The proximal end of the ulnar nerve, high in the armpit, was inserted into an opening in the sheaths of the median and sutured there. The long incision healed by primary union. It was united by the clip and strip method, using Michel's clips for twenty-four hours only; the adhesive strips were removed after ten days. The clips did not irritate as when left in for five days. The results of this method were so uniformly ideal that Doctor Dawbarn had ceased practically to suture wound edges.

Doctor BYRNE said that the interesting feature of this case was the hyperalgesia which followed the surgical trauma of the median nerve. True hyperalgesia of the peripheral nerves was a rare condition. It was formerly called causalgia and mentioned as such by Weir Mitchell in his classical *Injuries of the Nerves*. In this case there were, first week, sensory symptoms; second week, burning sensation at the roots of nails in thumb and index fingers; third week, whole median area on palm and fingers exhibited hyperalgesia, the boundaries of which were in contrast to median and ulnar areas. The hand was pink-lilac, glossy, tense. This lasted two weeks and then abated. This was due to injury of the median nerve. Doctor Byrne thought his theory of pain in tabes and gastric crises served to explain hyperalgesia and all paroxysmal pains of neural origin. This was oversteering of potential in the related cells of the sensory ganglia. This overloading of potential resulted in the spontaneous discharge of afferent impulses brainward, which caused paroxysms of pain referred to the areas of distribution of the related peripheral fibres. The anesthesia and manipulation incidental to the operation in this case discharged the stored potential in the sensory ganglion cells, and before it had time to reaccumulate, conductivity had been reestablished in the median nerve.

Doctor DAWBARN presented as his third case, an account of a thigh amputation, low down, in a middle aged man, the operation having been made necessary by severe trauma. The surgeon made a common blunder. He did not shorten the sciatic nerve at the time of amputation, and the patient could not bear the pressure of the artificial limb. Whenever he attempted to walk, he had violent spasms in the thigh stump. After five years he came for relief, and Doctor Dawbarn suspected a neuroma. He drew out the terminal five inches of the sciatic nerve. It was very large and vascular. The irritation of the neuroma had led to hypertrophic changes. The lesson to be drawn was that in every amputation there should be a shortening of several

inches, of the pain bearing nerves, for example, in a middle leg amputation, the anterior and posterior tibial and internal and external saphenous and musculocutaneous should be shortened. Formerly he had doubted whether it was wise to shorten the nerve, because of the possible danger of atrophy of the trophic nerves of the skin, but he had found this did not occur. The bloodvessels had a very rich nerve supply, both sensory and trophic, and this was carried by them to the skin. Thus the trophic supply was not cut off from the skin. This should be emphasized by surgical teachers.

Doctor BYRNE recalled that Weir Mitchell had stated that the nerves should always be shortened. After injury nerve degeneration passed inward as well as outward. Several facts lent support to the theory of the storing of potential in the sensory ganglion cells, but the actual proof of the spontaneous passage of impulses inward, awaited future workers.

**Herpes zoster oticus, with Facial Palsy and Acoustic Symptoms.**—Dr. NORMAN SHARPE presented an Italian carpenter, forty-two years of age. The previous history was negative, except for excessive beer drinking. The present illness occurred in the early part of February, with an onset of severe pain in right ear, headaches, dizziness, tendency to stagger, and diplopia. After a week of these symptoms, he noticed small pimples and facial palsy on the right side, and with the palsy and eruption came lessening of the headache and pain and diplopia disappeared. Examination at this time at the New York Eye and Ear Hospital, showed loss of taste sense on the right half of tongue, small red spots on the right side of mouth and right pillars of the fauces. Three weeks after onset, the pain disappeared and the headaches were only occasional and very slight. He came to the Neurological Institute one month after because of the facial palsy. Several small recent scars were found in the concha of the right ear, and there was right facial palsy, lateral nystagmus, and the right corneal reflex was diminished. There was slight hypalgesia round the concha of the right ear and almost complete loss of hearing on that side. The urine was normal, the Wassermann negative for blood and cerebrospinal fluid, the globulin was negative, and there were sixty-two cells. Doctor Dench found both tympanic membranes thickened and depressed. Two months after onset, taste had partially returned, palsy was still evident, but nystagmus had disappeared. Hypalgesia and hypalgesia had disappeared. The superficial and deep reflexes were normal from the first. The patient had one of the class of cases, described by Hunt, of herpes zoster, attacking the sensory ganglia of the cephalic extremity. He emphasized the fact that in zoster, though one ganglion was primarily involved, the adjacent ganglia did not entirely escape. This should be borne in mind in order to understand multiple nerve complications. In placing the lesion in this case, the site of the eruption was in the distribution of the seventh, ninth, and tenth nerves. The tenth nerve could be eliminated because of absence of nausea and vomiting and by the fact that there was no eruption on the mastoid and posteromesial surface of the auricle. Other symptoms pointed to the geniculate of the

seventh, as loss of taste and facial palsy. Loss of hearing pointed to involvement of the auditory ganglia or of the eighth nerve. This occurred by extension from the inflamed geniculate ganglion. The involvement was not entire. There was also slight involvement of the glossopharyngeal nerve; and diminished corneal reflex pointed to involvement of the Gasserian ganglion. The case was one of herpetic zoster attacking the geniculate ganglion of the facial nerve, with extension to the auditory nerve and slight involvement of the glossopharyngeal ganglia and the Gasserian ganglion of the fifth nerve.

(To be continued)

## Book Reviews.

[We publish full lists of books received, but we do not assume any obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*Microbes and Men.* Tomorrow's Topics Series. By ROBERT T. MORRIS, M.D. New York: Doubleday, Page & Co., 1915. Pp. xi-539.

With unusual daring, Doctor Morris has issued three books of essays simultaneously, each book being intended for a different class of readers. This volume is intended for the educated physician, as one might guess from the title, and, to plunge in *medias res*, we are glad to be able conscientiously to commend it to the person referred to. It is gratifying to note of late the output of purely literary work from the pens of physicians, but this is something distinctly superior and represents the flowering—not the double flowering, we hope—of a thoughtful and productive mind. This figure of the double flower is a favorite one with the doctor and he recurs to it more than once in comparing genius to a plant which in producing a beautiful freak, demonstrates thereby that its reproductive power is gone. We wish that the chapters were not so long and that side heads had been used. In reading books of this kind, filled with luxuriant blooms of fancy, the mind likes to rest occasionally and not to be pushed constantly on, no matter how clever and attractive the matter. The kindly author would not begrudge our doing a little induced thinking of our own, and he can indulge us by a few directions to the printer of the next edition—for a next edition we are sure there will be, and other editions after that.

Doctor Morris has taken the crass materialism which makes so acceptable and workable a basis for scientific reasoning and built thereupon a philosophic structure that seems to do away with free will altogether. To the microbes go the credit for the best productions of the mind as well as the blame for our most objectionable characteristics. On the colon bacillus, for example, lies the responsibility for ill temper; in fact the doctor calls the household where nagging is constant, a "colonial family," and he lays stress on the characteristic that keeps up the nagging until the angry response hoped for is elicited. On the other hand, to tuberculosis and other intoxications are attributed the poetical effusions of Keats, Shelley, and similar writers, whose inspiration was once upon a time credited to heaven. Poe's style comes from alcoholic exhaustion, parental and personal. This is all very well, but we all have the microbes, while few of us write like Keats or Poe. There must be another element in such people. Doctor Morris would have it that nations are unconscious of the real reasons for going to war; apparently we are quite wrong in attributing war to personal ambitions or jealousies. Under the heading of Tomorrow's Topics, the author indulges to an unusual degree in prophecy; and here, probably, he will elicit even more contradiction than elsewhere in a book which is likely to stir up dissension rather than agreement. This is far from being a book over which the reader will nod approvingly with the conviction that its thoughts have often been his own; a writer could hardly be more out of touch with popular ideas. Very



to be done in its isolation. We could go on for hours on this subject matter from the volume but space forbids. It is certainly in these few words in which we have given a just idea of the author's trend of thought. We have found the book most entertaining as well as stimulating, and we believe that those who disagree, will be obliged to write a volume equally large in which to combat successfully its heresies—if any.

**Textbook of Practical Therapeutics for Students and Practitioners.** By HOBART AMORY HARE, B.Sc., M.D., Professor of Therapeutics, Materia Medica, and Diagnosis in the Jefferson Medical College of Philadelphia; Physician to the Jefferson Medical College Hospital; One Time Clinical Professor of Diseases of Children in the University of Pennsylvania; Author of A Textbook of Practical Therapeutics, and Diagnosis in the Office and at the Bedside, Third Edition, Revised and Enlarged. Illustrated with 142 Engravings and 16 Colored Plates and Monochrome. Philadelphia and London, 1915. Pp. xviii+709.

One naturally expects a good work on the practice of medicine from a therapist, and it is no surprise to find a third edition ready of the excellent textbook by Doctor Hare. We are of those who can sympathize with the author in his struggle to keep abreast of the advances in etiology, pathology, symptomatology, and treatment, and we too, feel his optimism based on the increasing army of investigators. As was to be expected, the department of treatment is ably and completely handled throughout, which makes the work attractive and useful to the student and general practitioner.

**The Practical Medicine Series for 1915.** Comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Under the General Editorial Charge of CHARLES L. MIX, A.M., M.D., Professor of Physical Diagnosis in the Northwestern University Medical School. Volume I, *General Medicine*. Edited by FRANK BILLINGS, M.S., M.D., Dean of the Medical Faculty of Rush Medical College, Chicago, and J. H. SALISBURY, A.M., M.D., Professor of Medicine, Illinois Post-Graduate Medical School. Volume II: *General Surgery*. Edited by JOHN B. MURPHY, A.M., M.D., LL.D., F.R.C.S., England (Hon.), F.A.C.S., Professor of Surgery, Northwestern University Medical School, etc. Chicago: The Year Book Publishers, 201.

The names of Frank Billings and J. H. Salisbury and of John B. Murphy as editors of the first two volumes of the Practical Medicine Series for 1915 are sufficient guarantee of their excellence. In volume I the opening articles on anaphylaxis and the anaphylactogenic activity of vegetable proteins are important, particularly when taken in connection with recent work done in arteriosclerosis and the treatment of cancer. It is significant that tuberculosis takes up one quarter of the first volume. After an introduction and remarks on anesthesia, analgesia, operative technic, radiotherapy, and wound healing, the volume on surgery is divided according to the various regions operated in. Both volumes are illustrated and are worthy additions to this excellent and useful series.

**Notes on Dental Metallurgy.** For the Use of Dental Students and Practitioners. By W. BRUCE HEPBURN, I.D.S. (Glasgow), Lecturer on Dental Metallurgy and Visiting Dental Surgeon in the Glasgow (Incorporated) Dental Hospital and School, etc. Second Edition. New York: William Wood & Co., 1915. Pp. ix+252. (Price, \$2.50.)

Hepburn has brought up to date this second edition of his book by having had rewritten the chapters on alloys and dental amalgams; in a condensed and concise form it gives the essential information regarding those metals and their alloys as used in dentistry. It has chapters on dental amalgams, hardening, annealing and tempering of metals, furnaces and crucibles, pyrometry, and a most valuable chapter on the structural and other changes arising in connection with metals used in the mouth. This is an acceptable book for students preparing for examinations and for the general practitioner who wishes to refresh his memory in regard to the composition of the latest alloys and

## Interclinical Notes.

Training for Blind Soldiers is an article by James H. Hare in *Leslie's* for September 23, 1915, that will interest the physician. It is handsomely illustrated and shows how the blind can earn a living in quite unexpected ways, viz., by poultry keeping, writing shorthand as well as longhand by the ingenious machines devised for that purpose, massage, shoe repairing, mat making, gardening, and even carpentry. The editor continues his interesting account of a trip to Alaska.

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According to the *Survey* for September 25, 1915, Doctor Crile believes the whole Belgian nation to be suffering from shock similar to that experienced by surgical patients after operation. Unfortunately it is not possible to create anoci-association in a nation by *ante bellum* inoculations of scopolamine-morphine, although we think there is a national anesthesia or intoxication during war, which leads to acts and allows acts that would be considered criminal or degenerate in times of peace.

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The *Survey* for September 25th gives considerable space to a description of the extraordinary scene at the trial of William Sanger for giving away a single copy of *Family Limitation*, the pamphlet on birth control written by his wife. Now that Anthony Comstock, the main agent in trials of the kind, has left us, it will be interesting to note if circumstances bring forth immediately a similar type of character. There was a remarkable analysis, some months ago, in *Paris medical* of the mentality of a French priest who embarked on a career like the late Mr. Comstock's and gradually came to misunderstand altogether the nature of the motives which actuated his crusades.

"My nature is subdued

To what it works in, like the dyer's hand;  
Pity me then."

There is no doubt that Comstock did valuable work in protecting children from indecent pictures and pamphlets. The amount of this sort of thing sold on the streets when he began his work is almost incredible and constituted a blot on the name of the city.

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Ruth Comfort Mitchell's verses, *The Night Court*, in the September *Century*, are something unusually fine and strong; the old phrase, magazine verse, as a slur on generalization, will have to go. The *Night Court* pierces the heart, and does not make the mistake of blaming "My lords and gentlemen," as would have been done in the days of Dickens.

## Meetings of Local Medical Societies.

MONDAY, October 4th.—Clinical Society of New York: Throat, Nose, and Lung Hospital; German Medical Society of the City of New York; Utica Medical Library Association (annual); Niagara Falls Academy of Medicine; Brooklyn Hospital Club; Hornell Medical and Surgical Association; Clinical Society of the New York Polyclinic Medical School and Hospital; West Side Physicians Economic League.

TUESDAY, October 5th.—New York Academy of Medicine (Section in Dermatology); New York Neurological Society; Clinical Society of the West Side German Dispensary and School for Clinical Medicine; Broome County Medical Society (annual); Medical Society of the County of Yates; Medical Society of the County of Ulster; Medical Society of the County of Orleans (annual); Medical Society of the County of Orange; Medical Society of the County of Cattaraugus.

WEDNESDAY, October 6th.—New York Urological Society; Brooklyn Society for Neurology; Society of Alumni of Bellevue Hospital; Harlem Medical Association; Bronx Medical Association; Elmira Academy of Medicine; Schenectady Academy of Medicine.

THURSDAY, October 7th.—New York Academy of Medicine (stated meeting); Brooklyn Surgical Society; Practitioners' Club, Buffalo; Geneva Medical Society; Glens Falls Medical and Surgical Society.

**FRIEDMAN, Oskar M.**, New York Academy of Medicine (Section in Otolaryngology); Society of Externs of the German Hospital in Brooklyn; Flatbush Medical Society, Brooklyn; Eastern Medical Society of the City of New York; Society of Alumni of St. Luke's Hospital.

## Official News.

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending September 25, 1915.*

**Carrington, P. M.**, Surgeon. Granted twelve days' leave of absence from September 18, 1915. **Frost, W. H.**, Passed Assistant Surgeon. Granted fourteen days' leave of absence from September 11, 1915. **Neill, M. H.**, Assistant Surgeon. Directed to proceed to Baltimore, Md., for conference with the health department relative to the diagnosis of a suspected case of typhus fever. **Kerr, J. W.**, Assistant Surgeon General; **Rucker, W. C.**, Assistant Surgeon General, and **Stimpson, W. G.**, Assistant Surgeon General. Detailed to represent the Service at the annual meeting of the Association of Military Surgeons of the United States at Washington, D. C., September 13-15, 1915. **Watkins, J. A.**, Assistant Surgeon. Directed to report at the Bureau, Monday, September 27, 1915, for examination to determine his fitness for promotion. **Wayson, N. E.**, Assistant Surgeon. Granted fourteen days' leave of absence en route to Washington, D. C. **Williams, L. L.**, Surgeon. Relieved on or about October 15, 1915, at the Ellis Island Immigration Station, and ordered to take charge of the Marine Hospital at San Francisco, Cal.

#### Boards Convened.

Board of Medical Officers convened to meet at Stapleton, N. Y., at the call of the chairman, to make a physical examination of an officer in the Public Health Service. Detail for the board: Senior Surgeon George W. Stoner, chairman; Surgeon L. L. Williams, member; Surgeon C. H. Lavinder, recorder.

Board of Medical Officers convened to meet at Manila, P. I., for the examination of Assistant Surgeon R. H. Heterick for promotion. Detail for the board: Surgeon John D. Long, chairman.

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending September 22, 1915.*

**Anderson, John F.**, Surgeon. Granted three months and twenty-two days' leave of absence from September 22, 1915. **Ashford, F. A.**, Passed Assistant Surgeon. Granted three days' leave of absence on account of sickness from September 23, 1915. **Carmelia, F. A.**, Assistant Surgeon. Relieved from duty in connection with plague suppressive measures at New Orleans, La., and ordered to report at the Hygienic Laboratory, Washington, D. C. **Carmichael, D. A.**, Senior Surgeon. Granted two months and ten days' leave of absence from September 15, 1915, and placed on waiting orders beginning November 25, 1915. **Cobb, J. O.**, Surgeon. Redetailed for duty at the Marine Hospital, Chicago, Ill., effective September 20, 1915. **Collins, G. L.**, Passed Assistant Surgeon. Detailed to attend the ninth annual convention of the Illuminating Engineering Society at Washington, D. C. **Foster, A. D.**, Surgeon. Granted seven days' leave of absence from September 28, 1915. **Foster, M. H.**, Surgeon. Relieved from duty at Ellis Island, N. Y., and ordered to report to the medical officer in charge, Marine Hospital, Stapleton, N. Y.; also to deliver first aid lectures in cooperation with the American Red Cross to seamen of the merchant marine, New York city. **Freeman, A. W.**, Epidemiologist. Detailed to attend the meeting of the Missouri Valley Public Health Association at Kansas City, Mo., September 28-29, 1915. **Grimm, R. M.**, Passed Assistant Surgeon. Granted one month's leave of absence from October 11, 1915. **Grubbs, S. B.**, Surgeon. Detailed to attend the meeting of the American Social Hygiene Association at Boston, Mass., October 8, 1915. **Herring, R. A.**,

Passed Assistant Surgeon. Reported to duty at the Marine Hospital, Louisville, Ky. **Kalloch, P. C.**, Senior Surgeon. Granted two days' leave of absence from September 20, 1915, under paragraph 193, Service Regulations. **Mathewson, H. S.**, Surgeon. Granted fifteen days' leave of absence on account of sickness from September 16, 1915. **Phelps, E. B.**, Professor. Directed to inspect the work of the Service in connection with investigations of industrial hygiene in New York city. **Schereschewsky, J. W.**, Surgeon. Detailed to attend the annual convention of the Illuminating Engineering Society at Washington, D. C., September 20-23, 1915. **Thompson, W. R. P.**, Acting Assistant Surgeon. Granted one day's leave of absence, September 18, 1915.

### United States Army Intelligence:

*Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the week ending September 25, 1915.*

**Boyer, Perry L.**, Major, Medical Corps. Upon the demobilization of the Second Division, will proceed to Harlingen, Texas, and report to the commanding officer at that place for temporary duty to command Field Hospital No. 5. **Bryan, Ray W.**, Captain, Medical Corps. Relieved from duty at Douglas, Ariz., and from further duty at Fort Mackenzie, Wyoming, and will proceed to San Diego, Cal., and report in person to the commanding officer of the Signal Corps, Aviation School, at that place, for duty. **Burcham, Thomas A.**, First Lieutenant, Medical Reserve Corps. Relieved from duty at Fort Des Moines, Iowa, and ordered to proceed to his home, and upon arrival there will report by telegraph to the adjutant general of the army; also relieved from active duty in the Medical Reserve Corps, to take effect upon the expiration of the leave of absence granted for three months and one day, to take effect upon arrival at his home. **Corbusier, Harold D.**, First Lieutenant, Medical Reserve Corps. Assignment to active duty at Plattsburg Barracks, New York, from August 9, 1915, until the termination of the Camp of Instruction for Regular Troops at that post, under verbal orders of the commanding general, Eastern Department, is confirmed and approved; upon the termination of the camp Lieutenant Corbusier will return to his home, and upon arrival there stand relieved from active duty in the Medical Reserve Corps. **Culler, Robert M.**, Captain, Medical Corps. Relieved from duty at Fort Robinson, Nebraska, to take effect at such time as will enable him to comply with this order, and will proceed at the proper time to Hot Springs, Ark., and report to the commanding officer of the Army and Navy Hospital, for duty on or before October 1, 1915, relieving Captain Howard H. Bailey, who upon being thus relieved will proceed to Jacksonville, Fla., and report in person to the executive officer of the National Matches for temporary duty during the matches. **Edwards, Daniel B.**, First Lieutenant, Medical Reserve Corps. Ordered to active duty and will report in person to the commanding officer, Fort Screven, Georgia, for duty during the absence of Captain Ernest R. Gentry, Medical Corps; upon Captain Gentry's return Lieutenant Edwards will return to his home. **Fuller, Leigh S.**, Major, Medical Corps. The leave of absence heretofore granted is extended twenty-one days. **Gentry, Ernest R.**, Captain, Medical Corps. Ordered to proceed at the proper time to Jacksonville, Fla., and report to the executive officer of the National Matches for temporary duty during the matches; at expiration of this duty will return to his proper station. **Houghton, Harris A.**, First Lieutenant, Medical Reserve Corps. Ordered to active duty in the service of the United States on account of an existing emergency, and will report in person to the commanding officer, Fort Totten, New York, for duty until the arrival of another medical officer at that fort, when he will return to his home and stand relieved from active duty in the Medical Reserve Corps. **Koerper, Conrad E.**, Major, Medical Corps. Having reported in Washington, D. C., in compliance with orders heretofore issued, ordered to proceed to Philadelphia, Pa., and take station at that place for duty as inspector-instructor of the Second Sanitary District, comprising the States of Delaware, Maryland, New Jersey, Pennsylvania, Virginia, and the District of Columbia, reporting his arrival at Philadelphia, by letter to

the chief of the Division of Militia Affairs. **McKinney**, G. L., Captain, Medical Corps. Granted an extension of fifteen days to one month's leave of absence granted him. **Metcalfe**, Albert W., Jr., First Lieutenant, Medical Reserve Corps. Ordered to active duty, to take effect September 15, 1915, on account of an existing emergency, and will repair to Washington, D. C., and report in person to the commandant of the Army Medical School for duty. **Riley**, Charles W., First Lieutenant, Medical Reserve Corps. Relieved from duty in the Philippines Department, to take effect on or about October 15, 1915, and will then repair to Washington, D. C., and report in person to the commandant of the

Army Medical School, taking the course of instruction at that school. **Schule**, Paul A., First Lieutenant, Medical Reserve Corps. Ordered to active duty, to take effect September 25, 1915, on account of an existing emergency, and will repair to Washington, D. C., and report in person to the commandant of the Army Medical School for duty. **Schurmeier**, Harry L., First Lieutenant, Medical Reserve Corps. Relieved from duty at the Signal Corps Aviation School, San Diego, Cal., and will proceed without delay to Washington, D. C., and report in person to the commandant, Army Medical School, for duty. **Siler**, Joseph F., Captain, Medical Corps. Relieved from duty in New York, N. Y., and will then repair to Washington, D. C., and report to the commandant of the Army Medical School for the purpose of taking a special course of instruction at that school. **Stuckey**, H. W., First Lieutenant, Medical Reserve Corps. Granted leave of absence for ten days, effective on being relieved from duty at Fort Rosecrans, California. **Worthington**, George B., First Lieutenant, Medical Reserve Corps. Ordered to active duty in the service of the United States on account of an existing emergency, and will report in person to the commanding officer, Signal Corps, Aviation School, San Diego, Cal., for duty until arrival at that place of Captain Ray W. Bryan, Medical Corps, when he will stand relieved from active duty in the Medical Reserve Corps.

Each of the following named officers of the Medical Corps is relieved from duty at the station indicated after his name and will repair to Washington, D. C., at the proper time and report in person to the commandant of the Army Medical School, on or before September 30, 1915, for the purpose of taking a special course of instruction at that school: Captain Lucius L. Hopwood, Ambulance Company No. 2, Presidio of San Francisco, Cal.; Captain Lee R. Dunbar, Fort Leavenworth, Kansas; Captain William S. Shields, Galveston, Texas; Captain Craig R. Snyder, Columbus Barracks, Ohio, and Captain Charles L. Foster, Jefferson Barracks, Missouri.

Each of the following named officers of the Medical Reserve Corps is relieved from duty at the station specified after his name and will repair to Washington, D. C., at once and report in person to the commandant, Army Medical School, for duty: First Lieutenant Arden Freer, Madison Barracks, Ohio; First Lieutenant John S. Gaul, Fort Slocum, New York; First Lieutenant Charles G. Hutter, Columbus Barracks, Washington; First Lieutenant Harvard C. Moore, Vancouver Barracks, Washington, and First Lieutenant Edwin B. Maynard, Fort Benjamin Harrison, Indiana.

#### United States Navy Intelligence:

*Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Navy for the month ending September 15, 1915.*

**Cole**, H. W., Passed Assistant Surgeon. Detached from the *Colorado* and ordered to the *San Diego*. **Grove**, W. B., Surgeon. Detached from the *Arkansas* and ordered home to await orders. **Pryor**, J. C., Surgeon. Detached from the *North Dakota* and ordered to the *Arkansas*. **Rossiter**, P. S., Passed Assistant Surgeon. Detached from the *San Diego* and ordered to the *Colorado*. **Wood**, C. I., Assistant Surgeon. Detached from the *Colorado* and ordered to the *San Diego*.

The following assistant surgeons in the Medical Reserve Corps have been ordered to the Naval Medical School, Washington, D. C., for a course of instruction: R. H. Lhamon, G. B. Shields, G. B. Taylor, F. C. A. Gibbs, John Harper, R. H. Miller, G. C. Wilson, R. J.

Trout, W. A. Vogelsang, H. C. Weber, G. W. Taylor, W. J. Rogers, V. H. Carson, E. M. Gehdreau, F. M. Harrison, J. P. Owen.

## Births, Marriages, and Deaths.

### Born.

**Levin**.—In New York, on Tuesday, September 14th, to Dr. and Mrs. Oscar L. Levin, a daughter.

### Married.

**Bliss—Robinson**.—In Bangor, Me., on Wednesday, September 8th, Dr. Raymond Van N. Bliss and Miss Julia A. Robinson. **Christian—Snider**.—In Fort Scott, Kansas, on Thursday, September 16th, Dr. R. O. Christian, of Iola, and Miss Alice Snider. **Curtis—Nason**.—In Boxford, Mass., on Monday, September 20th, Dr. Charles L. Curtis, of Salem, and Miss Josephine Nason. **Johnson—Stoddard**.—In Dedham, Mass., on Tuesday, September 14th, Dr. Alfred E. Johnson, Jr., of Greenfield, and Miss Rosalie M. Stoddard. **Knapp—Johnston**.—In Clinton, Mass., on Wednesday, September 8th, Dr. Ralph H. Knapp, of Youngsville, Pa., and Miss Margaret Isabelle Johnston. **Schley—Van Campen**.—In Brooklyn, N. Y., on Monday, September 13th, Dr. Winfield Scott Schley and Miss Grace Marie Van Campen.

### Died.

**Alexander**.—In Paterson, N. J., on Friday, September 24th, Dr. Archibald F. Alexander, aged forty-one years. **Bemis**.—In Worcester, Mass., on Wednesday, September 22d, Dr. John Merrick Bemis, aged fifty-five years. **Bickford**.—In Fillmore, Utah, on Thursday, September 9th, Dr. Fred D. Bickford, aged fifty-five years. **Coleman**.—In Lexington, Ky., on Tuesday, September 14th, Dr. Benjamin L. Coleman, aged sixty-eight years. **Cornwell**.—In Riverhead, N. Y., on Thursday, September 16th, Dr. Robert G. Cornwell, aged sixty-two years. **Coulter**.—In Ogden, Utah, on Sunday, September 12th, Dr. Chester E. Coulter, aged fifty-nine years. **Garneau**.—In Fall River, Mass., on Monday, September 20th, Dr. Alphonse J. P. Garneau, aged forty-seven years. **Grier**.—In Los Angeles, Cal., on Friday, September 10th, Dr. Joseph H. Grier, aged eighty years. **Hawley**.—In Charlotte, N. C., on Tuesday, September 14th, Dr. F. O. Hawley, aged seventy-nine years. **Honsinger**.—In West Chazy, N. Y., on Tuesday, September 21st, Dr. Willis T. Honsinger. **Hunt**.—In Detroit, Mich., on Thursday, September 16th, Dr. David Hunt, of Boston, Mass., aged seventy years. **Jova**.—In Newburgh, N. Y., on Monday, September 20th, Dr. Andreas V. Jova, aged fifty-six years. **Kortenbein**.—In Oconomowoc, Wis., on Tuesday, September 14th, Dr. Henry F. Kortenbein, aged forty-six years. **Lamont**.—In Sandy Hook, N. J., on Sunday, September 19th, Dr. George F. M. Lamont, of Newark, N. J., aged forty-two years. **McDougall**.—In New York, on Sunday, September 19th, Dr. Colin McDougall, aged seventy-two years. **McHenry**.—In Windber, Pa., on Tuesday, September 14th, Dr. R. S. McHenry, aged forty-six years. **McKinley**.—In Columbus, Ohio, on Friday, September 17th, Dr. James Bates McKinley, of Harrisburg, Ohio, aged forty-nine years. **McLaughlin**.—In Kansas City, Mo., on Saturday, September 11th, Dr. Josiah C. McLaughlin, aged fifty-one years. **Parmenter**.—In Port Stanley, Ontario, on Thursday, September 16th, Dr. William L. Parmenter, formerly of Buffalo, N. Y., aged eighty-one years. **Picotte**.—In Walthill, Neb., on Saturday, September 18th, Dr. Susan La Flesch Picotte, aged forty-nine years. **Pierce**.—In Chesterfield, Ind., on Saturday, September 18th, Dr. Silas G. Pierce, aged seventy-seven years. **Prince**.—In St. Elmo, Tenn., on Thursday, September 16th, Dr. G. T. Prince, aged fifty years. **Schell**.—In Terre Haute, Ind., on Monday, September 13th, Dr. Walker Schell, aged fifty-eight years. **Sivert**.—In Georgetown, W. Va., on Monday, September 13th, Dr. John L. Sivert, aged thirty-three years. **Skinner**.—In Hempstead, L. I., on Tuesday, September 21st, Dr. Erasmus D. Skinner, aged seventy-seven years. **Spear**.—In Fargo, N. Dak., on Thursday, September 2d, Dr. Edgar D. Spear, aged fifty-four years. **Wade**.—In Millville, N. J., on Tuesday, September 14th, Dr. John W. Wade, aged sixty years.



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### Original Communications.

#### THE GONORRHEA COMPLEMENT FIXATION TEST.

##### *A Clinical Study of Comparative Results.*

By ALEXANDER A. UHLE, M. D.,

Philadelphia,

AND WILLIAM H. MACKINNEY, M. D.,

Philadelphia.

Prompted by Wassermann and his coworkers, who applied the principles of complement fixation to the serum diagnosis of syphilis, Müller and Oppenheim, in 1906, were the first to extend the principles of this test to the study of gonococcus infections. The next most important advance in this method of diagnosis was made by Schwartz and McNeal, who emphasized the necessity of using a polyvalent antigen to secure more accurate results. Since then all contributors to this subject have accepted their conclusions as to the value of a polyvalent antigen, because of the well recognized difference in the morphological and biological characteristics of different strains of gonococci. This test is regarded as more specific for gonorrhea than is the Wassermann test for syphilis, as it is not influenced by the action of any drug, and has not been found consistently positive in any other disease. A negative reaction is regarded as of little clinical value, but a positive reaction is of great importance, as it signifies the presence of active foci of gonococcal infection. Such foci most frequently exist in the structures comprising the genital tract in man or woman. The gonorrhea complement fixation test is of the greatest value in determining the possible gonorrheal nature of inflammations of the joints, tendons, bursa, or iris.

A summary of the opinion of all the writers up to the present time concerning the value of this test is given in the following:

1. A positive reaction is diagnostic of active foci of gonococci.
2. A negative reaction does not exclude gonorrhea.
3. When the disease is limited to the anterior urethra, a positive reaction is seldom obtained.
4. A positive reaction in urethral gonorrhea is not to be expected until after the fourth week of the disease.
5. A positive reaction continues from two to eight weeks after a clinical cure.
6. A positive reaction is obtained in from thirty to eighty per cent. of all cases of gonorrhea.
7. A positive reaction is obtained in from thirty-three to 100 per cent. of all cases of chronic gonorrheal prostatitis.
8. In acute arthritis and epididymitis the reaction is from eighty to 100 per cent. positive.
9. In iritis a positive reaction is obtained in 100 per cent. of all cases.
10. Stricture of the urethra gives a positive reaction in sixty-six per cent.
11. The reaction is positive in 100 per cent. for at least one year, after the administration of vaccines.
12. In the female the test is positive in sixty-six to seventy per cent., but is usually negative when the disease is limited to parts below the cervix.
13. Patients clinically cured show a positive reaction in from ten to twenty per cent.
14. The complement fixation test is a more specific test for gonorrhea, than is the Wassermann for syphilis.
15. On account of its specificity, no patient can be considered cured who has a positive reaction.
16. No patient who has a positive reaction should be permitted to marry.

Notwithstanding the unanimity of favorable opinion of this test, it has received comparatively little general recognition, and the paucity of contributions to the subject is surprising. On the other hand, the literature upon a similar test, the Wassermann reaction, or complement fixation test for the diagnosis of syphilis, is voluminous, and the statistical reports are so favorable that many clinicians are satisfied to establish a diagnosis of syphilis upon this reaction alone.

It has been the experience of all clinicians who submit specimens of blood to different serologists, to receive conflicting reports upon the same individual blood, withdrawn at the same time. Our observations upon the discrepancies in Wassermann reports from a number of serologists upon specimens of blood from the same individual submitted simultaneously, will shortly appear. Prompted by the results of these observations, and the fact that we have had similar discrepancies in the gonorrhea complement fixation test, we have submitted the serums of a number of gonorrhea patients and control cases for comparative study.

We are firmly convinced that the tabulated percentages of positive and negative serological examinations, whether for gonorrhea or syphilis, agree more closely with the clinical expectancy when the tests are made by serologists who are familiar with the clinical history of the patients, than when they are made by serologists who know nothing about the patient. The value of a complement fixation test, for syphilis or gonorrhea, is best determined by comparing the results of different serologists, upon the serums of patients obtained at the same time under identical conditions. The percentage value of positive and negative findings of one serologist in a certain series of cases may show a striking similarity to the percentage value of another

serologist, yet positive and negative reports may be obtained in different cases of the series.

It is our intention in this communication to discuss only the practical value of this test, and not its theory or technic. We may say, however, that each serologist used a polyvalent antigen.

This paper is based upon the study of 155 gonorrhea complement fixation tests, in which the serums of 141 individuals were tested by each of four competent serologists, two of whom have contributed to the literature on this subject. The blood was withdrawn with a dry sterile needle from a vein in the forearm, collected in four sterile test tubes of five c. capacity each, and one tube was sent to each serologist. When more than one specimen of blood from the same individual, withdrawn at the same time, was submitted, different names were used.

Of the 141 patients, fifteen were normal controls who we believe never had gonorrhea; thirty-seven suffered from other diseases, and all denied ever having had gonorrhea, and presented no clinical evidences of infection; the remaining eighty-eight have or have had gonorrhea.

*Table I.* Of the fifteen series of tests upon normal people in the present group, reported by each of the four serologists, only one laboratory, B, reported negative in each case. The percentage of positive reports by the other three serologists varied from 6.6 to 13.3 per cent. In no case was there a positive reaction reported by more than one laboratory; while the percentage of positive reports from laboratories A and D agree, their positive findings were upon different cases, as were also the 13.3 per cent. of positives reported by laboratory C.

*Table II.* In the next group of thirty-seven patients, none of whom presented clinical evidences of gonorrhea, laboratory B again reported negative in each case, while the other three laboratories vary in their proportion of positive findings from 13.5 to 35.1 per cent. Of these thirty-seven patients positive reports were submitted by one or more of the laboratories in twenty-one cases; two laboratories reported positive reactions in eight cases and one laboratory in the remaining thirteen. Here it will be observed again that laboratories C and D closely agree in their results, yet the greater number of positive findings by each of these laboratories were upon different individuals.

*Table III.* This group represents tests upon patients, all of whom have had gonorrhea, but who at the time of this examination presented no clinical evidences of the disease and were regarded as cured. Of these patients, eighteen had been clinically cured for over five years, eight were cured from one to five years, and three were cured but a few months. Of the eighteen cases all laboratories agree in a negative report in eight; one laboratory reports a positive in four cases; two laboratories a positive in five cases, and three laboratories a positive in one case. Of the eight cases clinically cured from one to five years, all laboratories report negative in four; in three, one laboratory reports a positive, and in one case two laboratories report a positive. Of the three patients recently cured, there was in one case only a positive report, and this was given by two laboratories.

The gonorrhea cases, of which there were fifty-

nine, are subdivided as follows: Acute gonorrhea, chronic gonorrhea, gonorrhea with complications, and chronic gonorrhea treated with vaccines.

*Table IV.* Of the eleven patients with acute gonorrhea of less than four months' duration, all the laboratories agree in a negative report in three cases. One laboratory reports positive in four cases, two laboratories agree in a positive in three cases, and three laboratories agree in a positive in one case. The discrepancies in the proportion of positive findings from the different laboratories are considerable, the reports varying from 18.1 to 45.5 per cent.

*Table V.* Six of the group of thirty patients had uncomplicated chronic urethritis; twelve had chronic urethritis with a history of previous epididymitis, and twelve chronic gonorrheal prostatitis. A positive report was received: In ten cases from one laboratory, in seven cases from two laboratories, and in two cases from three laboratories. In the remaining eleven, all reports show negative findings.

*Table VI.* Of these patients with acute gonorrhea with complications, three had epididymitis, three arthritis, and one iritis. It is in this group that 100 per cent. positive results are to be expected. In two cases, both of epididymitis, uniform negative reports were submitted. In two cases there were one positive and three negative reports; in two other cases there were three positive and one negative reports, and in one case four positive reports. Of the total number of specimens submitted for examination this is the only one of which positive reports were received from each of the four laboratories. This patient had chronic gonorrhea with recurrent epididymitis of twenty-one years' duration; at the time when his blood was taken he had an acute exacerbation.

The highest proportion of positive results obtained by any one worker in this group is 51.1 per cent., which is considerably below the proportion reported by other observers.

*Table VII.* It has been maintained by a few observers that the test remains positive for a period of at least one year after cessation of vaccine therapy. Six of these patients had been treated with gonorrheal vaccines within five months prior to this study, and six had vaccines more than one year previously. In one case reports were received from only two of the laboratories, both reports being negative. In two cases, both of which had been treated within five months by gonorrheal vaccines, all the laboratories reported negative. In five cases one laboratory reported positive; in three cases two laboratories reported positive, and in one case three laboratories reported positive. The total proportion of positive reports varies from 9.9 to 58.3 per cent., this being the greatest variation in any one of the groups studied.

Owing to the marked discrepancies in the reports of the several serologists, two specimens of blood from each of fifteen patients were withdrawn at the same time under identical conditions, marked with different names, and submitted to each worker for examination. Laboratories A and B reported a positive and negative in one of the fifteen cases,

laboratory C had six conflicting reports in fifteen cases, and laboratory D was consistent throughout.

Of the 141 cases, excluding all anticomplementary reactions, there were 128 tests reported by each serologist; fifty-one or 39.9 per cent. agree, and seventy-seven or 60.1 per cent. disagree.

In summarizing the results of these tests, we find that only one laboratory reports a negative result in all nongonorrheal patients. Were we to consider the percentage results collectively, the highest in each of the tables above enumerated are considerably below the positive percentages reported by other observers. In only one of the 141 cases did all the laboratories agree in a positive report. The high percentage of positive findings in nongonorrheal cases, together with the inconsistency of reports of the same serologist upon the same blood, leads us to the conclusion that the gonorrhea complement fixation test as observed by us has not the practical significance ascribed to it by other observers.

We desire to thank Doctor Brown, Doctor Becker, Doctor Laird, and Doctor Thomas for their kind cooperation in this work, and Dr. W. H. Haines for his valued assistance in the preparation of this paper.

TABLE I.

Complement Fixation in Normal Individuals.

| No. of Tests. | Lab. | Neg. | Anti. | + | ++ | +++ | ++++ | Pos.           |
|---------------|------|------|-------|---|----|-----|------|----------------|
| 15            | A    | 12   | 2     | 0 | 1  | 0   | 0    | 6.6 per cent.  |
| 15            | B    | 15   | 0     | 0 | 0  | 0   | 0    | 0.0 per cent.  |
| 15            | C    | 13   | 0     | 2 | 0  | 0   | 0    | 13.3 per cent. |
| 15            | D    | 13   | 1     | 0 | 0  | 0   | 1    | 6.6 per cent.  |

TABLE II.

Complement Fixation in Known Nongonorrheal Affections.

| No. of Tests. | Lab. | Neg. | Anti. | +  | ++ | +++ | ++++ | Pos.           |
|---------------|------|------|-------|----|----|-----|------|----------------|
| 37            | A    | 34   | 0     | 2  | 1  | 1   | 1    | 13.5 per cent. |
| 37            | B    | 35   | 2     | 0  | 0  | 0   | 0    | 0.0 per cent.  |
| 37            | C    | 24   | 1     | 11 | 1  | 0   | 0    | 35.1 per cent. |
| 37            | D    | 25   | 0     | 3  | 3  | 5   | 1    | 31.4 per cent. |

TABLE III.

Complement Fixation in Gonorrhea Clinically Cured.

| No. of Tests. | Lab. | Neg. | Anti. | + | ++ | +++ | ++++ | Pos.           |
|---------------|------|------|-------|---|----|-----|------|----------------|
| 29            | A    | 22   | 2     | 1 | 2  | 1   | 1    | 21.0 per cent. |
| 29            | B    | 24   | 0     | 2 | 1  | 2   | 0    | 17.2 per cent. |
| 29            | C    | 20   | 2     | 7 | 0  | 0   | 0    | 31.0 per cent. |
| 29            | D    | 22   | 0     | 3 | 1  | 0   | 3    | 24.1 per cent. |

TABLE IV.

Complement Fixation in Acute Gonorrhea.

| No. of Tests. | Lab. | Neg. | Anti. | + | ++ | +++ | ++++ | Pos.            |
|---------------|------|------|-------|---|----|-----|------|-----------------|
| 11            | A    | 6    | 0     | 1 | 2  | 0   | 2    | 45.5 per cent.  |
| 11            | B    | 9    | 0     | 1 | 1  | 0   | 0    | 18.18 per cent. |
| 16            | C    | 8    | 0     | 2 | 0  | 0   | 0    | 20.0 per cent.  |
| 14            | D    | 7    | 0     | 1 | 0  | 3   | 0    | 35.7 per cent.  |

TABLE V.

Complement Fixation in Chronic Gonorrhea.

| No. of Tests. | Lab. | Neg. | Anti. | + | ++ | +++ | ++++ | Pos.           |
|---------------|------|------|-------|---|----|-----|------|----------------|
| 38            | A    | 10   | 0     | 2 | 1  | 4   | 4    | 36.6 per cent. |
| 31            | B    | 21   | 0     | 6 | 3  | 0   | 0    | 30.0 per cent. |
| 26            | C    | 26   | 0     | 3 | 0  | 0   | 0    | 10.3 per cent. |
| 30            | D    | 23   | 0     | 1 | 1  | 3   | 2    | 23.3 per cent. |

TABLE VI.

Complement Fixation in Gonorrhea with Acute Complications.

| No. of Tests. | Lab. | Neg. | Anti. | + | ++ | +++ | ++++ | Pos.           |
|---------------|------|------|-------|---|----|-----|------|----------------|
| 7             | A    | 4    | 0     | 0 | 1  | 0   | 2    | 42.8 per cent. |
| 7             | B    | 4    | 0     | 0 | 3  | 0   | 0    | 42.8 per cent. |
| 7             | C    | 3    | 0     | 4 | 0  | 0   | 0    | 57.1 per cent. |
| 7             | D    | 5    | 0     | 0 | 1  | 0   | 1    | 28.5 per cent. |

TABLE VII.

Complement Fixation in Gonorrhea Treated with Vaccines.

| No. of Tests. | Lab. | Neg. | Anti. | + | ++ | +++ | ++++ | Pos.           |
|---------------|------|------|-------|---|----|-----|------|----------------|
| 12            | A    | 5    | 0     | 3 | 2  | 0   | 2    | 58.3 per cent. |
| 11            | B    | 7    | 0     | 2 | 2  | 0   | 0    | 36.3 per cent. |
| 12            | C    | 10   | 0     | 2 | 0  | 0   | 0    | 16.6 per cent. |
| 11            | D    | 10   | 0     | 0 | 1  | 0   | 0    | 9.0 per cent.  |

TABLE VIII.

Complement Fixation in Testes of Gonorrheal Cases.

| No. of Tests. | Lab. | Neg. | Anti. | + | ++ | +++ | ++++ | Pos.           |
|---------------|------|------|-------|---|----|-----|------|----------------|
| 9             | A    | 34   | 0     | 0 | 0  | 0   | 0    | 0.0 per cent.  |
| 9             | B    | 41   | 0     | 0 | 0  | 0   | 0    | 0.0 per cent.  |
| 8             | C    | 47   | 0     | 0 | 0  | 0   | 0    | 18.9 per cent. |
| 9             | D    | 45   | 0     | 0 | 0  | 0   | 0    | 25.4 per cent. |

1701 CHESTNUT STREET.

## THE AUTOLYSIN TREATMENT FOR CANCER.

BY CURRAN POPE, M. D.,  
Louisville.

From my observation and study of the use of the Horowitz-Beebe extract, autolysin, in thirteen cases, during five or six weeks, I would epitomize or summarize the results as follows:

The injection, usually into the subcutaneous cellular tissue of the arm, is extremely painful for a period ranging from two to five minutes, and is followed by a dead, dull aching pain for approximately ten minutes. This can be quickly relieved by kneading and manipulation; sometimes local inflammatory changes take place, a local "caking," although no abscess formation occurs; it is best relieved by cold, especially an ice bag.

Reaction usually takes place within six hours and varies from malaise, depression, and chilly feelings to an actual chill, followed by a rise in temperature, in no sense proportional to the chill; that is to say, a mild chill may have higher temperature than a severe chill or vice versa. I have noticed but little influence on respiration or pulse; occasional increase of the latter in nervous and hysterical individuals. I have observed that the best results were seemingly obtained where the temperature remained under 101° F., and that the best average reaction fever was around 100° or 100.4° F. The reaction has been more difficult to secure in those cases that have a free surface discharge (skin) and rises higher in those who have "internal discharges" of purulent matter, such as from the rectum and pelvis. After a time, even under increasingly large doses, there seems to be acquired a certain resisting power to autolysin, perhaps an immunity, and there is very little discomfort, if any, from the injection, and hardly half a degree rise in temperature. In some cases (three), where no change had been noted, a severe local reaction in the arm seemed to be the index of immediate betterment. Patients in this section of the country describe the feelings of the reaction by the term "malarial."

The first change usually noted, has been in the discharge. The first few injections may increase the quantity, but usually after the fourth or fifth injection, there is a marked diminution and frequently a cessation. I have in a number (seven) observed that where we had to deal with an irritating mucopurulent, purulent, or sanguineopurulent discharge, this soon changed to semiclear or clear, thin, watery discharge, distinctly nonirritating in character and of small amount. This is so prompt and so noticeable, that nurses comment on its occurrence.

Of all the changes that take place under autolysin, the cessation of the odor is the most remarkable and



most noticeable. This usually follows a lessening and change in the discharge. In private homes and public hospital wards, the remedy has already been pronounced a godsend, even if it does nothing but relieve the terrible stench of carcinoma. The psychic effect of this upon the family and the patient is powerful. Its relief, in my opinion, is of value, in that the patient may with comfort and self-respect mingle with family and friends without the feeling that he is odious and undesirable. This feature of a return to the social circle is of great comfort, as well as pleasure to one who has been deprived of this happiness. In hospitals, it means the reception of cases that have been the opprobrium of medicine and the outcasts from hospitals in general.

Pain is more slowly impressed than either of the preceding. Relief is very noticeable, however. Even after a few injections, I have been able to decrease the various opiates and analgesics usually employed. Patients state that they will go for several hours without pains, then have a paroxysm, then a period of relief, with gradually lengthening periods of relief, until, in several cases, there has been complete cessation of pain, and in consequence, of pain medication. Of the value to the economy, of the better chances for upbuilding, little need be said for the cessation of narcotics. They, in themselves, where continually employed, are a burden and a source of denutrition. Some cases are slow to respond, but all so far observed, have had much less pain and in several instances, complete relief.

Cachexia has been very marked in all the cases treated. Its appearance is so well known that it is needless to describe it. The first change I have noticed in these cases, has been a whitening of the conjunctiva, a clearness of the eye, and a better expression. Next, the lips become redder and fuller, and then the skin begins to clear. The place where this "pinking" is first noticeable is the ear, best observed by transmitted light, finally spreading to the skin of the face, finger nails, and then the body generally. This, I believe, is the result of a combination of effects, lessened toxemia, fewer opiates, diminished pain, increased and new blood formation.

Appetite seems distinctly and directly increased by the remedy, doubtless reinforced by the blood regeneration and lessening odor and toxemia. Of ten patients observed for thirty days, six gained flesh, ranging from one to five pounds; two lost a pound, and five remained in *statu quo ante*.

The blood changes seem to vary, although there has been a marked increase in both red and white cells. I have observed the greatest increase of the lymphocytes and polymorphous varieties. The reds rise fairly well and some myelocytes are observed. Clinically the blood regeneration is more plainly shown and sometimes seems disproportionate to the laboratory findings.

Of the action upon the growth itself, I have noted that nodules and glands are the first to feel the effect. They seem to slowly diminish in size and where visible, lose their color and become white, finally disappearing. The raw and ulcerating surfaces heal very slowly, but the time of my observation is really too short to as yet form an opinion. That the major growth in a given case lessens, has

been confirmed by physicians and surgeons who have placed cases under my care.

While there are unquestionably protein reactions and changes taking place, I find that my lack of knowledge of such reactions and an inexperience as yet with autolysin forbid my offering any hypothesis.

CASE I. Woman, aged forty-six years, married, with three children, all healthy, was in good health until 1910, at which time she noticed a small growth in the left breast, which was pronounced a scirrhus cancer. A radical operation for the removal of the entire breast was performed. In 1912 a recurrence took place from between the cartilages of the fourth and fifth ribs on the left side, and at this time, another radical operation was performed, including the subclavicular and axillary glands. This operation gave a respite until the winter of 1914, when cancer recurred. For six months, she suffered agonizing pain, while the nodular growths in the skin broke down until there was a lesion from the sternum to midway between the posterior axillary line and the spine. There had been a steady progression until an area, approximately eight by fourteen inches had become denuded, presenting a raw, angry, suppurating, and discharging surface, very painful, foul, and exceedingly septic. She was chairfast and bedfast, and never able to remain up long, on account of her weakness and the weight of the left arm, which was swollen to enormous proportions. Surrounding the area were masses of hard nodules, purplish blue in color. Physically she was in bad shape, toxic from head to foot, and markedly cachectic. Had recently lost thirty-five pounds of flesh. Her suffering was plainly written on her face. Her appetite was gone, her digestion weak, costive owing to odor, pain, and opiates. Had little sleep or none save under opium for some time past. Had been given six weeks to live.

Physical examination showed no marked metastases, but the general effect of long continued suffering. Her urine showed trace of albumin, a few hyaline casts, many phosphates, and reacted to the Walker-Klein test for sarcoma or carcinoma. Pupils, reflexes, intelligence, and general nervous functions negative. The administration of autolysin was begun with gradually increasing doses. Its influence after four injections was marked. The odor ceased, the discharge moderated, and pain lessened. There was in this hopeless, helpless case a slow but steady improvement, shown by a disappearance of many nodules, changing from purplish blue to pink, then to white, and finally disappearing. There was granulation and healing in the ulcer, and the arm was much less swollen. After six weeks the patient was rosy, her lips red, her skin clear, her eyes white, her expression cheerful. The cachexia departed and she was much stronger, so much so that she could take a ride, and had walked one block to the grocery where the scales showed a gain of three and one quarter pounds in two weeks. She gave every promise of continued gain.

CASE II (referred by Doctor Haines and Doctor Mills). Man, aged forty-five years, married, no children, teacher, worked on a farm until seventeen years ago, and then began his professional work. He was always robust, six feet tall, weighed 210 pounds, but had lost sixteen pounds recently. Was in unusual good health until May 1, 1915, when he sustained a severe rectal hemorrhage, accompanied by severe bearing down pain in the sacral region. He then began to have rectal hemorrhages, pain, and severe bloody diarrhea. A growth was found in the rectum and a clipping showed an adenocarcinoma. Later, upon physical examination, this growth was found to be of rocklike hardness, obstructing the rectal canal, and making instrumentation impossible. Examination caused extreme pain, hemorrhage, etc. Usually passed a moderate amount of mucus, foul smelling. An x-ray picture by Doctor Keith confirmed the manual and instrumental examination. The general, physical, neurological, and other examinations were negative. He was mildly cachectic, pale, gray, and somewhat easily exhausted.

After three injections of autolysin, the pain had practically ceased; after five, no hemorrhage or foul smelling mucus. After eight, the ulcerated spot, where the piece of tissue for examination had been removed, was healed. He has received twenty in-

jections. At present he is clear skinned, rosy, pink lipped, and strong. Doctor Haines is able to pass the usual sigmoidoscope without pain or hemorrhage, the growth is softer and disappearing, and his blood shows now hemoglobin 90 Fleischl; reds 5,000,000, whites greatly increased. He feels well and gives promise of a successful outcome.

CASE III (referred by Doctor Karraker; female surgical ward, colored, Louisville Public Hospital). Woman, aged thirty-nine years, cook, married, one son; former weight 164 pounds, now 132; loss, 32 pounds. Was always strong and healthy. Had smallpox, at twenty-five years, and pneumonia at twenty-seven. Had never been addicted to drugs or alcohol, but used morphine for pain. Had no appetite and suffered from fermentative disturbances of gastrointestinal tract, and marked constipation, worse from use of morphine. Her present trouble was of three years' standing. Began as a flooding, then later, flooding of a foul character, then bleeding with discharges of pus. Cachexia present, but not so plainly shown owing to her color. Was compelled to quit her occupation because of pain in lower abdomen and weakness. Passed large quantities of purulent, mucopurulent, and sanguineous discharge, very foul and offensive, really stinking. General examination was negative, save for the presence of a tender mass in the pelvis, easily palpable through the abdominal wall. The cervix was friable, enormously enlarged, as was the uterus, bled easily. The uterus was fixed, hard and tender; there was a nodular infiltration of the growth into the broad ligaments, the vaginal roof, and the vaginorectal septum. The removal of the examining finger was followed by a gush of pus of a sickening odor.

Three injections of autolysin absolutely removed all odor, and five changed the discharge to a watery character, clear or semiclear in appearance. Five weeks' treatment shows marked clinical improvement, a gain in strength, freedom from pain, no discharge, no pus, no odor nor stench. Interns, nurses, and all who came in contact with her, noticed the immediate change in her condition.

## INOPERABLE CANCER TREATED WITH AUTOLYSIN.

### *A Report of Cases.*

By EDWARD HUNTINGTON WILLIAMS, M. D.,  
Los Angeles.

This report is based on observation in twelve cases of inoperable cancer, all but two of which are still under treatment. Ordinarily one would not attempt to generalize from observation of so small a number of cases, but there are certain conclusions that force themselves upon the attention, concerning which I wish to comment briefly in connection with the presentation of specific reports on the cases themselves which follow.

I would first call attention to the diverse types and varied sites of the neoplasms under observation. The regions of the body involved include the face, nasopharynx, jaw and neck, lungs, arms, abdomen, and pelvis. The neoplasms include sarcoma, lymphosarcoma, and carcinoma of various types, with the usual metastatic and lymphatic involvements associated with recurrent malignant tumors in their later stages of development. Yet every case showed definite response to the effects of autolysin. Some cases responded much more kindly and persistently than others, but in no case were the results negative.

Although the autolysin treatment has been applied

for less than two months in the case longest under observation, and for a much shorter period in most of the cases, yet complete clinical recovery has been recorded in one case and several of the others give great promise. Four of the cases seemed absolutely hopeless from the start. Yet at least one of these has shown so much improvement as to justify a very hopeful prognosis; and it is something to be able to record that the other three patients are still alive and more comfortable than they were, though in such condition that they have at best a slim fighting chance.

These results must of course be considered in the light of the recognized character of inoperable and recurrent cancer, hitherto regarded as hopeless. It seems clear that this humiliating prognosis can no longer be applied, now that autolysin is available, as the stock verdict in dealing with inoperable malignant neoplasms, even where the malady has reached an advanced stage.

For the benefit of physicians who have not used autolysin, I think the fact should be emphasized that the administration of the remedy involves something more than the mere giving of a hypodermic injection. It is true that the actual procedure of administering autolysin is simplicity itself, and that the physiological effects of the remedy are induced with somewhat remarkable uniformity. But it is true also that there are cases that prove peculiarly resistant, failing to respond to ordinary doses administered subcutaneously; and the physician who encounters such a case at the outset might gain a wrong impression, to the prejudice of the treatment and the disadvantage of the patient.

Thus, even among my small number of cases, there is a marked variation as to the dose that evokes the therapeutic response. In some cases, a dose of fifteen minims brings a responsive chill and rise in temperature. In other cases there is no such response, even when thirty-five or forty minims are given subcutaneously, but a vigorous response when a much smaller quantity (ten to fifteen minims) is given intravenously.

So far as I can judge from my own limited number of cases, and from observation of a much larger number under treatment by Doctor Beebe and his associates in New York, it is difficult to form any opinion in advance as to what manner of case will respond readily to small doses and what will call for the intravenous administration of autolysin. It has chanced that among my patients those of a blond type have responded more readily than the brunettes, and it might be of interest for other physicians to note whether their experience is confirmatory; but I would not generalize from so limited a number of cases.

I call particular attention, however, to the fact that it does not seem to be absolutely essential to produce the characteristic reaction in all cases, inasmuch as one of my patients (Case IV) made a really remarkable clinical recovery in less than three weeks' time (the carcinoma in his neck diminishing so rapidly that its regression could be noted day by day), while the patient did not at any time exhibit the slightest rise of temperature. With most of the other cases, however, the reaction indicated by rise

of temperature and a slight chill seemed an index to the protein absorption associated with the remedy.

As will be seen, I ascribe the lack of reaction in the case of carcinoma of the neck in which the tumor disappeared with such astonishing rapidity, in part at least to the fact that the tumor itself was not large, and hence its regression did not involve the absorption of large quantities of protein products. It may be presumed, however, that this patient had an idiosyncrasy that prevented an anaphylactic response to the vegetable proteins contained in autolysin. Possibly a plausible explanation may be found in the suggestion that the response of the blood forming organs was so active as to make ample provision for the immediate hydrolysis of the protein products. The fact that hemoglobin decreased about five per cent. twenty-four hours after each treatment, suggests a rapid destruction of red blood corpuscles in connection with their work of disposing of the protein products, after the erythrocytosis induced by the remedy.

Such theoretical considerations, however, are obviously of subordinate importance in comparison with the bald record of the case itself—the record of clinical recovery of a recurrent carcinoma within a period of twenty days as the direct result of the administration of hypodermic injections into the arm, associated with no local treatment whatever of the tumor itself, which was situated in the neck. Similar comment applies to other cases (very notably Case II), in which there was rapid and continuous regression of the carcinoma in the abdominal cavity or deep in the pelvis, involving uterus and vagina. Under such circumstances, the belief that the action of the remedy is constitutional and not local is obviously placed beyond controversy; and these cases, I believe, are typical.

As illustrating another aspect of the matter, I call particular attention to Case VII, in which autolysin treatment was undertaken with a view to a modification of conditions in the abdomen, due to the presence of malignant neoplasms in connection with an ovarian cyst; in the hope that ultimately regression of the surrounding (probably omental) masses might be brought about to an extent that would permit removal of the cyst with the knife. As will be seen, the present progress of the case fully justifies the treatment, and leads to the hope that this use of autolysin as an adjunct to the surgeon's equipment may prove successful.

The question arises, whether there are not a large number of cases of operable cancer in which autolysin may advantageously be administered as an adjuvant, preparing the patient to withstand the shock of operation by stimulating the production of the white and red blood corpuscles, and making sure of the completeness of the operation by reaching out after distant metastatic foci and involved lymphatics that the knife could not reach. This must be for future observation to decide, but in the meantime it seems impossible to doubt that autolysin is able to cause regression of postoperative neoplasms, which even the most optimistic of surgeons freely admit to lie beyond the reach of their skill.

Inasmuch as the remedy, while thus causing regression of the tumor mass itself, ameliorates the concomitant symptoms, relieving pain in the most

gratifying manner, and causing malodorous discharges to take on an inoffensive character, and ulcerating surfaces to assume healthy granulations, while the general health of the patient improves correspondingly, even the most pessimistic and skeptical observer is disarmed in the presence of such a group of cases as that I am privileged to report.

Incidentally, I call attention to the transformed mental attitude of patients under autolysin treatment, associated with their improved physical conditions. In one of my cases (Case III), as will be seen, the patient's physical condition had a mental concomitant diagnosed as insanity; and the mind of this woman cleared up and became normal in about ten days.

This case suggests possible auxiliary uses of the autolysin treatment that tempt discussion, but I refrain from further comment, as my prime object in this paper is merely to report briefly but explicitly the cases thus far treated by me, rather than to make predictions as to future progress.

CASE I. Woman; carcinoma of breast, lung involvement, with indications of cerebral involvement also. Condition precarious when treatment with autolysin was begun. Did not react to three treatments, became unconscious on fifth day, and died on seventh day from toxemia apparently due to the carcinoma. (This woman's husband has an inoperable cancer of the prostate, and will begin autolysin treatment in a few days.)

CASE II. Woman; carcinoma of uterus, operated on seven years ago. Recurrence a year ago, with great involvement of tissues, and large ulcer in vagina. After five treatments with autolysin the odor disappeared, and the ulcer lost its angry, ragged appearance, and the tendency to bleed. At the present time, after forty treatments, the carcinomatous mass was reduced to one third the original size, the ulcer to about one third, and apparently healing.

This cancer was evidently of very slow growth, and the mass was unusually hard. The patient did not react except to thirty-five or forty-five minims of autolysin, although her reaction was somewhat better for the last seven treatments. Nevertheless her condition improved steadily, and there was good reason to expect ultimate recovery.

CASE III. Woman; carcinoma of breast. Operation not complete five months ago, owing to involvement about the head of the humerus, subclavicular glands, etc. Patient bed ridden, greatly emaciated, able to take no solid food and but little liquid. Had never been able to move arm to any extent since operation, suffered constant pain about the shoulder, great pain on pressure or movement of any kind.

After second treatment with autolysin, pain left the shoulder, and the tenderness to pressure disappeared. After eight treatments, there was complete movement of the arm. At the present time (twenty-fifth treatment), the glands about the clavicle are about one fourth the size, patient has gained slightly in weight, is able to sit up, and takes solid food. At the time of beginning treatment, this woman's mental state was such that she was practically insane. This condition cleared up in about ten days.

CASE IV. Man, aged seventy-five years, two months before first operation, noticed swelling under angle of jaw on right side. Would increase and diminish. May 31, 1915, operated on, gland removed. Examination showed squamous cell carcinoma. Metastases in lymph gland, probably from a skin lesion. More extensive operation two weeks later. Skin thickened at once, recurrence taking place very rapidly. Treatment begun July 27th. After twentieth treatment growth had completely disappeared and patient was pronounced clinically well by his physician.

This patient is still under treatment. The interesting features of this case are, 1, the rapid disappearance of the growth which could be noted literal-



ly from day to day; 2, the fact that *no temperature reaction* occurred at any time, even when thirty-five or forty minims of autolysin were given, although the characteristic subjective symptoms—a "clawing" sensation at the seat of the cancer, etc.—were pronounced. The pulse rate also increased to 90 and 95 about six hours after each treatment; 3, the hemoglobin decreased about five per cent. twenty-four hours after each treatment.

I ascribe the lack of temperature reaction to the small amount of cancerous tissue, the actual amount of protein absorption each day being insufficient to cause marked toxicity. The patient, although seventy-five years old, is an unusually muscular, healthy man.

CASE V. Woman; two years ago, complete hysterectomy for carcinoma. Operated on again last October for recurrence. Operation incomplete. Present condition, cancerous mass about five inches by seven, large ulcer, with bloody and foul discharge. Temperature about 100° F., pulse 120, patient bedridden, emaciated, anemic, with little vitality left. Liquid diet only.

Thirty treatments with autolysin have been given. The mass is reduced fully one half in size. The character of the discharge changed to watery and slightly purulent after sixth treatment. There is no pain and the patient is taking a little solid food. Today (August 24th) the patient's temperature was normal at 10 a. m. for the first time.

I considered this case as hopeless from the start. Nevertheless the woman is unquestionably more comfortable now, the discharge is no longer offensive, and her placid mental state contrasts strongly with her condition when treatment was begun.

CASE VI. Woman, aged forty years, unmarried, lump in left breast two years ago, painful, involving whole breast and glands in axilla in four months. Received quack treatment with "paste" four months ago. At present, there was an ulcer three by six inches. Right breast completely involved, also axillary glands. Breathing area reduced fully one half. Coughed continually, unable to take any solid food.

After twenty-six treatments with autolysin, the ulcer was reduced about one fourth in area, the edges were thinned and healthy, there was practically no discharge, and the lesion was tending to heal. The patient now takes solid food and is troubled only slightly with cough. No improvement has been noted in the right breast, which is still painful at times.

CASE VII. Woman, aged fifty years, fifteen years ago, had benign tumor removed from breast. Five months ago was operated on for ovarian cyst. Omentum was found filled with masses which proved to be malignant. Operation for cyst incomplete, and this cyst was now about nine inches in diameter. At the time of beginning autolysin treatment lumpy masses, apparently in the omentum, could be felt all over lower abdomen, and about the sides of cyst. On consultation with surgeon it was decided to give treatment with autolysin before attempting removal of cyst.

This patient has received twenty-five treatments up to the present time. After the seventh treatment the "lumpy" condition of the omentum disappeared, and apparently there was less thickening, as the cyst could be outlined more distinctly. Passages from the bowel are now normal and more free, and the patient is able to pass gas, which she asserts she has been unable to do for several months. The general condition of the patient is improved.

CASE VIII. Man, aged twenty-seven years, four months ago sought treatment for polyp in the nasopharynx. No relief, and cavity filled rapidly and became completely occluded, necessitating mouth breathing. Microscopic examination showed lymphosarcoma. Patient suffered from intense pain at base of skull. Condition declared inoperable, and treatment with autolysin was begun.

The lower part of pharynx became less congested after the fifth treatment, and it was possible to remove three masses about the size of hickory nuts at one operation, and about half that amount of tissue at a second. This patient has received twenty treatments with autolysin, and feels distinctly better (less pain and a peculiar watery, odorless discharge) after each reaction. It is practically impossible to get a reaction, however, except by intravenous injections, and these are now being given.

CASE IX. Woman, married, aged sixty-seven years, carcinoma of breast, involving the entire right gland, most of the left, and the axillary glands on both sides. Peculiar scirrhus type, the right breast being contracted, leathery, and purplish with nipple retracted. Left breast was less involved, but showed a similar condition.

This patient has received twenty treatments with autolysin. Discoloration is less pronounced, skin becoming more the normal color. The entire area involved is somewhat softer, the nipple less retracted, and the axillary glands are reduced about one third in size. These breasts were hardened and contracted to the consistence of gristle over almost the entire area. It takes at least forty minims of autolysin to produce a reaction in this case.

CASE X. Man, aged seventy years, carcinoma of the face; cancer started from injury to side of nose with a burnt splinter. Had been operated on, treated with x rays and radium, but for three years growth had been increasing steadily, so that the side of nose was gone, antrum exposed, hard palate gone anteriorly for about one inch and a half. Patient was taking two grains of morphine a day, was very anemic and greatly emaciated; altogether a very hopeless sort of case.

This man has had ten treatments with autolysin, and the discharge is much less offensive; the pain is less, so that morphine has been reduced to one grain a day. The discharge has become less purulent.

CASE XI. Woman; carcinoma of uterus. Had only seven treatments with autolysin. Pain much less, discharge less offensive, no longer bloody, and less purulent. General condition of patient considerably improved.

CASE XII. Woman, aged seventy-one years, carcinoma of both breasts. Two operations with recurrence. X ray treatments for the past three months. Had only four treatments with autolysin. Pain practically disappeared. Slept and ate well, and expressed herself as feeling considerably improved.

## INOPERABLE CANCER TREATED WITH AUTOLYSIN.

### *A Report of Cases,*

By HUGH G. NICHOLSON, M. D.,  
Charleston, W. Va.

I have had nine patients under treatment and all have done exceedingly well, except those who had been addicted to alcohol. Why these patients should not do as well as the others I am unable to say. A peculiar thing is that the habit in one (Case iv) had been discontinued some years before. From what I had seen done in cases of like kind and location in New York, I had hoped this man would make a

complete recovery. Not until I saw I was getting no result did I dig up the fact that he had been a heavy drinker when younger.

Patients I and II also took whisky in liberal quantities and, although both were in very advanced stages when treatment was started, I believe a more marked result would have been seen had the patients not been taking whisky.

Case VII is that of an inveterate smoker of a very dirty pipe, and although she is improving very nicely, I can but feel that this habit has had some bearing in her case, delaying the result I had expected.

Of all the cases none have done better than two of the rectum. It is certainly a godsend to have something to look forward to in these horrible cases. Case III was one of these, and, although the patient died, I have no idea that her cancer had anything to do with her demise. In the early period she had considerable pain in the region of the mediastinum and, although there were no heart signs or evidence of aneurysm in this location, from the nature of her death and the fact that she could not be embalmed, I believe there was a rupture of an artery, probably the pulmonary. From the beginning of her treatment there had been a marked regression of the tumor, and her last few weeks were made absolutely comfortable by the treatment. She came in a great sufferer and obtained complete relief. Case IX is one of this kind and is approaching recovery.

It is interesting to watch the effect of the remedy on the hard scirrhous nodules of the recurrent breast cases. In these I have obtained better results by injection into the nodules themselves, supplemented by the subcutaneous method. The blood supply in these nodules is so poor that unless we do this it would take much longer to attain the same results. Following the injection the nodule promptly softens, becomes detached from the underlying bone, and is absorbed.

It has been known for some time that certain substances had an especially selective affinity experimentally for tumor cells, digesting them without ill effect on the surrounding healthy tissue cells. This has been tested in the case of cancer by injection into the tumor mass with sodium selenate, sodium tellurate, and certain colloidal derivatives of copper and tin.

Autolysin seems to act in this way, but goes much further. When injected into the tissues at any point, it is taken up by the blood stream, carried to the growth no matter how remote, and almost immediately macroscopic changes can be seen. There is a reduction in size following some edema, pain is relieved, and lymphangitis is cleared up in two or three days. Most wonderful of all is the effect on the blood. It has been my habit in all cases to make a count and test for hemoglobin about every four weeks. No matter what the state of the blood, it is brought nearer the normal. In cases in which the white cells are smaller in number than normal, they are increased. Hemoglobin is increased in even some of the worst cases even without a hematonic. The lymphocytes are almost invariably increased. Cachexia is markedly decreased, and after the patient has been under treatment two or three weeks the skin takes on a look of health.

After the administration of autolysin as positive

reactions are seen as in the giving of the serums and bacterins. I am guided in my doses by certain effects I get. It is not unusual to have a chill with elevation of temperature five or six hours after the injection. Sometimes sweating follows this. Not unusual is drowsiness, probably a toxic condition brought about by the liberation of the digested cancer cell in the blood. There is often local evidence of the injection, such as heat, redness, and swelling. In no case have I had abscess formation. If a second injection is given before the effect of the first has worn off, we get anaphylaxis varying in degree.

The remedy gives strong hope of cure in probably eighty per cent. of cases of inoperable cancer, if these are seen reasonably early. A little later, when autolysin is better known than now, we will get the cases earlier and better results will be seen.

It has been noticed that stomach cases do not respond to the treatment as well as do some others. Autolysin largely owes its results to a vegetable protein content. The gastric enzymes coming in contact may disrupt the protein molecule before sensitization can occur. The entire protein molecule being concerned in the cytolytic process, may account for the fact that stomach cases do not do well. Even should these cases not be permanently cured, much will have been accomplished. The relief from pain, the lifting of the veil of death on which these patients have been looking, if only for a year or so, is worth something. Patients eat and sleep well and apparently are well.

CASE I. Woman, aged sixty-seven years, married, four children, had carcinoma of right breast. Small cystic tumor removed from breast more than twenty years ago. Breast removed by complete operation in June, 1914. Recurrence in November, 1914. Tumor purple in color and the size of a bun, with numerous radiating purple lines, indicating extensive lymphangitis. Supraclavicular lymph nodes on both sides, marked on the left. Patient much emaciated, markedly cachectic, and very weak. Suffering pain, requiring three eighths grain morphine about every three hours. Whisky being taken in frequent small quantities.

Urine acid, specific gravity 1.012. Pus and renal cells, numerous hyaline and large granular casts, some blood casts, cylindroids very numerous. Chlorides diminished. Blood pressure 100. Heart showed systolic murmur. Appetite and sleep poor. Right arm edematous and very painful to raise.

After seven doses of autolysin this patient slept well and her appetite was very much improved. Morphine was exhibited every six to nine hours instead of every three. She had some use of the right arm. Twenty-one doses of autolysin had been given by June 30, 1915. At this time treatment was discontinued at the request of the patient. She was very nervous, and the slight pain induced by the injections became a dread to her. She had gradually grown weaker and finally died, after a period of coma lasting several hours, on July 25, 1915. Tumor showed a marked diminution in size, and color was much less angry in appearance. The edema in the arm had disappeared. No autopsy.

CASE II. Woman, aged forty-three years, married, seven children, had carcinoma, recurrent, of left breast. First appeared three years ago. Nipple always retracted and babies would never nurse from this breast. Blood and pus discharged from breast twenty-three years ago. Complete removal of breast in September, 1914. Recurrence very early, but history not clear. Radium used four times, two, four, six, and eight weeks after operation.

Appetite poor, slept fairly well, very much pain, requiring several three quarter grain doses of codeine daily. Very large supraclavicular glands on both sides; left arm very much swollen, edematous, and useless. Also paralysis involving left facial nerve. Blood pressure 120. Urine normal.

Dr. Joseph Ranschoff, who operated, reported that her condition seemed hopeless. She had a large scirrhus of the breast, infiltrating the skin, with extensive glandular involvement of the axilla. She was admitted to the hospital for autolysin treatment June 11, 1915. From propulsive vomiting, paralysis present and increasing in area after admission until all limbs were involved, a diagnosis was made of metastasis into the base of the brain. Fifteen doses of autolysin were administered with no apparent benefit, except considerable relief from pain and slight improvement in appetite. Death occurred on July 10, 1915, preceded by a typical picture of apoplexy.

CASE III. Widow, aged thirty-seven years, two children, admitted to hospital for treatment May 24, 1915. Carcinoma of rectum came on with diarrhea and cramps in February, 1915. Bowels became constipated two weeks later. Blood in the stools from the beginning. Appetite good. Sleep poor. Pain considerable, requiring morphine frequently. Strained at stool. Tumor in cul-de-sac size of small grape fruit. Colostomy advised by the physician referring the case, but was deferred. After being under treatment a few days, bowel movements became normal. On admission, owing to pain, patient could not sit down; under treatment all pain disappeared, appetite was good, and sleep became normal. All opiates were discontinued. The urine had a specific gravity of 1.010, was acid, and had a trace of albumin, pus, epithelium, blood, and mucus. Wassermann negative.

Thirty-eight doses of autolysin were administered with apparent marked benefit. Tumor very much decreased in size. No pain, appetite and sleep good. On July 28th patient decided to discontinue treatment and went home. Died very suddenly, two days later. No autopsy. Body could not be embalmed, as fluid escaped through mouth and nose.

CASE IV. Man, aged sixty-seven years, entered May 27, 1915. Epithelioma, left side of face, first noticed in February, 1915, growing very rapidly. Cancer paste was used in March. No ulcer before this time. Ever since, a funnel shaped sore about one and one half inch in diameter and one half inch deep, edges fungating. Whole cheek probably involved. Appetite good and slept well. Considerable pain. Constipated. No lymphatic involvement. Blood pressure 160.

Urine, specific gravity 1.020, acid, trace of albumin, casts, hyaline and granular. Considerable amorphous matter.

Up to this time, August 28, 1915, fifty-eight doses of autolysin have been administered. The whole cheek has broken down, and the disease has apparently gone beyond the boundaries as defined in the beginning of treatment. There has been no stoppage of the growth. Appetite remains fair, sleep is good, and there is entire absence of pain.

CASE V. Woman, aged thirty-five years, married, entered for treatment June 15, 1915, with recurrent carcinoma of left breast after three operations. Growth started nine years ago. Six years ago small tumor, fibroid in nature, was removed from breast. In one year new lump appeared, which remained the size of a pea for some time. In 1913, the whole breast grew hard with pseudoparalysis of entire left side. Breast removed April, 1913, and axilla partially cleaned out. Further recurrence in 1914. Radical operation in June, 1914.

June 15, 1915, patient presented several hard lumps closely attached to clavicle and ribs. Some recurrence in scar of axilla. Physique delicate. Appetite poor. Sleep broken. Miscarriage at six weeks seven years ago. Putrid fetus

and beginning of ill health. Bowels very constipated. Some edema of arm of affected side. Blood pressure 115. Urine, specific gravity 1.002, acid, occasional pus cell, considerable epithelium, phosphates, and amorphous matter.

This patient shows remarkable improvement. Eats and sleeps well, and has absolutely no pain. Has gained ten pounds in weight. Hardness has practically left all nodules; two only can barely be felt. She has had thirty-four doses of autolysin, and, if she continues to improve for the next two months as rapidly as she has up to this time, she will be a well woman.

CASE VI. Woman, aged forty-seven years, married, one child, received for treatment, July 5, 1915. Carcinoma of both breasts, with extensive lymphangitis and wide lymphatic involvement. Last November, felt lump under right arm, side ached, and was soon followed by ache in right breast. Cachexia marked. Patient rather fat. Appetite and sleep good. Some pain. No constipation and very little tenderness of tumors. Blood pressure 140. Urine normal, except for some pus and epithelium.

In this case at this time, there is no pain, cachexia is less, appetite and sleep good. All evidence of lymphangitis has gone, and breasts are softening. Lymph nodes are much smaller. This patient had been pronounced inoperable at Johns Hopkins Hospital, and in the same city she was advised that radium treatment would do no good. She was sent home to die. We shall watch this case with unusual interest.

CASE VII. Woman, aged forty-three years, married, five children, always well until August, 1914. Entered for treatment June 22, 1915. Cancer of stomach. Tumor oblong in shape and extended whole length. From pressure due to weight it rested on abdominal aorta, pulsating therewith. First noticed pain, periodical, in region of stomach. Gastroenterostomy in May. Tumor pronounced malignant. Bile now occasionally invaded the stomach, producing nausea and vomiting. History showed that her father probably died of cancer of the stomach. Patient's appetite was good, sleep was fair. Cachectic. Pain in region of heart. Some morphine used hypodermically. Urine normal, except for some epithelium.

This patient has now been under treatment for two months and has gained three pounds in weight. Appetite and digestion are good, bowels are regular; she sleeps well, and has very little pain, but she has kept up the morphine. She is quite nervous. The tumor is not more than half the size as when treatment was started, but we do not like her general appearance, although she is less cachectic. The result probably hinges on how much healthy tissue is left in the stomach wall after the cancerous tissue is absorbed. To this time fourteen doses of autolysin have been given subcutaneously and a decoction made from the herbs is being administered by mouth.

CASE VIII. Widow, aged sixty-three years, five children, entered June 26, 1915. Always well. Epithelioma on nose. Ulcer started several years ago, now size of dime. Appetite and sleep good. No pain. Urine normal, except for some pus and epithelium. Blood pressure 140.

The ulcer looks better and the patient's general physical condition is very much improved.

CASE IX. Woman, aged forty-five years, married, four children and one miscarriage, entered for treatment, August 5, 1915. Recurrent carcinoma of rectum with blood and mucus discharge. Always constipated. Hemorrhoids since eighteen years of age, and operated on in March, 1915, without benefit. Diagnosis of carcinoma made and rectum removed April 26, 1915. Blood, etc., continued. Pain returned ten days ago. Considerable induration around the rectum and anus. Obstipation. Some backache. Appetite and sleep good. Some cachexia. Urine



Showed considerable pus and epithelium, amorphous matter, cholestrands and crystals of calcium oxalate and uric acid.

After three weeks' treatment this patient is looking and feeling very much better. Induration has practically all gone and the bowels are moving regularly, only one Seidlitz powder and one dose of Russian oil having been used for this purpose since she entered the hospital, three weeks ago.

910 QUARRIE STREET.

## THE AUTOLYSIN TREATMENT OF INOPERABLE MALIGNANT NEOPLASM.

BY ANDREW WILSON, M. D.,

Wheeling, W. Va.

In reporting the cases which I have had under observation and treatment for inoperable cancer by autolysin, the following facts seem to me of sufficient moment to warrant most careful consideration being given to the further use of this method of treatment.

Every patient treated, in whom pain was very pronounced, has been greatly relieved without the use of morphine.

The marked cachexia noted in many cases cleared up within a very short space of time. The general feeling of health and the return of strength were very marked in a number of instances.

The reduction in the size of the malignant neoplasm in one half the cases treated was very marked. Of course we must guard against giving too optimistic a viewpoint toward relieving or benefiting the patient stricken with an inoperable malignant neoplasm; still, having become conversant with this method and after observing many cases beside those treated by me during the past few months, I believe that any relief that can be given to the afflicted is a step in the right direction.

I want to make it clear that the cases treated by me were all referred by other men and every case was pronounced an inoperable one, because it is the desire and wish of Doctor Beebe and Doctor Beveridge that nothing but inoperable cases should at present be treated, and if there is any chance or opportunity to remove the initial foci of the malignant neoplasm, it should be done by the surgeon.

CASE I. Female, aged eighteen years; diagnosis, osteosarcoma, confirmed by microscopic section. Growth began three years ago; two operations were attempted for the removal. A third was deemed inadvisable. Tumor now filled the whole orbital cavity; pressing the eyeball out of the orbit on to the brow. Recently bleeding from nose, mouth, and tumor was extremely grave. No examination for vision was made before the treatment was begun, because of danger of hemorrhage. Treatment began May 3d. Ten days later could count fingers at three feet. Case steadily improved. She could now read type with ease. Tears began to pass through lacrimal duct about July 15th. By August 10th right side of nostril was patulous and aid could be forced through for the first time in one year. Weight increased from ninety-six and one half to one hundred and eleven and three quarter pounds. Tumor decreased in size and from present appearance it seemed probable that it would in time entirely disappear.

CASE II. Female, aged fifty years, general carcinoma of abdominal viscera; exploratory incision, deemed inoperable. Large quantity of fluid in the abdomen. Treatment began May 3d. Patient improved rapidly in color, appetite, and general appearance, when at the end of four weeks she was permitted to return home for a week. On return

to the hospital her general health was not so good. Fluid in abdomen returned rapidly. Family became discouraged and took her home on June 26th where she died about seven weeks later.

CASE III. Man, aged fifty-three years; diagnosis, cancer of the esophagus, confirmed by x ray plate, no microscopic section being possible. Was admitted to hospital, May 11th, and treatment begun promptly, because of imminent total obstruction. Could swallow water only with great difficulty. By May 20th, could swallow liquids with ease. Pain much less. By May 31st, could swallow soft solids. Pain gone and patient was discharged from hospital, to return for treatment at intervals. June 18th had some hemorrhage, and evacuated what seemed to be a small abscess, and general condition became worse. June 25th, patient returned to hospital, with color not so good, more difficulty in swallowing, and some return of pain. One week after readmission improvement began, swallowing became better, general condition better. Patient was discharged from hospital again August 16th, with no pain, returning to hospital for treatment; weight 126 pounds; original weight was 160 pounds.

This patient's weight has been stationary for the past month. His general condition is better, he is gradually gaining in strength, and his present condition appears to be decidedly better than it would have been under any other treatment that might have been administered.

CASE IV. Girl, aged fourteen years, osteosarcoma of hip. No microscopic section made. Growth began about January 1st, and at time treatment began the tumor was a round mass, about six inches in diameter, lying below and behind crest of the ilium. Patient suffered extreme pain from pressure on the sciatic nerve, requiring morphine in one quarter and one half grain doses to relieve. Alcohol had been injected into the nerve to control pain three weeks before autolysin treatment was begun. Coley's toxins had been given and abandoned, having no effect.

Treatment began May 18th. Was followed by gradual relief from pain and slight decrease in size of tumor, so that five weeks later pain was gone, tumor markedly decreased in size, the child gaining in weight, color, and general physical condition. She continued to improve until about August 15th, when she had a return of the pain, and while the tumor continues to decrease, there is some sciatic pain, and she is not able to move herself with as much freedom as she did a month ago. She is much better than at the beginning of the treatment, but is not as free from pain as she was one month ago, although the tumor is smaller now than it has been at any time since treatment began.

CASE V. Man, aged sixty-three years, cancer of the penis, very frail and anemic. History of chronic Bright's disease for the past three years; suffering great pain. Treatment was begun May 20th in this case, and continued three weeks with the hope of relieving pain. This was accomplished to a considerable extent, but patient gradually failed and died July 20th.

CASE VI. Woman, aged about forty-five years, cancer of the bladder and uterus. Had hysterectomy for adenocarcinoma in April, with reported extensive involvement of the bladder. Patient was suffering great pain in bladder and abdomen, and treatment begun May 21st, was followed promptly by great relief from pain and improvement in color and general appearance. Apparently increased in weight, but it was impossible to weigh her as she was confined to bed. Improvement continued until first week in August. She began to fail in strength with symptoms of obstruction of the bowels. This never became complete. Color remained good, pains did not return. Patient died, September 5th. Autopsy showed extensive involvement of the bladder, intestines, liver, pancreas, and abdominal wall, softening and some degeneration. (Microscopic examination of the tissue has not yet been made.)

CASE VII. Man, aged seventy-four years, epithelioma of the hand, two and one half inches in diameter, raised one

half inch from surface of the skin. Diagnosis confirmed by microscopic section. Three years' duration. Refused amputation; suffering extreme pain; general physical condition not good; weak and emaciated. Treatment began May 25th, with gradual decrease in tumor and relief from pain and increase in strength and appetite. His tumor is now on a level with the skin, and edges are apparently healthy, but no healing of the edges has yet begun. Patient is comfortable and in much better physical condition. A part of this is possibly due to hospital care.

CASE VIII. Woman, cancer of the cervix, ulcerated and inoperable; diagnosis confirmed by microscopic section; suffering extreme pain, requiring two grains of morphine daily. Treatment began May 26th, with no change in pain. Color improved within ten days. Continued to lose weight for six weeks, when the dose of autolysin was increased to 6 c. c. as a maximum, followed by a daily dose of 4 c. c. Pain became less, appetite improved, and general condition became much better until August 16th, when pain was gone and her condition so much improved that she was allowed to go home, sixteen miles from the city, to return to office for treatment, having gained in weight from 111 to 120 pounds, which is still ten pounds under normal. This patient spent Thursday, September 9th, at the Wheeling, W. Va., State Fair. The apparent progress of this case, after a very discouraging beginning, has been most remarkable.

CASE IX. Woman, aged fifty-seven years, epithelioma of the nose. Diagnosis confirmed by microscopic section. Tumor involved whole left side of nose. Duration seven years. Recently had been increasing more rapidly. No operation had ever been done, and none possible now. Treatment began May 27th, with rapid improvement. Left hospital, June 12th, with growth nearly gone, to return at intervals for treatment. The whole area involved in this case has now healed except two small patches, each probably one half inch in diameter. Is returning at intervals of two weeks for observation.

CASE X. Woman; extensive cancer of the abdominal viscera, with obstruction, requiring colostomy last March. Treatment began May 27th, and with some apparently favorable results. Pain less, appetite improved for about four weeks, when she began to fail. Treatment was discontinued July 28th. Patient died August 19th. No autopsy.

CASE XI. Man, aged forty-five years, cancer of the scrotum. Diagnosis confirmed by microscopic section. Tumor removed by operation; returned in glands of groin, which were partially removed. Treatment by x ray continued and failed to control the growth. At the time treatment began, patient's leg was swollen greatly and he suffered intense pain, owing to some obstruction of the circulation. Treatment began May 28th, with marked relief from pain within four days. Improvement continued; pain totally relieved; swelling disappeared from leg and he could move it with ease. Appetite returned, color improved. This continued for about four weeks, when wound in the groin broke down, discharging very freely broken down, cancerous tissue, requiring dressing three times daily. A little later he began to lose in strength, and although he had no return of the pain, he gradually failed and died August 1st. Autopsy refused.

CASE XII. Woman, aged forty-six years, glioma of the brain, recurring after three operations, at intervals of approximately one year. This patient was suffering intense pain with earache, bulging of the opening in the skull; unable to balance in walking, and dizzy at all times. Began treatment because of intense pain and the feeling that she could not undergo another operation, June 4th. Within three days there was relief from the earache and the feeling of fullness in the head. The pains continued to decrease until total disappearance about two weeks after treatment began. The symptoms of pressure were much less. Patient could sit up with comfort, and continued to improve until she was able to be up all day. Could walk with comfort and on two occasions took an automobile ride. July 21st, had some slight return of the pain. This returned at intervals, and was described by the patient as not the same as the previous pains. Dizziness was not present. Some fullness over the opening in the skull, and the patient was not as well at the present time as she was at the point of the greatest improvement, about July 21st,

but decidedly better than at the time of beginning treatment.

CASE XIII. Man, aged sixty-five years, rodent ulcer of temple, diagnosis confirmed by microscopic section; seventeen years' duration. Operation and x ray at various times without benefit. Treatment began June 4th, with marked improvement within a week. Improvement such that in two weeks, treatment was discontinued, but later resumed because ulcer was not entirely healed. At present a small area was not healed and patient was receiving treatment every three days.

CASE XIV. Man, cancer of lower jaw. Operation on April 1st, with x ray treatment following. Return rapid, involving lips and glands of neck. Treatment began June 4th. This patient received little benefit, except relief from pain and an apparent retarding of the progress of the growth. This patient was not in good condition at this writing.

CASE XV. Woman, aged forty years, cancer of the cervix, diagnosis confirmed by microscopic section. Operation refused by a competent surgeon. This patient was confined to the house and to bed most of the time. Required morphine for the relief of pain. Was markedly cachectic. Treatment began June 10th and continued since, with steady and marked improvement; until at present she walked three quarters of a mile to the cars and rode five miles by trolley, three times a week, for treatment. Had no pain, appetite good; slept well and gained in weight. This patient was in a most hopeless condition, and the change for the better was great, digital examination showing softening and decrease in the tumor mass.

CASE XVI. Man, aged forty-seven years, cancer of prostate, diagnosis made on the following symptoms: Progressive loss of weight within last three months from 160 to 133 pounds; marked cachexia, great loss of strength, inability to empty bladder, coming on rapidly and having had no previous trouble in urinating. Examination by rectum showed the prostate to be hard, nodular, and enlarged. No microscopic section was possible. Treatment began June 9th, with a gradual relief of symptoms, until now he emptied bladder without difficulty; had gained in weight from 133 to 151 pounds. Color normal. Strength much increased and was now working about three fourths of the time as a collector (his former occupation).

CASE XVII. Man, aged sixty-three years, inoperable cancer of the stomach. On beginning treatment, June 17th, this patient had marked symptoms of obstruction, vomiting daily; food particles streaked with blood on a few occasions. There was apparently improvement within a week after beginning of treatment. Appetite returned. Stomach was emptied; no vomiting. This continued until about the last week in July. Obstructive symptoms returned; patient failed rapidly and died August 3d.

CASE XVIII. Man, aged forty-three years, extensive cancer of the rectum, with a large mass on buttock. Colostomy, last October, for total obstruction; diagnosis confirmed by microscopic section. Bleeding from this tumor was constant and severe, and the prospect of early death in this case was very great. Treatment was begun, June 17th, with marked decrease in hemorrhage. Gradual improvement in patient's general condition; no bleeding. Tumor mass decreased two thirds. He was passing fecal matter by the bowels at intervals of a day or two; able to sit up. Appetite excellent, and the whole change in the condition of this patient, from one of impending death to that of fair prospects of recovery, was hard to believe.

CASE XIX. Man, aged sixty-five years, cancer of the stomach, diagnosis confirmed by exploratory incision. Whole anterior wall of the stomach involved. Treatment began June 23d without apparent result. Died, August 20th.

CASE XX. Woman, aged fifty years, cancer of breast. Operation one year ago. Recurred in glands of axilla with metastasis into spinal cord. Total paralysis of body to the waist line. Treatment was begun June 25th, at express request of husband, and with no hope of effect. The only apparent effect seemed to be great amelioration of the pains; otherwise, the case proceeded as before, and ended fatally, August 4th.

CASE XXI. Man, aged seventy-two years, cancer of the stomach. Exploratory incision made two months ago. Large mass, involving pylorus and lesser curvature of the stomach. Patient anemic and very frail. Treatment begun

July 24th, with apparently decided improvement. Appetite better. Strength seemed to increase until the last week of August, when he suddenly became worse, and slight hemorrhage was suspected. After this he improved slightly for about a week, when the previous symptoms of shock and pain returned. Patient died September 8th. Autopsy showed a carcinoma carcinomatous mass, involving the whole of the lesser curvature of the stomach, the first eight inches of the duodenum, and a portion of the transverse colon, with no metastases into any of the abdominal glands or elsewhere. A slight perforation at the junction of the tumor with the stomach wall was the immediate cause of death.

CASE XXII. Woman, aged forty-two years, cancer of the rectum, high up, beyond the reach of finger. Considerable hemorrhage and discharge of tissue, which, on microscopic examination, showed the nature of the growth. Treatment began July 14th. The apparent effects, so far, in this case were, first, great improvement in color, decrease in frequency and amount of bleeding, amelioration of pain. Patient still in the hospital under treatment.

CASE XXIII. Boy, aged seven years, lymphosarcoma of glands of neck, removed by surgical operation last March. Returned rapidly. Began treatment July 25th. Tumor continued to grow slowly, but seemed much softer in consistency. About the last week in August, a portion of the tumor apparently discharged into the esophagus, with some improvement in the patient's condition, but the parents becoming discouraged, removed the child to his home, where treatment was discontinued. Our apparent success with this case was about the same as that given by surgery—none.

CASE XXIV. Man, aged sixty-seven years, epithelioma of lip, removed by caustics three different times, and when treatment was begun, was returning rapidly, with considerable pain and constant loss of weight. Treatment was begun July 27th. The apparent effect was great decrease in pain, marked decrease and sloughing of tumor, with no further loss of weight; otherwise, physical condition was about the same as when treatment was begun.

CASES XXV, XXVI, AND XXVII. Cancer of the uterus, recurrent cancer of the breast, and cancer of the stomach, respectively, have not been under treatment sufficient length of time to make observations of value.

All the cases here reported, when referred, were deemed inoperable and hopeless by their attending physicians and surgeons. These cases have been referred to me by Doctor Hall, Doctor Drinkard, Doctor Noome, Doctor McColl, Doctor Gilmore, Doctor Hupp, Doctor Vieweg, Doctor Fulton, Doctor Staats, Doctor Reed, Doctor Wineberger, and Doctor Swinn, of Wheeling, West Virginia; Doctor Howell, of Bridgeport, Ohio; Doctor Hawthorn, of Colerain, Ohio; Doctor Armstrong, of Bellaire, Ohio; Doctor Vorhis, of Cambridge, Ohio, and Doctor Dye, of Sisterville, West Virginia.

## TREATMENT OF FRACTURES OF THE UPPER END OF THE HUMERUS.\*

BY ROBERT E. DAVISON, M.D.,  
Pittsburgh.

It is in no wise our intention to review what is found in current literature on this subject. What we wish to bring before the reader is a satisfactory method of treatment, stated briefly, yet with detail sufficient for application. We fully realize the folly of attempting to formulate a method applicable to every fracture in this part of the humerus, or in fact in any bone; this statement requires no discussion. The principles governing the treatment should be uppermost in the surgeon's mind and not the little details we shall recite to meet the conditions

in the case presented. For instance, in this case we used a wire nail. Now we might just as well have used an ivory peg; as far as the material was concerned this was not important, but the principle demanding a point of fixation in order to maintain apposition by means of splints, was of the highest importance. In this presentation there is nothing original, novel, or bizarre. The various steps in the mechanics of the method have been used by surgeons on previous occasions; yet this method presents a different ensemble, no doubt, the result of a fuller knowledge of bone growth and the better surgical technic of the present day. Comparatively speaking, these fractures are not common, when we consider the exposed position of the upper end of the humerus.

For years there had been no advancement in the treatment of fractures, especially of fractures in-



FIG. 1.—Shows a closed fracture of the upper end of the left humerus. The lower fragment displaced forward and upward into the axilla, and the upper fragment rotated outward. This is the usual position of these fragments. There is no dislocation of the humeral head.

volving the joints. For instance, take the treatment of fractures of the head of the humerus, as described in Fergusson's *Surgery*, published in 1848. We find the treatment advised in this old book almost identical with that in our modern textbooks. As a result of Lister's teaching other lines of surgical endeavor had made enormous strides, but bone surgery lagged. The *noli me tangere* idea prevailed everywhere among surgeons; now and then a daring operator would attempt open fixation, usually with disastrous results. The dawn of the antiseptic era did not help much, excepting in compound fractures. The closed fracture either within or without the joint was a sealed book, which no man dared to open, if he wished to maintain the respect of his confreres. It was by the merest chance that Lister succeeded in his open operation for fractured patella performed before the skeptical London surgeons. In fractures of the shoulder both surgeon and patient were dissatisfied with the results, yet all attempts to improve them were abortive. There is only one conclusion, and that is, that the antiseptic method with its technic had failed in bone and joint



surgery. The surgeon failed because of infection and not because of lack of skill. He was safe in abdominal surgery, but not in bone surgery, because the latter required a higher conception of surgical cleanliness. The surgeons were slow to grasp this



FIG. 2.—Shows the mechanics of maintaining apposition. The wire nail gives one point of fixation in perfect apposition and around this is built up the plaster splint to hold the fragments in place. The wire nail in no wise holds the fragments so firmly fixed as the Lane splint, a slight degree of mobility being desired.

idea, and even today very good men believe that the technic for abdominal surgery suffices for any surgery. As a result of their experience the leading men advocated, and with good reason, the treatment of all simple fractures with bandages, splints, and extensions by the closed method. The open method of treatment, although they were convinced as to its



FIG. 3.—Shows an anterior view of the plaster cast and the position of the arm. The shaft was abducted to about 90 degrees slightly rotated, and the forearm flexed. The position of the arm was the result of opposing the fractured surfaces. The line of fracture determines the position of the arm.

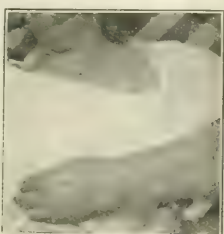


FIG. 4.—Shows an anterior view of the breast and chest. The splint carries the entire weight of the arm and in this case it was particularly strong because the arm was very heavy. A wire bracket in the axilla was incorporated in the plaster to give additional strength to the splint.

greater accuracy, had proved a failure in their hands. The burden of their teaching was to fear the opening of a fracture by incision; even a bad anatomical result with limited function was to be preferred to the risk of infection.

With aseptic surgery came the present open treat-

ment of fractures. These methods in the hands of most men were crude and the results bad. All kinds of plates, nails, and screws made of diverse materials were to be had. Men without proper surgical training or facilities, and with no conception of the surgical skill demanded, attempted open treatment. The pendulum soon swung from the radical to the conservative, and today has settled down to about where it belongs. There is a place for closed treatment today as there was yesterday, and there is also a place for open treatment. Judgment is a requisite in the choice of a proper treatment of fractures as it is in all surgery.

A complete knowledge of bone detail is essential. One should have several good skiagraphs taken from at least two angles. Fortunately at the present time there is scarcely a community where a fairly good plate cannot be had. The fracture should be studied thoroughly from every point, considering all facts, probabilities, and possibilities entering into the case.

The problem is one of the reduction and retention of the fragments. Even in the simplest complete



FIG. 5.—Shows a view of the cast covering the right shoulder and breast. Notice the breast was padded but not the shoulder. Padding destroys the grip of the plaster, so it is well to use as little as possible in the treatment of fractures.



FIG. 6.—Shows a view of the cast. Notice the large wide piece of adhesive plaster holding the cast down. See the rolls of adipose tissue. There was no padding under this cast in the back, yet the skin was in perfect condition at the end of four weeks.

fractures of the neck of the humerus, reposition by manipulation is difficult, and may be impossible without inflicting serious injury to the soft parts of the axilla. The small upper fragment usually rotates in the socket, upward and outward to an abnormal position, thus making it difficult to oppose the lower fragment. The shaft is often shoved up into the axilla, damaging more or less the vessels and nerves with its sharp spicules. Attempts at reduction, unless gently made, increase the damage already done to the axillary soft structures. Occasionally the head is dislocated, which further complicates any attempt to get apposition. A mere entanglement of the fractured ends is not enough, and attempts to impact the broken bone usually end in failure beside damaging the already traumatized tissues. The author can conceive of only one way, textbooks to the contrary notwithstanding, that can assure reduction with no damage to important structures, and that is by incision. Apposition must be correct or a bad anatomical result follows, and this means in the head of the humerus a bad func-

tional result. The final test of the treatment is the functional result, and the best assurance of that is a good anatomical result. In the shaft good function is compatible with overlapping, but not in joint fractures.

Prominent among the causes of ununited fracture is interposition of soft parts—muscle, fascia, ten-

and the fracture investigated. An unhappy result may be averted by heeding the patient's cry of pain. Pain more than an ache is not a concomitant of a properly set and a correctly splinted fracture. The material of the splint is not important just so it meets conditions. It should be strong and snug and free of constriction. Plaster of Paris reinforced with sheet tin or wire, will answer every purpose.



FIG. 1.—Shows a patient one or two days after a week's use of the splint. The patient is in a future case to hold the shoulder fractures in general, because in a future case to hold the cast. The position of the shaft when correctly opposed to the upper fragment determines the shape of the cast and the position of the

don, ligament, and periosteum. Since we began to use more incisions we have been impressed with this frequency. Just recently in a fracture of both bones of the forearm in a young woman with the ulna in bad position, we found the fragments completely separated by interposed muscle and periosteum. It took only a moment to clear away the soft tissue, when the fracture was exposed by incision, thereby permitting perfect apposition and a good functional result. Rubbing the fractured ends together, or injecting the line of fracture with caustics, would have been useless in this case.

Retention is just as important as apposition, because what will it profit if apposition is obtained but not maintained until there is union? The splint

is the chief factor in maintaining apposition, for it carries the weight of the limb, relieves the fractured bones of stress and strain, and puts the injured parts at rest. This should be accomplished by the position of the splint and not by constriction. A tight splint defeats its very object by causing pain. When both apposition and splint are correct the patient should suffer very little pain. A painful fracture, as a rule, is evidence of defective surgery. The patient may be nervous, and require a sedative, but the use of opiates to relieve pain is bad practice. If a patient suffers severe pain after a fracture is set and splinted, an opiate masks the blunder and gives false assurance when really the splint should be removed



dence of defective surgery. The patient may be nervous, and require a sedative, but the use of opiates to relieve pain is bad practice. If a patient suffers severe pain after a fracture is set and splinted, an opiate masks the blunder and gives false assurance when really the splint should be removed



FIG. 3.—Shows abduction and weight bearing.

The secret is in the application. In orthopedic work, where casts are left on for a month or more, the skin is protected under the cast, but in fractures where the plaster is rarely left on for more than three to four weeks, no skin protection is needed except over bony prominences. The plaster splint holds much better if applied directly to the skin. Cotton bandages and pads are useless *per se* to maintain apposition in these fractures.

The closed method of treatment, although highly desirable, rarely meets the conditions in fractures of the upper end of the humerus. When possible the open method should be used, whereby all parts may be brought into plain view and treated *secundum artem*. The rotated or dislocated head is readily brought into place, interposing soft tissues or loose bone removed, apposition accurately made and fixed, and the proper position of the arm determined. This is positive surgery and should give uniform results.

This operation requires perfect technic, and in the hands of men who do not appreciate this, it will fail. These men had better use the closed method because infection is a serious matter. As pointed out by Lane and Murphy, asepsis must be perfect in operating on bones and joints, for infection renders the operation futile. The technic of abdominal surgery is not good enough for bone surgery. The peritoneum will take care of a good deal of infection, but the broken bone and injured joint will tolerate none.



FIG. 4.—Shows flexion, external rotation and abduction. The patient is arranging her back hair.

The splint is just as important as reduction and

asepsis, and demands the study, preparation, and ingenuity of the surgeon. There is no way of estimating how often bad results are due to bad splinting, but they must be frequent, considering how carelessly splints are used. In this operation it is very easy to tell what splint should be used after apposition is made. The position assumed by the arm when the apposition is correct is the one to be maintained, consequently the splint that holds the arm in this position is the right one. One fixed point at the seat of fracture suffices, for the splint should carry the weight of the limb.

CASE. Mrs. M. A., widow, aged sixty-five years, weight 182 pounds, in good general health, fell down stairs, March 18, 1914, striking her left shoulder. The skiagraph showed an ugly fracture of the upper end of the humerus. It was a closed fracture caused by direct violence. The extensive contusion over the shoulder and arm showed the fall to have been a very hard one. By a study of the plate it was evident that reduction without incision would be very unsatisfactory in this case. The patient was anxious to have a useful arm because her livelihood depended upon her own exertions. Open treatment was considered the best solution, although the contusion and fat would materially interfere with aseptic healing. The arm and shoulder being heavy it would require a strong splint to maintain the desired position. A bracket of heavy copper wire was devised so that the angle would fit in the axilla of the affected arm, one leg resting against the chest wall and the other extending out along the arm. The wire frame bracket was not strong enough to support the arm alone but when incorporated in plaster proved to be a good support.

On the sixth day of her injury, under ether, an incision was made along the posterior border of the deltoid muscle for about five inches. The deltoid was covered by a heavy layer of fat, making the site of fracture very deep and requiring a rather long incision. Lane's advice was followed, namely, to keep the gloved hand out of the wound; the hand must not touch any material coming in contact with the wound; when ligature or instrument is handled by mistake it is discarded or boiled. Ligatures and sutures were placed and tied without handling.

The incision exposed the fracture well and allowed ample room for manipulation. The fracture was high on the tuberosities, involving the capsule and consisting of two fragments. The shaft was displaced forward into the axilla and the upper fragment rotated outward. The fragments were seized with Lane's bone holders and easily brought into apposition. The apposition was maintained when an assistant held the arm in abduction and slight outward rotation. The splint must be devised to hold the arm in this position.

A hole was drilled in the compact bone of the lower fragment, and a small wire nail was driven through into the upper fragment. This held well. All bleeding having been checked, one catgut suture held the capsule and another the fascia, and the skin was closed with interrupted catgut. Our usual practice is to check bleeding and simply close the skin with Michel clips, not using any sutures in the fascia, muscle, or capsule. The wound was surrounded with wet five per cent. carbolic gauze to take up secretions. The arm was ready now for the splint. The wire bracket was placed in position and held by a gauze bandage, padding well the resting points and the breasts. The opposite arm, shoulder, and back were not protected under the plaster.

The plaster bandages were put on in a figure of eight manner, extending over the sound shoulder and arm. The splint was made heavy and strong. The arm was held quite firmly in the abducted position. The patient had the use of both elbows and was able to feed herself. By the end of the week she was out of bed. The wound was dressed for the first time at the end of four weeks, when the cast was removed. It had healed by first intention. The arm was bandaged to the chest and supported by a sling about the neck, and the patient was discharged from the hospital on April 22d. She has every use of the broken arm that she formerly had, and is very happy with the result. While in the hospital she got bromides and veronal, but no opiates, and at no time did she suffer severe pain.

The pictures show details not touched on in the text. The second skiagraph and the photographs of the patient in street dress, were taken January 23, 1915.

8152 JENKINS ARCADE BUILDING.

## A BROADER VIEW OF MENTAL DEFICIENCY IN ALIENS.

By HOWARD A. KNOX, M. D.,  
Ellis Island,

Assistant Surgeon, United States Public Health Service; Temporarily Detailed Assistant Physician, Psychiatric Institute, New York State Hospitals.

Except for certain necessary digressions, I shall confine myself wholly to the consideration of alien defectives, including the problems peculiar to this class; the definitions, laws, etc., which are a part of the general study of weak-mindedness, I must omit for the sake of brevity.

There are those who believe that a rational eugenic program cannot be applied to the immigrant, and it is unnecessary, they argue, for during our national life we have improved and progressed without such a program. To this it is easy to make reply. How much easier would our progress be, for instance, if we were not compelled to care for so many incarcerated individuals, the vast majority of whom all will eventually agree, I think, are a burden to society because of mental deficiency or defective germ plasm. At the present time approximately one per cent. of the people in this country are confined in institutions for the blind, deaf, feeble-minded, insane, criminal, juvenile delinquent, paupers or the eleemosynary (1). It is not hard to conceive at least a majority of these as being so situated because of some sort of predisposition or constitutional inferiority which must be included in our broader conception of mental deficiency. The number of those persons who are foreign born and the relative percentages of those foreign and American born have not been accurately determined for the whole country, but such a study might be productive of results somewhat favorable to the alien. It should be remembered that immigrants coming to us from certain countries of Europe, where the infant death rate is unusually high, are already highly selected, and that in our own country modern social conditions are partly responsible for the problems that face us. Natural



selection would continue to cut off lines of stock unadapted to conditions here if it were permitted to operate, but it is not permitted to do so by beneficent society, and the basis of parenthood is thereby lowered, permitting the dissemination of defective traits among the general population, until deterioration shall have progressed to such a point that society will no longer be able to bolster up the defective; but this is not the end, however, for at this time natural selection will again become operative and more worthy strains of mankind will arise. This theory is probably a fact, nevertheless we wish to maintain present standards, and to do so we must supply rational selection in place of natural selection, which we are preventing, else our race must inevitably deteriorate, as has been the case with some of the too often conquered countries of the old world.

#### WHOM SHALL WE CONSIDER DEFECTIVES AMONG OUR IMMIGRANTS?

For the best interests of the country this consideration must be broad, but based on completely established principles. To be of material service it



FIG. 1. A group of men standing in a line, possibly in a medical or institutional setting. The caption indicates that the men to the left of the desk have cases of congenital asthenia and poor physique, while the two men to the right have none.

will of necessity work hardship on a few for the good of the many. Every person who presents evidence of inferior germ plasm, physical or mental, must be regarded as bad potentially, and should be excluded without recourse to bonds, and those who administer the law should not be interfered with so long as they are conscientiously performing their duties.

The earlier conception of mental deficiency dealt only with the intellectual forms or plain fools—the criminal and the ne'er-do-well receiving scant attention except at the hands of the police.

#### —I. FEEBLEMINDED.

At the present time the term, "feeble-mindedness," is by common consent applied to the merely intellectual types (i. e., the cases that are detected by scales and performance tests), and the term is modified by such adjectives as toxic (from disease or chemical poison), traumatic (from injury), anesthetic, amaurotic-idiotic, mongolic or ethiopic, cretinic, epileptic, microcephalic, macrocephalic, simple

functional moronic, and essential congenital. These forms can be easily detected at the immigration stations with an adequate force of examiners, but the ensuing classes of defectives when they are to all intents normal intellectually cannot be so effectively handled either from a medical or administrative standpoint.

#### II. PAUPERS.

These may be grouped as, 1, ne'er-do-wells; 2, beggars, petty peddlers, and street fakers; 3, globe trotting tramps and characterological freaks; 4, migratory laborers who work indifferently and only long enough to return to their native land and a life of idleness for a few months, afterward returning practically penniless and often to become a public charge. The special defect in this class is shiftlessness and many of them are morons or high grade imbeciles. In the third group, we have found that the condition is frequently due to "cleared up" or improved psychoses, especially of the deteriorating types. Persons with normal traits, who have by accident become dependent, should not be included in the pauper class. This class includes those with a degenerative makeup which manifests itself in a lack of ambition or laziness rendering them useless to organized society, and every immigrant who cannot demonstrate that he does not belong to this group should be denied admission to the country.

#### III. INEBRIATES.

Mental deficiency here appears to be the cause in the individual himself, while the effect is chiefly manifest in his progeny. The members of this class are lacking in moral tone and inhibition, and I doubt if a healthy person of wholesome heredity could become either a dipsomaniac or a chronic alcoholic (2). The accidental or occasional drunkards are not herein concerned and are responsible for their acts, while the dipsomaniacs and chronic alcoholics should not always be held responsible, but should be confined in institutions like any other incurably defective or insane person, and therein they should be prevented from contributing their traits to a new generation. At the present time the inherently defective alcoholics do not come under the mandatorially excludable conditions named in the law.

#### IV. CRIMINALS.

Persons whose instincts are social, but who commit technical civil offenses not characterized by repetition, do not belong to the criminal class of mental defectives. It does include, however, all those individuals who commit crimes because of a lack of social morality. If punishment and teachings have no effect upon them they should be considered as moral imbeciles regardless of their intellect, and they should be prevented from entering the country and from procreating. The following crimes are committed by persons of this definitely criminalistic class.

#### I. CRIMES AGAINST CHASTITY.

- a. Adultery.
- b. Promiscuous fornication.
- c. Bigamy.
- d. Polygamy.
- e. Prostitution.
- f. Homosexuality.
- g. Seduction.
- h. Other types of sexual perversion.

## 2. CRIMES AGAINST PERSONS.

- a. Slander.
- b. Assault.
- c. Extortion.
- d. Robbery.
- e. Rape.
- f. Homicide.
- g. Suicide.

## 3. CRIMES AGAINST PROPERTY.

- a. Malicious mischief and trespass.
- b. Larceny, petty and grand.
- c. Fraud.
- d. Embezzlement.
- e. Forgery.
- f. Burglary.
- g. Arson.

## 4. CRIMES AGAINST PUBLIC POLICY.

- a. Disorderly conduct.
- b. Drunkenness.
- c. Vagrancy.
- d. Truancy.
- e. Incurability.
- f. Perjury.
- g. Illicit liquor traffic.
- h. Counterfeiting.
- i. Treason.

Persons committing these crimes are thereby manifesting their lack of fitness for reproduction, and for American citizenship; and all those unable to prove that they do not possess this criminal personality or special type of mental deficiency, should be excluded at all costs.

## V. EPILEPTICS.

Insanity, crime, drunkenness, and feeble-mindedness in general are intimately associated with the symptom known as epilepsy. The special type found in the defective may be petit mal or grand mal or an epileptic psychosis with its periodicity and dangerous equivalents. Epileptic defectives furnish us with the clearest instance of specific hereditary degeneracy. It is obvious that effective efforts should be made to exclude this type of case.

VI. THE INSANE.<sup>1</sup>

This division of the mentally defective can be touched on only briefly in this connection, and I will content myself with the setting forth of the chief problems presented. At the present time nearly all those who present symptoms that can be elicited are being detected, certified as insane, and deported. Cases in lucid intervals or with temporary insight, or who for some reason are inaccessible, cannot be diagnosed as insane without long periods of observation which are, with present facilities, an impossibility. It seems for the present that a part of the problem must of necessity be handled from within the country by lengthening the period within which an alien may be legally deported, and by other appropriate measures. Insane and defectives who have been deported not infrequently return to this country through other channels. The following question presents a large part of the insane problem and it also explains why there are alien insane in the country in spite of the medical examinations. How may one detect epileptic and insane persons who present no symptoms, and the psychopathically predisposed or potentially insane who are for the time being normal, or those who will produce these individuals? The only theoretical solution of this problem that I know of, and this is impracticable, consists in obtaining family histories in the case of

every alien, and in examining in detail each and every alien and keeping him under observation for a certain length of time, and perhaps in examining his blood serum to determine whether it contains ferments capable of digesting brain, thyroid, or sex gland tissue, or whether it contains other evidence of nervous disease. It can be seen that these suggestions are nothing more than visionary at this time. Organic disease of the central nervous system, so often associated with insanity and deficiency, is not as yet a mandatory condition.

## VII. CONGENITAL ASTHENIA AND DEEP PUEBOD.

These conditions are not in themselves types of mental deficiency, but I have been surprised at the



FIG. 2.—Case No. 258. Asymptomatic degeneration of the hands. The father was normal, the paternal grandfather had wasted fingers on both hands, but the fingers involved could not be ascertained; a paternal male cousin had deformities exactly like these shown here except for the rudimentary digit growing from the first finger of the left hand in this case; a sister of this cousin was described as an imbecile. (This is the fifth case seen by me in three years in which maldevelopment of the fingers was associated with feeble-mindedness, once in the individual himself and four times in relatives.)

rather large number of our certified defectives who themselves and whose relatives have been found to be afflicted with some variation of them. Most of these persons are not pleasant to look upon, in fact intellectual defectives are seldom comely, while moral and criminal ones may sometimes be handsome, although not often. Many of our defectives just seem to lack constitutional vigor and stamina, and this has been seen so often, that I believe all individuals who are of poor physical development or who have a lack of physical development for the age they give should be mandatorially excluded. Physical weakness interferes with the fullest functions of the mind, and the motto, "a sound mind in a sound body," is a good one. The large majority of a certain people that are entering the country at this time are physical weaklings, and it is a remark-

<sup>1</sup>See VIII, The Diathetic Class, etc.

able fact that this race furnishes us with the largest relative and absolute percentage of insane and defectives, and one cannot help but believe that a relationship exists between the mental and physical conditions.

The following table illustrates the type; it represents an average certified group of 105 boys that closely approximate a mean male average in physique of people from the country that yields the largest relative percentage of feeble-minded persons at Ellis Island; the boys were certified for "lack of physical development for age claimed," many thousands being so certified each year.

PHYSICAL DEFICIENCY OF PHYSICAL MEASUREMENTS  
FROM A RACE YIELDING THE MOST  
MENTAL DEFECTIVES.

(By Surgeon Ebersole.) (3)

|                              |             |
|------------------------------|-------------|
| 16 years, 4 feet 9.2 inches  | 84.8 pounds |
| 17 years, 4 feet 10.1 inches | 87.5 pounds |
| 18 years, 4 feet 10.6 inches | 93. pounds  |
| 19 years, 5 feet             | 99.8 pounds |

To show how physically deficient these aliens are, from our standpoint, let us compare them with the



FIG. 1. Case 1. Right hand of patient shown in Fig. 2.  
FIG. 2. Case 1. Left palm of patient shown in Fig. 2.

average English schoolboys of the same age. (From Bowditch.)

| Age | Height            | Weight        |
|-----|-------------------|---------------|
| 16  | 5 feet 5.3 inches | 115.96 pounds |
| 17  | 5 feet 6.9 inches | 131.93 pounds |
| 18  | 5 feet 7.3 inches | 136.68 pounds |
| 19  | 5 feet 7.7 inches | 142.00 pounds |

It is to my mind more than a coincidence that the country furnishing us the highest relative percentage of mental defectives should also furnish the highest percentage of physical defectives.

#### VIII. THE DIATHETIC CLASS AND PERSONS POSSESSING SIGMATA AND DEFORMITIES.

No effective means is available at this time for the exclusion of the diathetic class who are not suffering from active disease; predisposed persons are free to come and go as they please. To attack this subject intelligently, we must determine to what degree and in what cases diathesis is a fact, and the extent to which it affects the race. There might be conditions that could be neglected, but others, such as epilepsy or Huntington's chorea, in which the diathetic influence is strong, should be excluded and their blood relations as well, because they are probably potentials.

The hereditary possibilities of a person are determined when the parental gametes meet to form the zygote in fertilization, and the mere act of birth or uterine residence has absolutely no influence on the production of traits, except in so far as traumatic, nutritive, and toxic factors may organically change the individual.

Direct heredity is the transmission of a quality that will, in spite of the best environment, appear

at some time in the individual's course of development, as Huntington's chorea upon which environment has no effect and which usually appears at about forty years of age. Our American civilization can exert no good influence on aliens the subject of diseases characterized by direct heredity.

Indirect heredity or "predisposition," environment plays a much greater part than it does in direct heredity, but it is not always a necessity. Heredity may be described as the foundation upon which environment builds the trait, but heredity often becomes manifest in spite of environment. People do not directly inherit tuberculosis, but they inherit a constitutional make-up, functionally, morphologically, and chemically, that causes them to fall an easy prey to the disease, and just these same individuals seem to predominate in the families of some mentally unstable individuals, indicating defective germ plasm throughout; in other words, constitutional inferiority is a thing that seems to pervade all the tissues, and the nervous ones suffer only incidentally and with the others. A physical condition presenting an example of indirect heredity at Ellis Island, is hernia, and we may well wonder what that infirmity has to do with my subject, Mentally Defective Aliens, yet it is true that this condition is extremely common in a race of immigrants in whom it is often impossible to find one member on a barge load of 1,500 persons that could pass the physical examination for the army and navy, and not only that, but these same aliens are the ones in whom deficiency and insanity have a high incidence. It has doubtless been divined before this that I am attempting to help solve a mental problem through physical channels.

Before leaving the subject of heredity and diathesis, I should like to call attention to the strong ground upon which we are standing as regards the influence of heredity in most diseases of nervous origin, and to ask if it is not now time to take more active measures toward the exclusion of such, even going so far as to exclude certain blood relatives of an insane alien, and require every alien to furnish satisfactory proof that there has never been an insane individual or a public charge in his family, collateral or direct, for three generations. The following table (4) shows the percentage of psychoses in one group in which there was a history of insanity and nervous disease and other unmistakable evidence of psychopathic make-up. It also suggests that direct heredity is the most potent factor in the first eight conditions, although it enters into all of them, and that environment seems to play a greater part perhaps in some than in others.

#### A. (NEW YORK LUNACY COMMISSION.)

PSYCHOSES WITH A HIGH PERCENTAGE OF CASES OF FAMILY  
HISTORY OF INSANITY OR NERVOUS DISEASE.

|  | Percentage of cases with history of insanity and nervous disease, etc. |
|--|--|
| Psychosis.                                       |  |
| Dementia præcox                                  | 59.2   |
| Involution melancholia                           | 61.6   |
| Alcoholic  | 54.2   |
| Allied to manic depressive                       | 50.7   |
| Epileptic  | 60.2   |
| Hysterical, psychasthenic, neurasthenic          | 61.9   |
| Other constitutional disorders and inferiorities | 57.8   |
| Imbecility and idiocy with insanity              | 58.5   |



## B.

## PSYCHOSES WITH LOW PERCENTAGE OF CASES WITH HISTORY OF INSANITY AND NERVOUS DISEASE.

|  |      |
|--|------|
| Senile .....                             | 41.7 |
| Dementia paralytica .....                | 38.4 |
| Infective-exhaustive and autotoxic ..... | 41.7 |
| Allied to infective-exhaustive .....     | 33.3 |
| Paranoiac hallucinoses .....             | 40.1 |
| Depressive hallucinoses .....            | 37.5 |

## DEFORMITIES AND STIGMATA.

Most of us at Ellis Island are by this time convinced that the vast majority of persons possessed of numerous stigmata and congenital deformities are inherently inferior, both mentally and physically. There is evidence of lowered resistance to disease, psychic shock, and social adversity; intellectually they are underlings, although the defect is not great enough to warrant our certifying them as feeble-minded according to present standards and policies. Many workers would consider them as high morons and such I believe they are. Multiple stigmata and deformities are not often found in pure healthy stock. Such being the case, why should we menace ourselves by admitting them when we know that these objective signs are almost surely indicative of poor mental germ plasm?

Among the stigmata and deformities to which I refer are the following:

1. *Special senses.* Congenital perversion and maldevelopment of the special sense organs with consequent disordered function, such as speech defect; defective vision from atrophy of the optic nerve, glaucoma, cataract, ectopia lentis, aniridia, ophthalmoplegia, nystagmus, micropthalmos, or megalophthalmos, color blindness, and retinitis pigmentosa; defective hearing from undeveloped tympanic cavity, absence of membrane, ossicles, or other necessary parts of the structure.

2. *Hemophilia* or other constitutional dyscrasia.

3. *Disordered physiology* throughout the body dependent upon improperly developed organs, for instance, some forms of sterility and intestinal troubles in certain marasmic infants.

4. *Dwarfs*, cretinoid, achondroplastic, and ateleiotic. (Rhachitic might be included by some.)

5. *Giants*, infantile with great size and infantile somatic traits; acromegalic giants. (The author is making a study of one of the former at the present time who is in addition eunuchoid and a sex pervert.)

6. *Race type degeneracy*, persons with Mongolian, Ethiopian, and American Indian physiognomies who racially have no right to possess them.

7. *Sex organ deformities.* Hermaphroditism, both male and female; hypoplasia in males (eunuchoidism); hypoplasia in females.

8. *Skin and hair peculiarities*; absence of hair, hypotrichosis, hypertrichosis, absence of nails, albinism, melanism, xanthism, lentigo, ichthyosis (apart from disease), general thickening of skin as a family characteristic.

9. *Consistent lack of comeliness*, with irregular large or small features and lack of general symmetry and shape. Harelip, cleft palate, congenital hypertrophy of lips or ears, macrostoma, microstoma, absence of, or supernumerary teeth and third dentition.

10. *Head.* Large or small head and hydrocephaly.

11. *Neck.* Cervical auricles, torticollis, and cervical ribs.

12. *Spine.* Spinal curvature, spina bifida, increase or decrease in number of vertebrae and synthesis.

13. *Trunk.* Supernumerary nipples, fatty pendulous abdomen in the young, congenital hernia, fusion, suppression or increase in number of ribs, scaphoid scapula, absence or deficiency of clavicle, congenital elevation of scapula, absence of pectoral muscles, long slender phthisical chest, and funnel chest.

14. *Extremities.* Absence of one of the bones of the arm, congenital dislocations of both shoulder joints, club hand, syndactylism, polydactylism, brachydactylism, rudimentary patella, congenital genu valgum or varum, absence of one of the bones of the leg, and talipes.

If the characteristics of this class are really indicative of degeneracy, we should pay more than passing attention to them and should strive to procure laws to give them proper evaluation.

## ACTIVITIES OF THE UNITED STATES PUBLIC HEALTH SERVICE AT ELLIS ISLAND.

The number of aliens certified for mental deficiency at Ellis Island during the fiscal year ending 1913, per 100,000, was over twice the number it had been in the largest previous year, being 25.1 per 100,000 in 1908, and 50.8 per 100,000 in 1913 (5), and in the last fiscal year ending June 30, 1914, about ninety-six per 100,000 were certified, nearly doubling the record of the previous year. During the recent light immigration when the proportion of the medical officers to immigrants was relatively high (and an intensive examination possible), a record ratio of 280 certified per 100,000 was reached, which is a most weighty argument in favor of a large force of trained officers to conduct the mental examination of immigrants. The increased efficiency during the last two years has been due to the advent of trained men, to experimental study (6), to the collection and correlation of data obtained by work on immigrant defectives, and to the use of performance tests designed by Public Health Service officers for special use among European aliens (7). In general it has been due to a constantly broadening view on the part of these officers as to what really constitutes mental deficiency, and the work has been accomplished in the face of some discouragements.

The following table shows the mental work actually accomplished in the fiscal year ending June 30, 1914. The immense value of it as a eugenic public health measure must be at once apparent.

DISPOSITION OF CASES QUALIFIED AS MENTALLY DEFICIENT AT ELLIS ISLAND, FISCAL YEAR ENDING JUNE 30, 1914. EXCLUDED CASES PENDING FROM THE PRECEDING FISCAL YEAR, AT THE PORT OF NEW YORK.

| Class "A" (1), Idiocy, Imbecility, Feeble-mindedness, Epilepsy, Insanity |   | From preceding year |   | Admitted |   | Excluded |     | Total |         |
|--|---|---------------------|---|----------|---|----------|-----|-------|---------|
|  |   |                     |   |          |   |          |     |       |         |
| Idiocy   | 3 | 76                  | 1 | 80       | 1 | 1        | 83  | 84    | 169,998 |
| Imbecility   | 3 | 76                  | 1 | 80       | 1 | 1        | 83  | 84    | 169,998 |
| Feeble-mindedness  | 2 | 50                  | 1 | 53       | 1 | 1        | 55  | 56    | 114,996 |
| Epilepsy   | 1 | 11                  | 1 | 13       | 1 | 1        | 15  | 16    | 32,992  |
| Insanity   | 1 | 11                  | 1 | 13       | 1 | 1        | 15  | 16    | 32,992  |
| Total  | 8 | 215                 | 5 | 228      | 5 | 5        | 238 | 244   | 499,984 |

A regulatory physical standard is demanded, equivalent to our minimum requirements for enlistment in the United States army. It should be remembered that applicants with congenital maldevelopment, asthenia, etc., are never accepted, and therefore if this physical clause was incorporated in the present law, vast hordes of potential psychopaths and defectives, both physical and mental, would be prevented from landing. A standard for women might be adopted, if thought advisable.

ALLEN, R. LAUCHLIN. *Resistant to the Common Cold*. New York: The Century Company, 1933. Pp. 118. \$1.50. This volume is a reprint of the 1927 edition of the book by the same author. It is a collection of essays on the common cold, its causes, and its prevention. The author is a well-known physician and a member of the American Academy of Medicine. The book is written in a clear, concise, and readable style. It is a valuable contribution to the literature on the common cold.

BY ROBERT HUGH ROSE, M. D.,  
New York.

For the intelligent supervision of weight reduction in cases of obesity, familiarity with the maintenance diet is a necessity. For this reason, I refer the reader to my article, The Maintenance Diet for Adults, which appeared in the NEW YORK MEDICAL JOURNAL for September 18th. A maintenance diet is one sufficient to maintain the person's normal weight and strength. It is dependent upon his height, his ideal weight and his activity. It must be well balanced. For a sample of such a diet, I refer the reader to the aforementioned article. This diet is calculated for one weighing 150 pounds. It is an easy matter for a physician familiar with food values according to the caloric method, and in possession of the tables given and referred to therein, to calculate the maintenance diet for any patient. For convenience in treatment, the following simple classification of obesity may be used: 1. Cases due to constitutional causes, chiefly hypothyroidism; 2. cases due to overeating.

Patients with hypothyroidism should be given thyroid extract, grain one daily, with subsequent increase in the dose until sufficient is administered to control the symptoms. Tablets should be dispensed, because it is not safe to allow patients to use their own judgment regarding the dose, as many will do if a prescription is given.

In conjunction with thyroid treatment, a diet should be used which is lower than a maintenance diet. It must be borne in mind that thyroid extract reduces weight only by increasing metabolism. If, therefore, enough thyroid is given to reduce the weight of one who is overeating, it can be done only by increasing metabolism to such a degree that it will be harmful to the patient. Therefore, in the use of thyroid, the dose should be regulated by the symptoms of hypothyroidism and not by the amount of adipose tissue.

Cases of obesity from overeating may be sub-

divided into: *a*. Those consuming an amount of food which seems small, yet is really more than a maintenance diet because activity is slight; *b*, those consuming an excessive diet in spite of the fact that activity is average or greater than average.

It may be well to mention that von Noorden estimates that any of the following, when taken daily in excess of a maintenance diet, will cause a gain in weight of twenty pounds in one year:

Three slices of bread,  
One third of a quart of milk,  
Three quarters of an ounce of butter, or  
Two fifths of a quart of beer.

The patients in group *a* are not exercising enough. If they can be induced to exercise more, well and good; but, in any event, their weights can be reduced by dietetic measures. The patients in group *b* can hardly be induced to exercise enough to keep their weight down without a reduction in the diet, nor would this be desirable.

I shall not enter here into a discussion of general rules for weight reduction, such as increasing green vegetables and fruits, and diminishing starches, sugars, and fats in the diet. This will be successful in many patients—especially in those whose weights have increased slowly, who live active lives, or whose diet has been excessive in certain respects only. However, these directions will fail to secure the result in at least one fourth of the cases, and are particularly apt to fail with those difficult cases which have been unsuccessfully treated elsewhere, and with which a reputation might consequently be made.

There is only one scientific method of procedure, and that is to prescribe the diet in detail as to amounts of each article, times of eating, etc. Exercise is an especially valuable adjunct to dietetic measures, and the more, the better. It increases the strength and the feeling of well being during the period in which the weight is being lost. Hard outdoor exercise, and very hard room exercises are of value. However, for purposes of weight reduction, a walk of one or two miles daily is a joke. When the diet is low enough to cause weight reduction, the loss of weight will be over the most used muscles, and exercises can easily be devised to remove the weight where most desired. My purpose, however, is to discuss the dietetic factors in weight reduction.

Thoroughly to understand this subject, the physician should become familiar with caloric methods and with what constitutes a maintenance diet. My personal method in weight reduction is as follows: I ask the patient to tell me what he eats, not neglecting the very important inquiry as to amounts of oil, sugar, butter, bread, and dessert. It is important to elicit the amount of cream and butter used in the cooking—also amounts eaten between meals. Ice cream, it must be remembered, is quite nutritious.

These facts are written in the history of the case, and I estimate at once the caloric value of the food the patient is accustomed to eat. I then revise this diet to make it equal two thirds a maintenance diet for that individual when undergoing slight activity. A person weighing 150 pounds will lose one quarter to one half pound daily on two thirds of a maintenance diet.

The patient calls in four days to be weighed in the same clothing, and at the same time with re-

gard to meals. I see how much is lost, whether the patient takes the diet well, and perhaps, adjust it a little, according to indications. I then see the patient each week, and take the weight with occasionally the hemoglobin, and notice the respiration and heart action. Most patients, beyond hunger and a little lassitude, feel a great deal better for this treatment. Three pounds loss of weight a week for two to four weeks, and one to two pounds thereafter is generally satisfactory. If the patient is fifty pounds overweight, I would reduce from twenty-five to thirty pounds, and then place him on a maintenance diet. At the end of six months to one year, or even two years, further reduction may be resumed. While I consider it necessary to keep up a sufficient supply of proteids, I do not believe more than one half gram for each pound of the estimated normal weight of the individual is required.

If the patient suffers from hunger between meals, I allow a banana, an orange, or an apple. My diet is as nearly like what the patient eats as possible. If he cares little for breakfast, I make that very light. If he does not require much lunch, I am influenced by this fact in prescribing the diet.

Now for the benefit of those who do not wish to master the details of the caloric method, I give two diet tables. One is for 1,200 calories, the other is for 1,600 calories. If a man comes for weight reduction, I look up the average weight for one of his height on an insurance table, which any physician can easily procure. Multiplying this weight in pounds by 16, I get the maintenance diet for one of slight activity. Most of those we are required to reduce are not active, and it is always better to figure low, and add to the diet at the end of one week, if necessary. We do not figure on the actual weight of the individual, but on the ideal weight. If a patient's normal weight was 150 pounds, his body would contain approximately 22.5 pounds of fat. If that same person weighed 200 pounds (or fifty pounds above his normal), his body would contain about 72.5 pounds of fat, in other words, the increased weight would be practically all fat. This surplus fat does not enter into the calculation of the diet necessary to keep his weight. Multiplying by 16 the weights of two men who weigh respectively 150 and 120 pounds, we find the maintenance diets would be for the one 2,400, and for the other 1,920 calories. Two thirds of these amounts would be 1,600 and 1,280; consequently my first table applies to one and my second to the other.

TABLE OF CALORIES—I.

| Breakfast:          | Amt.                    | Calories. | Proteids. | Carbo-<br>hydrates. | Fats. |
|---------------------|-------------------------|-----------|-----------|---------------------|-------|
| Bread (average in.) | 1                       | 70        | 2.3       | 13                  | .5    |
| Butter              | 1 1/2 ball              | 40        | ..        | ..                  | 4.75  |
| Eggs                | 1                       | 80        | 11.8      | ..                  | ..    |
| C. free, milk       | 3/4                     | 23        | 1         | 1.1                 | ..    |
| Sugar               | 1 tea-<br>spoon-<br>ful | 33        | 1         | 8                   | ..    |
| Lunch:              |                         |           |           |                     |       |
| Bread               | 1                       | 70        | 2.3       | 13                  | .5    |
| Butter              | 1 1/2                   | 40        | ..        | ..                  | 4.75  |
| Meat (average in.)  | 50 gm.                  | 100       | 11.8      | ..                  | 9     |
| Potato              | 1                       | 90        | 2         | 20                  | ..    |
| Tea (strong)        | 1 tea-<br>spoon-<br>ful | 33        | 1         | 8                   | ..    |
| Dinner:             |                         |           |           |                     |       |
| Bread               | 1                       | 70        | 2.3       | 13                  | .5    |
| Butter              | 1 1/2                   | 40        | ..        | ..                  | 4.75  |
| Meat                | 100 gm.                 | 100       | 23        | ..                  | 18    |
| Peas                | 3/4                     | 80        | 5         | 10                  | 2     |
| Squash              | 3/4                     | 40        | 1         | ..                  | ..    |

|                       |                         |      |           |           |                     |       |  |
|-----------------------|-------------------------|------|-----------|-----------|---------------------|-------|--|
| Apple                 |                         |      |           |           |                     |       |  |
| Clear coffee          |                         |      |           |           |                     |       |  |
| TABLE OF CALORIES—II. |                         |      |           |           |                     |       |  |
| Breakfast:            |                         | Amt. | Calories. | Proteids. | Carbo-<br>hydrates. | Fats. |  |
| Bread (average in.)   | 1                       | ball | 70        | 2.3       | 13                  | .5    |  |
| Butter                | 1 1/2                   | ball | 40        | ..        | ..                  | 4.75  |  |
| Eggs                  | 1                       |      | 80        | 11.8      | ..                  | ..    |  |
| Coffee, milk          | 3/4                     |      | 23        | 1         | 1.1                 | ..    |  |
| Sugar                 | 1 tea-<br>spoon-<br>ful |      | 33        | 1         | 8                   | ..    |  |
| Lunch:                |                         |      |           |           |                     |       |  |
| Bread                 | 1                       | ball | 70        | 2.3       | 13                  | .5    |  |
| Butter                | 1 1/2                   | ball | 40        | ..        | ..                  | 4.75  |  |
| Meat (average in.)    | 50 gm.                  |      | 100       | 11.8      | ..                  | 9     |  |
| Potato                | 1                       |      | 90        | 2         | 20                  | ..    |  |
| Tea (strong)          | 1 tea-<br>spoon-<br>ful |      | 33        | 1         | 8                   | ..    |  |
| Dinner:               |                         |      |           |           |                     |       |  |
| Bread                 | 1                       | ball | 70        | 2.3       | 13                  | .5    |  |
| Butter                | 1 1/2                   | ball | 40        | ..        | ..                  | 4.75  |  |
| Meat                  | 100 gm.                 |      | 100       | 23        | ..                  | 18    |  |
| Peas                  | 3/4                     |      | 80        | 5         | 10                  | 2     |  |
| Squash                | 3/4                     |      | 40        | 1         | ..                  | ..    |  |
| Apple                 | 1                       |      | 70        | ..        | 5                   | 11    |  |
| Clear coffee          | 1                       |      | ..        | ..        | ..                  | ..    |  |
|                       |                         |      | 1,601     |           | 71.8                |       |  |

It will be an easy matter by using one of the tables of Caloric Values in Household Measures to add to or subtract from these tables as necessary. These diets are sufficiently high in proteids. I have never found any harmful results from their use. It is obvious that all extremely stout persons should be reduced. Weight control is so simple that it would be perfectly easy to do away with all the superfluous flesh in the city. It is much easier to prevent obesity than to reduce weight. The former is done by a maintenance diet; the latter by a still lower diet. During the process of weight reduction, the patient should be under the close observation of the physician, who can see that the proteids in the diet are sufficient, that the patient is not losing strength, that he does not become anemic, and that, at the end of the treatment, he goes on a maintenance diet.

It is unnecessary to dilate on the need of weight reduction. There are many persons who are made miserable for life by the excess baggage they carry in the way of adipose tissue. I shall not discuss the shortness of breath, the interference with life's ordinary activities, or the deaths from fatty heart. I wish to include these, and go enough further to say that, since it is now possible to learn what to eat, and how to maintain the body at any desired weight, there can be no two ways about it—the ideal weight being the desideratum, that is what all should strive to attain.

393 WEST END AVENUE.

**Recent Experiences with Emetine.**—Van Brannen and Dubois, at a meeting of the Société de pathologie exotique, Paris (*Presse médicale*, July 22, 1915), stated that the introduction of emetine in the treatment of amebic dysentery among the natives in the Congo had not been observed to reduce the incidence of the disease, but had caused a marked diminution in the mortality from it. They were convinced that the alkaloid exerts a distinct parasitocidal as well as a hemostatic effect. Intravenous injections of full doses at short intervals exert a more prompt and powerful effect than the customary subcutaneous injections. In a case of hemorrhoids, emetine in the dose of one and a half grain (0.1 gram) relieved the pain and caused shrinking of the hemorrhoids and their return into the rectum.



## ABUSE OF THE INSANITY PLEA AS A DEFENSE FOR CRIME.

BY MELVILLE A. HAYS, M. D.,  
New York.

Insanity now holds such a position and plays such a part in the building up of a defense for murder and other serious crimes, that it is one of the most thoroughly discussed topics of the present day. In view of this fact, it would naturally be supposed that the average layman, and especially one who has served on a jury in a murder case, would be able to give a fairly satisfactory lay definition of the term "insanity" and to some degree be aware of what really constitutes the condition. Such is not the case and it is not strange when we consider the diversity of views on the subject even among medical men, and the little attention which the average physician gives to the subject. Ask the average man, what constitutes insanity, and his reply will be to the effect that it is the state or condition of being "crazy," but he cannot go a step farther, or give any real definite idea as to the distinction between sanity and insanity. Yet this same man has been, or at some future time probably will be called upon to serve on a jury and pass judgment of life or death upon a fellow being accused of a capital crime and pleading insanity as a defense against the law's punishment; as a jurymen, his sole and entire knowledge of insanity must be based upon the confusing technical terms used by the defendant's counsel and the so called "medical experts." The sarcastic newspaper reference to these opposing arguments and views, commonly referred to as a "war of the experts," does much to belittle the value of real medical evidence; this would not be the case if genuine experts were permanently employed by the State, given adequate compensation, and required to devote their entire time to examining and giving evidence in these cases.

The law defines certain terms as follows:

*Insane person.* One whose mind is affected by general imbecility, or is subject to one or more specific delusions.

*Lunatic.* One who hath had understanding, but by disease, grief, or other accident hath lost the use of his reason.

*Idiot.* One who hath had no understanding from his nativity.

*Imbecility.* General weakness of intellect, from birth in idiots, or from old age or disease.

*Illusion.* A false mental impression derived through the senses, real things being distorted. These false impressions are capable of being corrected in many cases by an appeal to reason.

*Hallucination.* A false impression without any material basis, being usually conveyed through the organs of hearing in the form of voices ordering the performance of ridiculous or criminal acts.

*Delusion.* A belief in something purely imaginary and without real existence, it being impossible to correct the belief by any means. One writer describes a delusion as "a belief in something that would be incredible to sane people of the same class, education, or race as the person who expresses it, this resulting from diseased workings of the brain convulsions."

*Lucid interval.* Such a restoration to reason as will enable a subject to comprehend and do an act with such reason, memory, and judgment as to make it a legal act.

It is difficult, and sometimes impossible for even the most competent medical men to draw a definite line between sanity and insanity in a given case, and to state which of the person's acts are those of a

man in normal mental condition and which are due to a diseased mind or abnormal mental condition; under these circumstances it is not remarkable that the average jury can be imposed upon by the evidence submitted by persons who have a great interest in proving the insanity (?) of the defendant. Every act of the defendant, from childhood up, in which he displayed anger, stubbornness, or other unusual condition, is distorted and argued upon at great length in the effort to make it appear as the act of an insane person, and establish a chain of alleged insane acts; this practice is carried out to such an extent that, on the same line of evidence, we could prove practically every living person to be insane. It will usually be seen in medicolegal cases that only those authorities are quoted whose teachings bear out the contentions of the interested parties.

All diseases produce certain definite structural changes in the tissues of the human body, a certain definite period of time being required for the production of such changes, and another definite period of time being required for repair when health follows the production and course of the disease. Insanity, being a disease of the brain, is necessarily accompanied by certain definite structural changes, which require time for their production and further time for their disappearance when the patient recovers.

It is therefore utterly preposterous to ask sane, intelligent men to believe that a perfectly sane individual becomes suddenly insane and kills or seriously injures a person against whom he has a real or fancied grievance, and, immediately after the act is committed, returns to and remains in a condition of perfect sanity without any realization or memory of the criminal act. It is an admitted fact that a man may, as the result of continued persecution or great wrong, be wrought up to a frenzy and, while in this condition, seek to kill or seriously injure the alleged guilty party, but this does not constitute the act of an insane man, although the provocation may often justly be brought forward as a plea in justification of the criminal act in order to avoid or mitigate the usual punishment; in this case, the man realizes the criminal nature of his act, but either disregards it or does not take time to consider the penalty.

J. Dixon Mann, an authority on legal medicine, gives the following excellent description of insanity:

Insanity does not develop in a moment; there is a period of ingravescence during which the individual affected gradually deviates from his ordinary mental condition. Although the symptoms evinced during the various stages of insanity are irregular and do not follow any definite order, certain of them are of common occurrence, some of which are present in every case; a knowledge of these symptoms is essential to an early recognition of mental disease. The onset of insanity may be so insidious that long before any distinctive indications are manifest, an alteration in temperament is noticeable; the individual is different from what he was formerly—he has lost his equanimity. When insanity begins in this insidious way, the emotions are affected long before the mind is impaired. The patient is subject to unaccountable waves of depression, which may alternate with periods of excitement; he becomes unwontedly irritable and is unable to control his temper under the petty annoyances of everyday life. This instability of temper may be the condition that first rouses the suspicion in the minds of his friends that insanity is the cause of the change in disposition. A man who has been moody and

reserved in his manner for some time is credited with being overtaxed with business and is thought to be a little out of sorts, but nothing more; at some trifling contradiction or annoyance he suddenly blazes up into a frenzy or passion and behaves for the moment so like a madman that the bystanders are at once impressed with the idea that the balance of his mind is impaired. A change in the emotions is also commonly shown by transformation of like into dislike, or love into hate. A man shows unwonted impatience at the remarks addressed to him by his wife, whose opinion he previously valued, and then manifests an absolute antipathy to her, a sentiment totally at variance with their former relations. Loss of interest in objects and pursuits which formerly occupied his attention, desire for solitude, perhaps at first shown by avoidance of social intercourse in a general way, and then in a more special manner by seclusion from the family circle, are further evidences of perverted sentiments. At this period, the person affected is often quite capable of brightening up in the presence of strangers or friends for whom he has a special liking; he will even remark that he feels better in company—meaning in the society of those with whom he is not necessarily brought into relation.

So far the intellect is unimpaired. The capacity to fulfill the duties which devolve upon a merchant or professional man may be equal to the requirements, but the work is done in a perfunctory way without the display of any interest. The morbid state of the emotions, however, soon reacts on the mind in such a way that the reasoning processes are interfered with and the judgment is no longer that of a sane man; emotional depression gives place to morbid apprehensions, and an indefinite feeling of melancholy to dread of impending ruin in this world or in the future state. Delusions occur at this stage. Among the commoner delusions in the early stages of insanity is the conviction that some one—generally a member of the patient's family—has commissioned the police or a private individual to act as a spy upon the person laboring under the delusion; that there is a conspiracy to ruin him or deprive him of his rights; that attempts are being made to poison him. The last named delusion frequently causes those who are afflicted with it to arm themselves with a number of bottles of medicine, or parcels of food, and to seek the advice of a chemist, requesting him to analyze the samples for various poisons. It is rather curious that suspicion is not always directed against those who might be reasonably suspected of criminal motives, such as members of the family who would benefit by the death of the deluded person, but druggists and other shopkeepers who are almost strangers to him are often the alleged secret assassins; sometimes the allegation of conspiring is made to account for this inconsistency.

There are many classifications of insanity, but for the purpose of this article, the following taken from Draper will suffice:

1. Idiocy; 2, imbecility; 3, mania; 4, melancholia; 5, monomania; 6, general paralysis of the insane; 7, dementia; 8, forms of mania having distinct etiological relations.

*Idiocy* exists from birth and is denoted by defective mental and physical development, the degree of mentality varying in different individuals; in some there is practically no development of the mind, the patient being in his habits and actions like an animal, while in others there is sufficient mental development to permit the person to acquire and use a certain degree of intelligence. An idiot is absolutely irresponsible for his acts, and the condition is incurable.

*Imbecility*, or general weakness of the intellect, is usually acquired after birth, the person being stupid, silly, cunning, and without hallucinations. As in idiocy, when the condition is well marked, the affected person is not responsible for his acts. The condition is incurable.

*Mania* is a mental disease in which there is an

emotional exaltation accompanied by illusions, hallucinations, delusions, great mental and physical excitement, and a complete loss of control of the will; there is always marked destructiveness and tendency to violence. The usual symptoms are intense egotism, loud talking, violent motions of the limbs or body, excitement, insomnia, and continued noise. About fifty per cent. of these cases end in recovery after a period of time varying from one month to several years; many make a partial recovery, the mind being affected to a greater or less extent; twenty per cent. pass into the incurable condition of dementia or mental death; and about two per cent. end fatally as the direct result of the attack.

*Melancholia* is a condition of great depression of the spirits, the affected person being gloomy, unhappy, despondent, and unable to sleep; there are often delusions and hallucinations. Suicidal tendencies are very common in this form of insanity, while homicidal outbreaks often occur. Many of these cases end in complete recovery while some pass into the incurable state of dementia.

*Monomania*, or *paranoia*, is a chronic mental disease characterized by fixed delusions of persecution or self exaltation, while the emotions and memory are defective only at times. The delusions become perfectly fixed and overshadow the whole life of the patient.

This disease is absolutely incurable and soon terminates in death or passes into dementia. This is one of the favorite diseases used in defense pleas of insanity and is put forward in such cases as a disease with which the accused was suffering at the time of committing the crime with which he is charged, but from which he has since recovered.

*General paralysis of the insane* (often called *parietic dementia*, *paresis*, or *paralytic dementia*) is a degenerative disease of the brain which also often affects the spinal cord. It is characterized by alterations of intellectual and moral character, loss of muscular power with trembling and unsteady gait, difficult speech, impairment of vision, and delusions of grandeur. There may rarely be periods of remission in which the affected person appears perfectly sane, but the general tendency of the disease is from bad to worse, ending in death.

*Dementia* is a progressive weakening of the mind characterized by loss of reasoning power and memory, lack of attention and interest, incoherent speech, childishness, aimless movements, complete indifference to former friends and acquaintances, and a countenance which is vacant and expressionless. If the disease is acute, there is some chance for a cure, but in chronic cases the termination is death from apoplexy, exhaustion, or kidney disease; the duration of chronic cases is placed at about twelve years. Senile dementia is simply the same disease due to old age.

*Moral mania*, which is sometimes described as emotional insanity, is simply a perversion of normal feelings and is not usually recognized in law unless there is conclusive proof of absolute insanity. Many of the sexual crimes come under this heading; these include rape, maltreatment, cutting off of women's hair, wanton slashing of dresses, etc.

*Kleptomania*, a desire to steal, is a very much abused term. There are cases in which persons of

ample means or wealth will steal the most trifling and useless articles, seeming to be utterly devoid of knowledge of the criminality of the act; in the majority of the cases, however, there is ample evidence of the usefulness of the stolen articles, an intelligent attempt to hide the articles, and positive evidence that the guilty party is fully aware of the criminality of the act, the plea of kleptomania being entered simply in the hope of avoiding punishment.

*Pyromania*, a desire to set fire to all sorts of things without motive, usually does not exist by itself; a careful investigation of these cases will bring out, in the majority of them, a definite motive of spite or revenge. In many of these cases among children, the culprit will frankly admit the act, but maintains that he could not control his desire to see things burn.

*Dipsomania*, a craze for alcoholic drink occurring at intervals, is not ordinary drunkenness, but a condition in which the affected person is absolutely unable to master his desire for strong drink. Ordinary drunkenness is no excuse for crime, but in all cases in which the continued use of alcohol has produced disease of the brain which renders the person incapable of realizing the illegality of his acts, the person must be adjudged irresponsible; this is especially true in all cases in which there is no motive.

Under this heading there must also be considered a class of cases known as *alcoholic psychoses* in which the person will commit many acts which he believes he is ordered or impelled to do, without regard for the consequences; the acts may be a vicious assault upon an innocent person, deliberate murder, injury to himself, etc.

*Homicidal mania* is manifested by a desire for indiscriminate killing without reason or motive, the affected person killing those who were most dear to him and then making no effort to escape or to avoid the consequences of his act; in this condition, the affected person will kill all he can reach, while the malingering will kill only those against whom he has a grievance, and then make an intelligent effort to escape in order to avoid the legal consequences of his illegal act.

*Suicidal mania* is a desire for self destruction without apparent cause or reason. In these cases, the attempt will sooner or later be successful in spite of all precaution.

*Puerperal insanity* is that form which occurs as the result of childbirth and is characterized by various delusions. In many of these cases homicidal mania is a most pronounced symptom, the infant often being killed in a most brutal manner; this is followed by murderous attacks upon relatives or friends who were dear to the affected person. In one case of this sort which came under the writer's care, the patient believed she had died and could detect the foul odor of her decaying body; she made no attempt to injure her infant, but did try to poison herself and kill her favorite child, a boy about four years of age.

*Epileptic insanity* is a form of insanity due to epilepsy. It presents four varieties: Preepileptic mania, postepileptic mania, dementia epileptica, and imbecility with epilepsy. In preepileptic mania there are attacks of mania preceding the epileptic convul-

sion, the patient usually being morose, irritable, threatening, and often making homicidal attacks upon those around him. In postepileptic mania, the maniacal outbreak follows the epileptic convulsion, the outbreak being most desperate and murderous in character. In dementia epileptica, which occurs in about thirty per cent. of epileptics, there are the ordinary symptoms of dementia, as described previously, in addition to a history of epilepsy. In imbecility with epilepsy there is simply an association of epilepsy with imbecility, the condition usually having existed from birth. Many cases of indecent acts, and even rape, are due to epilepsy; when the epilepsy is genuine, the perpetrator of the acts is irresponsible.

When the foregoing forms of insanity do not cover the criminal case in question, a new form of insanity is discovered (?) and made to serve the purpose; this discovery also receives a new name. Genuine insanity differs from malingering in the following points:

1. The genuine insane person will have given ample evidence of insanity previous to the commission of the criminal act, while in the case of the malingeringer, the alleged symptoms of insanity began immediately after the criminal act was committed. If it is mentioned in the hearing of the person under observation that certain symptoms are usually seen in such cases, they will immediately be shown by the malingeringer.

2. In the insane there is usually an entire absence of motive for the criminal act, while in the malingeringer a careful inquiry will reveal a well defined motive.

3. An insane person will either make no effort to escape, or will show in his effort absolute evidence of an unbalanced mind; the malingeringer will make efforts to disguise himself, remove incriminating evidence, escape from the neighborhood, or otherwise show an intelligent planning to avoid the consequences of his crime.

4. Hallucinations and delusions of the insane are always accompanied by other unmistakable signs of insanity, while those of the malingeringer will show traces of intelligent planning in spite of all his efforts to make them appear as genuine insane delusions.

5. In mania, which is the form of insanity most frequently feigned, the genuine patient does not sleep, is continually violent day and night, alone or watched; the malingeringer sleeps, and has his outbreaks only when he thinks he is watched. The genuine maniac will make a bona fide effort to kill or injure, while the malingeringer will only pretend to attack his relatives or his attorney and will always choose a time when he is certain of being seen and restrained before he uses actual violence.

The usual hypothetical question as a test of the accused person's mental condition is an absolute farce, because it is always so framed as to admit of an answer favorable only to the accused. A type of insanity is determined upon as that with which the accused person is afflicted, the case is built up by selected evidence, and the hypothetical question is then framed to cover the case. A physician would not attempt to make a diagnosis or venture an opinion in an ordinary case of disease without seeing the



patient under all conditions and observing him for some time, but he is supposed to be able to observe a supposed insane man for about fifteen minutes, ask him a few questions, go into court and listen to the reading of a long winded hypothetical question containing thousands of words, and be able immediately to answer Yes or No as to whether the man in question is sane or responsible for the criminal act with which he is charged. The expert physician is expected to, and in only too many cases does testify that the person in question was afflicted with a specific types of insanity when the act was committed, but, since the crime, has recovered the full use of his mental faculties, although the best textbooks on the subject of insanity absolutely and positively state that such a type of insanity is progressive and absolutely incurable.

The writer of this article does not lay claim to being an expert alienist, but he has served his internship in charge of an observation ward for mental and alcoholic cases, and has had a great deal of experience with such cases since his graduation many years ago. It is not the intention to criticize members of the profession, but the writer has had many unpleasant experiences while on the stand both as ordinary medical witness and as expert; attempts have been made to have answered many foolish questions in a manner favorable to the opposite side, as well as to admit statements which were totally at variance with all medical knowledge and authorities. In these cases there have been medical men of some standing who backed up the contentions of the other side.

124 AUDUBON AVENUE.

### BACKACHE.\*

#### *Some of Its Orthopedic Aspects.*

BY SIGMUND EPSTEIN, M. D.,  
New York,

Orthopedic Clinical Assistant, Mt. Sinai Hospital Dispensary;  
Orthopedic Chief, German Polyclinic; Orthopedist,  
Bronx Hospital Dispensary.

I shall confine my remarks to a practical consideration of some of the backaches of serious import caused by bone and joint lesions that the orthopedist sees; these are not often encountered by the general practitioner. The subject of backache in children, though of great importance, would require a more lengthy paper.

The spine is particularly liable to ankylosis, of a painful form in adults, from an essential osteoarthritis. The lumbar region is first affected in the milder types, where there is a recurrent neuralgia, like a toothache, which is usually bilateral. Pain is felt when the patient turns around in bed, and on any motion of the affected vertebral joints. The prominent spinous processes may be palpated without finding any thickening or cyphosis at first, but there is a marked tenderness over all these bony prominences. When the patient is asked to stamp heavily on his heels while standing, there is no particular spot of severe pain that can be localized as in Pott's disease. The usual type of deformity comes later, is of diffuse, rounded nature, and is not

difficult to differentiate. Still, a recently observed case will serve to demonstrate several valuable points:

CASE. J. G., pharmacist, aged twenty-eight years, with a negative family history and no history of venereal infection, came to me for a severe backache. He had suffered from rheumatic arthritis, and had had a number of attacks of sciatica. He presented himself October 23, 1913, when he was under treatment for pulmonary tuberculosis, with a report of a positive von Pirquet reaction; there were fifty bacilli to the one microscopic field in his sputum, and he showed two prominent angular kinks in his spinal column. Tenderness over these was so acute that he fell to the floor when anyone inadvertently touched these points. He could scarcely sleep from pain in the back, radiating to the costal margins in front. The loss in weight was twenty-eight pounds in eighteen months. The spine deviated to the side at the sixth dorsal vertebra, where the kink mentioned was plainly noticeable; he stooped to pick up objects from the floor, without bending the spine. The knee jerks were exaggerated, and there was double ankle clonus. There was so much spasm in the spinal muscles, that a brace was ordered, to which we added a chin piece or mandibular rest. A tender painful process at about the third cervical vertebra led to the suspicion of tuberculous disease in this region, on account of pain of the same radiating nature as he experienced in the neighborhood of the sixth dorsal vertebra. The brace was applied at once, and in a month all the symptoms had very much diminished. Even the angulations had very much lessened in size. He had gained fifteen pounds. The patient was sent to a sanatorium for six months, where the sputum cleared up, his disease was arrested, and his condition greatly improved. His spine was now completely ankylosed from the occiput to the coccyx, tenderness and root symptoms had disappeared, and the new diagnosis of spondylitis deformans was established. The brace was soon dispensed with, its mission having been fulfilled.

The subject of Pott's disease in adults presents many phases of interest, and on looking over a number of histories of cases that would have permitted an earlier diagnosis, I have been led to make several observations:

1. Patients are not often examined with their underclothes removed, and their gait, posture, and spinal movements tested.

2. The tests for spasm of the psoas muscle and for the spasm of the posterior spinal muscle, which are just as important as abdominal rigidity in acute abdominal disease, are not fully appreciated by the general practitioner.

3. The general surgeon has removed appendixes and ovaries and done laparotomies, where the patient might have been much better served by a spinal support or plaster jacket.

As to the treatment of Pott's disease in adults, I might say that I favor the surgical or bone splinting treatment, in cases of recent onset; those humpbacks resulting from carious disease in childhood, on the other hand, are neither improved nor corrected, and little is gained. The time will probably come when we can demonstrate a distinct shortening in the course of an adult tuberculous disease of recent onset; while in old cyphoses, with their poorly formed spinous processes imbedded in adhesions and the calcareous remains of abscesses, the net result achieved is another case added to the experience of the operating surgeon.

The treatment of young women who have acquired a painful condition associated with scoliosis, is an important part of the routine of the orthopedist. We usually find that curvature is a painless deformity, but now and then a neurotic or

\*Read before the Yorkville Medical Society, May 17, 1913.

diathermia, trypsin, or an excessive bony formation about the spinal foramina, induces severe spinal or muscular soreness and marked disability. The essence of the management is, of course, an efficient support, a plaster jacket at first, later some form of spinal brace that will induce a straightening of the deformity. As valuable adjuncts, we have exercises, suspension of the spine in the Sayre apparatus or in the inclined plane, and the use of the Lorenz-Schanz *Gipps-Belt*, during the night. The benefit of exercise and massage is often promptly noted; I once had a very nervous, high strung girl patient, who had such a severe backache that she had been unable to sleep for a month. After the first treatment, she fell asleep while the spine was being massaged, and rapid improvement followed. Perhaps it might be wise to mention a few aids to the medical treatment of backache, after we have had recourse to the regular antirheumatics and liniments.

For suboccipital neuralgia, when the cause is a mild arthritis of the spine, I have had good results with the official veratrine ointment. For the soreness of a myositis, beside the usual treatment, an ordinary stiff neck can be much relieved by the application of a bandage or collar, reinforced with adhesive plaster. Adhesive plaster strapping for the lower part of the back and sacroiliac regions is well known as a pain relieving measure. The most convenient and efficient counterirritant is the Paquelin cautery, when properly used; the surface should barely be touched by the platinum point, which has been brought to a cherry red heat. The ethyl chloride spray has its indications; I like to use it in connection with shoulder arthritis and brachial neuritis. The value of diathermia cannot be overestimated, and it has been of the greatest benefit in a case of slipping of the lumbosacral joint. A form of sacroiliac support, called Goldthwait's sacral raiser, has proved its worth in certain cases of sacral relaxation, and is mentioned because so little use has been made of this pad and spring pelvic supporter. It may be wise to caution against too short periods of treatment of sprains of the upper and middle regions of the back in older people; support of such joints should extend over a period twice as long as in younger subjects. One reason for this lies in the fact that small fractures are liable to occur in the spinous processes and lateral masses in old people, while another is the tendency to traumatic arthritis, or Kummel's spondylitis.

In a series of cases of backache, eighty-three in number, seen in private practice by Dr. R. W. Lovett, of Boston, he found that twenty-nine were in males, and fifty-four in females. In age, he found more between the ages of fifteen and twenty, and between thirty-five and forty years, than at other ages. As to duration, only six were less than six months, fourteen were from six months to a year, four were from ten to fifteen years, and nine were said to have lasted "many years." As to classification into several arbitrary groups, he analyzes as follows:

Lateral defect in balance, ten, three of these occurring in bony lateral curvature.

Anteroposterior balance, thirty-one; five were due

to large abdomens, and in fifteen cases there was some static error in the feet which seemed to have an influence on the defective balance.

Pelvic, six.

Traumatic, twenty; five of these were associated with obviously bad standing positions, but in others the trauma seemed to be the only cause.

Arthritis, fifteen, in which must be included two cases of "recurrent lumbago," probably arthritic.

Most of the backaches occurring in dispensary patients are due to medical causes; the next largest percentage arises, it has appeared to me, from causes originating in the pelvis. Compared to the neurological cases seen in the Mount Sinai Dispensary, with the symptom of backache, one might venture to state that the larger number were of strictly orthopedic, or essentially spinal nature. In the differentiating of the various types, it has often struck me that some of the lay registrars at the desk of our large dispensaries become marvelously acute in the proper sorting of these various patients, thus saving a good deal of time for the working staff.

This story is published in the *Medical Pickwick*:

"John Jones, the patient who came in a little while ago," said the attendant in the out-patient department "didn't give his occupation." "What was the nature of his trouble?" asked the resident physician. "Injury at the base of the spine." "Put him down as a book agent."

Snap diagnosis in the treatment of backaches should be avoided, and if more time is spent in individualizing cases, symposiums will result in less discrediting of medical practice, and quackery will cease to prosper.

15 WEST FORTY-FOURTH STREET.

## Correspondence.

### LETTER FROM SERBIA.

*Recall of the Red Cross units.—Efficiency of American surgeons.—Fraternity among units from various countries.—French "sanitary trains."—Succeeded by freight trains and ox carts.—Characteristics of the Serbian peasant.—A man of peace, despite his fighting ability.—No sanitation in Serbian cities.—Training prisoners to nurse.—Can there be "graft" in Serbia?*

SKOPLJE, SERBIA, August 20, 1915.

The order recalling the American Red Cross units from all the lands of the war zone in Europe, for lack of funds, happening at the moment of the controversy between the United States with Germany had different effects at different places. Here in Serbia at present they have enough of missions from England, France, Russia, and other places, that is a fact, nevertheless, the Americans will be missed the most, after October 1st, while our unit will finish the work here at the end of September, as announced to you already. We Americans worked perhaps a little differently, somewhat more quickly and with a dash and accuracy which astonished the local authorities on one side and produced a happy and really scientific feeling between all the colleagues on the other. But to say that we knew it all, that there was nothing to learn from our

colleagues, students from the great European schools, would be nonsense, because there were times when the Russians told us in the beginning about the force and velocity of the small calibre jacketed bullets, producing straight wounds, French colleagues demonstrated their simple methods of

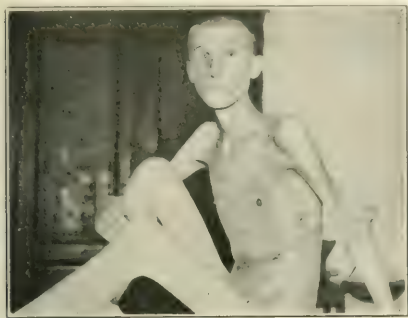


FIG. 1. A patient convalescing from typhus exanthematicus.

absolute cleanliness, and the English gave us all their knowledge of typhus during the rage of the scourge. And we tried our best in the light of modern surgery to keep faith with all of them as much as possible, learning even from the Serbians, slow as they seemed to be, especially in the experience of theirs with cholera and in their comparatively safe transportation of the wounded in their "sanitary trains," of French construction, used in the last conflict with Turkey.

With increased and improved facilities of this character, the transportation of the wounded from the front to places of safety to the southern and new parts of Serbia, and even to Skopljë, Dzevdzilija, etc., was an essential and proper requirement in securing the greatest amount of benefits from conservative surgery, even under the most unfortunate circumstances and primitive means on the fighting line with terrible results of destruction and

slaughter. The trains were well equipped in the beginning especially, having a surgeon and his assistant on board with a collection of drugs and material in case of emergency, etc., but later the wounded came by thousands and thousands and the material gave out. The common trains and freight cars had to be utilized on the trail, and on the bat-

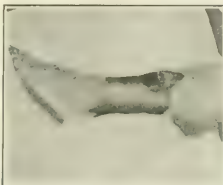


FIG. 2. Same patient as in Fig. 1; phlegmons developing.

telfield the primitive wagon with two wheels and oxen, with all the suffering, bleeding, swearing, and loss of life, had to suffice. And to what end? We do not know. The war is a series of incidents with no beginning and no end! The veil lifts for a moment and drops again—in these times of modern

warfare a great and sufficiently strong, well trained hospital corps and the use of improved litters and autoambulances, motor cycles, and similar improvements would be instrumental in securing prompt and easy conveyance of the wounded from the front to their destination, that is, the first dressing station and the field hospital or hospital proper. The conservative work begun on the field has to be continued at the hospital, which should offer additional facilities for the practice of ideal conservative surgery. But at present to talk about this ideal, and at this place, would be absurd. There are, all over fighting and cultured Europe, modern machines to kill, to cripple, and disable the human beings, but there is nowhere a fund large enough to save lives, as much as possible—the machines cost more than individual lives.

When we take into consideration that the Serbian nation was attacked shortly after the experience of three wars in succession, we may wonder at the statement, that the Serbian peasant, brave as he is, is a peaceable man. He is military, but not militant. He is stoical or perhaps sentimental, rather than impassioned. He loves his country, works easily (sometimes too easily), has his papers and politics, likes money, knows how to save, his house and family are sacred to him and before the war were sacred to others. He likes his wife, but



FIGS. 3 and 4. Gangrene after typhus.

she, working harder in her *kucha*, or now in the field, is a little bit cleaner than he, even on feast days. He is not ambitious. He fights bravely, like the German, but he would rather play his *gusle*, sing, dance his *kolo*, or smoke his cigarette, while inspecting his vineyard, or the rich soil in his fields, if he has any, otherwise he will sit in one place for a whole day, alone, and think, observe, and keep still, satisfied with a little piece of corn bread and a few onions! And this man and his oxen were winning the battles in this part of the country and not those in the cities, which also are not clean, and the population is mixed in such a way that we could not be surprised during the epidemic of typhus that the mortality was so terrible. There is absolutely no sanitation in the cities, and no sanitation in the trenches nor even in the barracks, no personal hygiene of the soldiers; and with such people we had to deal when we arrived here a year ago. The places of the prisoners of war were beyond description, overcrowded, and many of their wounds infected, with toilet rooms that were really "Turkish," as I have said. We knew what that meant and started to clean up, taught our nurses and patients how to wash, clean the beds, the rooms and surroundings, and how to use, disinfect, and clean the toilet rooms, halls, etc. Our Serbian male nurses, military, soon



grasped the opportunity, and worked with us later on, even in the bandaging room. Some of the more intelligent prisoners of war, technical engineers, architects, druggists, and medical students, prepared and sterilized all the material for a day, using our modern American apparatus. For the x ray room,



FIG. 1. Prisoners on their way to the clinic.

we had an electrician, also a prisoner of war, attending to our machines. But all this had to change when somebody wanted to show his authority, or was too jealous of our results, especially when we prescribed proper nutrition for our patients and the rake-off for some one was not large enough. Such are the military "boodlers" here and elsewhere. In the United States, embalmed beef; in Germany, rotten fish; England has her internal labor troubles; France is graft ridden in high places; Rus-



FIG. 2. The ward full of patients, in the clinic.

sia has her autocracy; Italy her ammunition scandals, and so on, so it is up to their observant pupils in Rumania, Greece, Montenegro, Bulgaria, Austria, and Turkey, not to mention . . . This we have to know in order to understand the situation and the slow progress of some missions, units, and

individuals, who came to help in the name of humanity and often, very often, were handicapped by the very people whom they came to help. Unusual circumstances? Wartime? Perhaps.

J. RUDIS-JICINSKY.

## Therapeutic Notes.

**Treatment of Cardiac Palpitation in Rheumatic Cases.**—Plicque, in a recent issue of *Nouveaux remèdes*, it is stated, advised the use of the following ointment over the precordium, in addition to administration of sodium salicylate by mouth:

R Sodii salicylatis, ..... gr. lxxv (5 grams);  
Iodoformi, ..... gr. xxx (2 grams);  
Extracti hyoscyami, ..... gr. xv (1 gram);  
Petrolati, ..... 5v (20 grams).  
M. et ft. unguentum.

The anointed area should be covered with flannel or a little cotton. In chronic rheumatism, in which palpitation is less common than in the more acute forms, the same ointment may be tried. Internally, however, potassium or sodium iodide in small doses is to be preferred to sodium salicylate.

**Treatment of Moist Eczema.**—Unna, in *Berliner klinische Wochenschrift* for March 1, 1915, calls attention to the fact that even in extensive moist eczema of the trunk or head, cumbersome dressings of cotton and gauze are unnecessary. They may be replaced by the use of a paste which will strongly dry into the skin, e. g.:

R Sulphuris præcipitati, ..... .aa 3iiss (10 grams);  
Calci carbonatis præcipitati, .....  
Unguenti zinci oxidi, ..... 3iiss (80 grams).  
Fiat pasta.

The more frequently this paste is applied, and the less at a time, the better the results. If the paste tends to dry up in its jar, addition of a few drops of water will restore its proper consistence. Again, where the skin is sensitive, as in moist eczema of the inguinal region, neck, or face, it should be wet with water before the paste is applied, or a few drops of water added to the paste.

The much used boric ointment will not cure true eczemas, i. e., those associated with coccic infection of the skin. An eczema paste may be made out of it, however, by certain additions, as in the following:

R Zinci oxidi, .....  
Sulphuris præcipitati, ..... .aa 3iiss (10 grams);  
Calci carbonatis præcipitati, .....  
Unguenti acidi borici, ..... 3xviiss (70 grams).  
Fiat pasta.

The zinc oxide, sulphur, and chalk act as drying, as well as drying in agents, and the sulphur also as a reducing agent. The zinc oxide and chalk in addition tend to relieve pain, hyperemia, and inflammation. The itching disappears with the destruction of the cocci and the relief of inflammation. The addition of an antipruritic agent such as tar to the formula is, therefore, not strictly necessary. Addition of one per cent. of phenol or creosote is, however, frequently of advantage both to allay itching and as an antiseptic agent.

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CHARLES E. DE M. SAJOUS, M. D., LL. D., Sc. D.

CLAUDE L. WHEELER, A. B., M. D.

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## A STUDY OF LEUCOCYTES IN VITRO.

Thanks to the researches of Carrel, Nature is once more wrested of her secrets in the domain of cell life. Now that tissues can be grown outside the body and cells cultivated on artificial media, the possibilities of close study of cell physiology are increasing and bid fair to change our most deeply rooted conceptions of the nature of certain pathological changes. The attempt to grow white blood cells outside the body has been made by a number of investigators, only with partial success, however. Most of the experiments were made with the blood of lower animals, guineapigs (Sundwall), chicken (Foot), and turtle (Champy and Critch). In 1913, Avrrow and Timofeevsky reported a series of successful experiments in the artificial cultivation of leucocytes derived from leucemic blood. They observed unmistakable multiplication of mononuclear leucocytes, by caryocinesis and the transformation of certain cellular elements, myeloblasts and lymphocytes, into hypertrophied, multinuclear giant cells and multipolar cells. Numerous experiments with the leucocytes from normal blood failed to disclose these changes in the lymphocytes. This, however, proved to be the fault of experimental technic.

In a recent communication on the subject (*Roussky Vrach*, June 13, 1915) the authors report a number of interesting observations made on

normal leucocytes obtained by the method suggested by Manuchin. When a bit of coagulated plasma holding the leucocytes and a few red blood cells, is planted in the plasma medium and placed in a thermostat at 38° C., the leucocytes appear to show activity almost at once. Active ameboid movement may be seen through the microscope, and in ten to fifteen minutes a distinct ring made up of migrated leucocytes surrounds the piece of plasma; in two to five hours the ring is from 0.5 to one mm. wide. A microscopic study of growth shows phagocytosis of the red cells by the mononuclear and transitional leucocytes, more rarely by the polynuclears. The engulfed red cells degenerate into small collections of granules which take the eosin stain, thus giving the impression that the eosinophiles are formed in this manner. The polynuclear cells show little activity and soon undergo degeneration. On the other hand, the mononuclear cells are transformed into hypertrophied cells, which show very active mitosis and in turn are transformed into giant cells and multipolar cells.

These studies seem to indicate that mononuclears are the active elements in the blood and are alone concerned in the regeneration of tissues. The suggestion that eosinophiles may be simply leucocytes containing granules derived from red blood cells, is highly interesting and should receive further consideration.

A NEW SPECIALTY DEVELOPING IN  
FRANCE.

Stomatology is the latest development of specialism in France, a service having been organized recently for the benefit of one of the army corps under Doctor Gaumerais, who describes it in *Paris médical* for September 11, 1915. Such a service has to fulfill the triple duty of repair of the maxillaries, the filling of teeth and manufacture of artificial dentures, and of general care of the mouth. It is best established thirty or forty kilometres from the front. The writer emphasizes the importance of the new specialty, which is likely to escape the superficial observer, and shows how important it is to the older men, for example, to have their false teeth replaced immediately when lost or broken, and to men of all ages to be promptly freed from toothache without loss of the offending tooth, if possible. The service has to be freely movable and is therefore accommodated in an automobile of moderate dimensions, fitted with a dentist's chair, washstand, etc., and the small instruments required, but unencumbered with the heavy baggage of a Red Cross surgical ambulance. Light and heat are easily furnished by gasoline or electricity from the numerous automobiles to be found everywhere along a modern

line of battle. The personnel is best composed of a surgeon, a surgeon dentist, and a mechanical dentist; its work is done during one of the frequent rest periods allowed to the troops, and mechanical cases are examined first, to permit of the repair of dentures, etc., while prosthetic work is being done by the surgeons. The automobile is so arranged that the chair is in full daylight, when possible, while curtains screen it from the curiosity of passers by.

#### THE NATIONAL GUARD SURGEON.

Some ten thousand troops of all arms, including all the National Guard of the State of New York in and near New York city, assembled at Van Cortlandt Park, on September 26th, for a demonstration and manoeuvres. Seven quadrangles were arranged along the western edge of the parade ground, in which each command was given an hour for evolutions for the instruction and edification of the public. In the afternoon, manoeuvres were carried out with as close an approximation to warfare as was feasible.

The immense number of people, estimated at 125,000, who turned out to witness the evolutions, demonstrates the widespread interest felt in the guard by the citizens. The smoothness with which the program was carried out proved the efficiency of the organization of the service. These evolutions showed clearly the excellent results which have followed the Dick bill, which brought the guard into close affiliation with the regular troops; in fact, instructors in the different branches of the service are detailed from the regular army to serve regularly with the National Guard and thus bring it into line with the requirements of the United States army.

Not the least important of the branches of service which took part in these manoeuvres were the sanitary troops, which include both the medical and the hospital corps. As at present organized each regiment has four medical officers, who are with the regiment at all times, even under fire. The second line of the sanitary troops is composed of ambulance companies, one to each brigade, each of which likewise has four medical officers. Next comes the field hospital company, with four medical officers, one for each division. Service in any one of these departments of the medical corps of the National Guard is both interesting and instructive. The military surgeon must be a good deal of a soldier as well as a good surgeon. The success of the sanitary troops depends not alone on the technical excellence of the military officers, but to a large extent also on their executive ability and knowledge of military affairs. It is therefore necessary for the medical officer to study tactics as well as surgery and sanitation.

#### THE NORMAL GASTRIC RESIDUUM.

It has been almost a fixed belief that the normal stomach is empty during the fasting period ending with the night, and one of the most significant indications of abnormality was thought to be the presence of gastric residuum. On the other hand, a few workers have suggested that the maximum of twenty c. c. of residual fluid is often exceeded in normal states, but this has not been generally accepted. The latest work, however, on this question by Chester C. Fowler, Martin E. Rehfuess, and Philip B. Hawk, seems to establish beyond doubt that there is a considerable residuum normally present in the stomach.

The studies were carried out in a painstaking manner on 100 normal students whose cooperation in the indoor work could be trusted. The contents were aspirated at about eight a. m. after a fasting period from the time of the preceding evening meal. Aspiration was performed with a modified and improved tube and was aided by alterations in posture and forced breathing. The average volume of residuum in this series was more than fifty-two c. c. The smallest was twenty-three c. c., the largest 160 c. c. This would seem to cast considerable doubt on the value of an increased residuum in the diagnosis of ulcer.

The residual fluids obtained were at once submitted to detailed analyses and the findings are of interest on account of the light they throw on the physiology of the normal stomach. Contrary to common acceptance the residuum was always found to possess all the qualities of a physiologically active secretion, which would lead to the belief that the gastric glands were never inactive, even in the absence of normal stimuli. The residual fluid was found to be of very low specific gravity and to have a cryoscopic index materially below that of the blood. These facts lead to the belief that there was a constant tendency toward an osmosis from the gastric wall into the lumen of the stomach. Normally both colorless and bile stained fluids were found, and even the same individual showed the two types on different occasions. Bile in the residuum appeared to be fairly constantly associated with the presence of the higher acidities, suggesting its entrance into the stomach with the result of neutralizing some of the acid.

Some degree of acidity was always present, and it was found that the total and free acidities varied directly with each other, there rarely being any free acidity unless the total acidity exceeded ten. For the entire series an average total acidity of about thirty was encountered, with an average free acidity of about eighteen. Total acidities in excess of seventy with an increased amount of residual fluid were found to be of diagnostic value as indicative of



ulcer. General opinion was further opposed by the discovery that a constant relationship existed between the quantities of pepsin and trypsin and the acidity. Where the acid values were low the quantity of pepsin varied directly with them, but where these were high no relationship was discovered. In the case of trypsin, which was always present to some extent, its amount varied inversely with the acid value in terms of free acidity. The more complete pyloric closure under the influence of high acid and the destruction of trypsin by acid seem to explain this relationship.

It is not an easy matter at the present time to place any accurate valuation upon these contributions to our knowledge of the physiology of the human stomach, but when they are analyzed and weighed along with other recent discoveries in the same field they bid fair to clear up many vexed problems and to provide us with a more accurate means by which to take our measures in the study of pathological gastric conditions.

#### PHYSICAL TRAINING AND THE MIND.

From the time of the downfall of the Roman Empire to the late nineteenth century, the human body was considered to be animal and sinful; the great universities educated only the "immortal" part of man, first for the priesthood alone, later for the liberal professions. The change of attitude today, says Professor J. H. McBride, in the *Scientific Monthly* for October, is due, first, to the rediscovery of the human body and its relation to our mentality, and, second, to the discovery of the mind of the child and the youth. Educators now concede that the brain is an organ of the body like other organs, and the interrelation of body and mind is recognized. We know how physical disease impairs the quality of the thinking mind, and we see how the life of physical activity led by the child develops and coordinates the brain and muscular system. We have learned that the muscles are the special organs of volition, the one part of the body that the brain can directly command and act on; the feeble-minded child is notably clumsy in his use of the muscles, while the development of the normal child is indicated by increasing accuracy and delicacy of muscular control. Physical training thus becomes to a large extent mental training; through manual training, vocational guidance, etc., we teach children to do things; we recognize that what are apparently the humblest functions of the organism are intimately related to the highest powers. The older type of metaphysician, with his staggering vocabulary and bag of "categories," is becoming extinct.

Much of what we used proudly to call reason is

simply feeling, and many of our activities are due to desire, sentiment, or habit, which under the illusion of reason determine our decisions and conduct. In combining mental and physical training in youth we are guiding and organizing such activities in relation to the needs of maturity. Even thinking is primarily a physical process and draws upon the vital stores of every organ; the energy that makes clear thinking possible depends largely on the vigor of the body. Many men, supposedly of intellectual attainments only, fail for lack of staying power, for lack of endurance. Timidity and indecision depend largely on lack of driving power, lack of pure physical vigor. Much loose thinking is due to poor educational drill. Very many people are, in large part, dead; the capacity they show is only a small part of a fine inheritance which, not knowing how to use, they allowed to die.

Enthusiasm, self confidence, the spirit of adventure, alertness, promptness, unselfishness, quick judgment are all to be learned on the field of games and sports; and every argument for such training of boys applies with equal force to girls. Mothers as well as fathers must be strong and healthy; and it is said that girls undergoing such training not only assume a more upright and dignified carriage, but begin unconsciously to avoid slang and other vulgarities.

The ancient Greeks knew these things; and in twenty-five hundred years we have not equalled their results. If a boy does not seem to pick up music with ease, or sword play, he may attain remarkable dexterity with tools. At best he may learn to carve, at least he may attain creditable efficiency as a joiner or carpenter. Even juggling and conjuring train certain brain centres of value to the organism, and are much better than no manual work at all. Personally we think very highly of military drill, which trains every fibre of the body, down to the very finger tips and the tiny muscles of the eye, beside inculcating invaluable habits of prompt obedience, team work, respect for efficient authority, etc., to say nothing of putting an eternal stop to absurd boasts of springing to the defense of the country without the need for drill owing to our marvelous intelligence and superabundance of inventive genius.

#### GALLSTONES COMPLICATING APPENDICITIS.

In the *Lancet* for September 18, 1915, Frederick Deane, of Barbados, tells of a case in which he operated for appendicitis. After removing a large and highly congested appendix from a man, fifty-two years of age, he noticed a tumor presenting from the under surface of the liver, which turned out to be a gallbladder distended almost to bursting with a cal-

culus as large as a pigeon's egg. The gallbladder was entered to the abdominal wound and drained externally; the patient recovered without incident.

Mr. Deane states that he reports this case simply to show the importance of carefully examining the entire abdominal cavity whenever it is opened; this patient had no symptoms of gallstones, and a hasty operator might have left the gallbladder intact.

### WE EXPECT EXCLUSIVE PUBLICATION.

We have received from the editor of the *Illinois Medical Journal* a complaint that we republished in our issue for May 22d last a communication, *The Military Surgeon on the Firing Line*, by P. J. Farrell, M. D., which had already appeared in his journal for February. Had we been aware of this previous publication, it is hardly necessary to state that we should not have considered Doctor Farrell's paper. The writer was carefully informed, according to our custom, that his paper was accepted for exclusive publication only, and we consider that the entire responsibility for the duplication rests on him. In his reply to our letter asking for an explanation, Doctor Farrell ignores altogether the point at issue, and testifies to his pleasure and that of his friends that we were misled into publishing his communication. We express our regrets to our readers for this mistake, one impossible to guard against without the good faith of contributors, and trust that we shall not again be subjected to so serious a breach of medico-journalistic ethics.

### News Items.

**Changes of Address.**—Dr. Mary Kay: 1st m. to 149 West Seventy-ninth Street, New York.

Dr. William Bradbury Noyes, to 207 West Fifty-sixth

**The Wesley M. Carpenter Lecture.**—Dr. George W. Crile delivered this lecture at the New York Academy of Medicine, choosing for his subject, *The Kinetic Drive—Its Phenomena and Its Control*, on Thursday evening, October 7th, at 8:45 o'clock. We hope to present a summary of Doctor Crile's remarks in our next issue.

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Tuesday, October 12th, Pediatric Society; Wednesday, October 13th, County Medical Society; Thursday, October 14th, Polyclinic Ophthalmic Society, Pathological Society; Friday, October 15th, Jefferson Hospital Clinical Society, Kensington Branch of the County Medical Society.

**The Harvey Lectures.**—The first lecture in the course will be given on Saturday evening, October 16th, at 8:30 o'clock, at the New York Academy of Medicine, by Professor C. W. Stiles, of the Hygienic Laboratory, United States Public Health Service, Washington, D. C., his subject will be *Recent Studies on School Children, with Social Reference to Hookworm Disease and Sanitation*.

**Eastern District Medical Society.**—At a special meeting of this society, which was held in the Hotel Brevoort, the new meeting place of the society, on Friday, October 8th, Dr. John B. Deaver, of Philadelphia, presented a paper on *Peritonitis*, which was discussed by Dr. Willy Meyer, Dr. Robert T. Morris, Dr. Charles N. Dowd, Dr. John F. Erdmann, Dr. Charles Goodman, Dr. William Linder, and Dr. Howard Lilienthal. The Value of Graphic Methods in the Treatment of Heart Disease was the title of a paper read by Dr. Marcus A. Rothschild and discussed by Dr. Albert Epstein, Dr. R. S. Oppenheimer, and Dr. T. Stuart Hart.

**Serbia Decorates American Doctors.**—Crown Prince Alexander has decorated forty-three American physicians and sanitary engineers in recognition of their services in stopping the epidemics which broke out in Serbia after the war began. The Americans decorated are representatives of the Rockefeller Foundation and the American Red Cross.

**New Wards Opened at the Philadelphia Polyclinic Hospital.**—On Wednesday, September 22d, the Augusta Caroline Thorn wards at the Philadelphia Polyclinic and College for Graduates in Medicine, were formally opened. Addresses were delivered by Dr. Samuel McC. Hamill, president of the faculty, and Dr. J. B. McAllister, president of the Medical Society of Pennsylvania.

**Typhoid Fever in Philadelphia.**—The Department of Health of Philadelphia states that of 211 cases of typhoid fever reported in that city since August 1, 1915, 46 were vacation cases and 14 cases occurred in persons transferred from other towns. Of the remainder, 15 were infected by contact, three by bathing in the Schuylkill River, three by drinking raw water from the Delaware River, and one by impure milk. Not a single case was traced to the city's water supply.

**Deaths of Nonresidents in New York.**—Official reports of the Department of Health of the City of New York show that approximately 1,500 deaths are registered annually of persons whose residence was elsewhere in the country. Last year over 200 of these deaths were due to cancer, 39 to suicide, and 150 to pulmonary tuberculosis. About half of the deaths of nonresidents were in persons over forty-five years of age, and approximately one eighth were in children under five years of age.

**Indiana State Medical Association.**—At the closing session of the annual meeting of this association, held in Indianapolis recently, the following officers were elected: Dr. George F. Keiper, of Lafayette, president; Dr. L. J. Willien, of Terre Haute, first vice-president; Dr. A. C. Chenoweth, of Winchester, second vice-president; Dr. W. F. Carver, of Albion, third vice-president; Dr. Charles N. Combs, of Terre Haute, reelected secretary and also elected treasurer.

**Appointments in the Medical Corps of the Navy.**—The surgeon general of the navy has issued a circular for the information of persons desiring to enter the medical corps of the United States navy. The next examination will be held on November 15th. Applicants must be citizens of the United States and must submit satisfactory evidence of both preliminary and medical education. The first stage of the examination is for appointment as assistant surgeon in the medical reserve corps. Copies of the circular, which contains full information with regard to both physical and professional examinations, may be obtained from the Surgeon General of the Navy, Navy Department, Washington, D. C.

**Commissioner Goldwater's Successor.**—The office of commissioner of health of the city of New York has been offered to Dr. Victor G. Heiser, of the United States Public Health Service, to succeed Dr. S. S. Goldwater, who wishes to resign and resume his work as superintendent of Mount Sinai Hospital. Doctor Heiser was for a number of years director of health of the Philippines and was one of the organizers of the Far Eastern Association of Tropical Medicine. In 1914, he became a member of the International Health Commission of the Rockefeller Foundation and made a tour of the Orient. He arrived in New York a short time ago and presented to the Rockefeller Institute a report of his investigations.

**The Physical Examination of School Children by Private Physicians.**—The Department of Health of the City of New York calls the attention of all physicians to Section 200 of the Sanitary Code and to the regulations governing the physical examination of school children of the city. Health certificates which are not made out in conformity with these regulations and on the card form provided for the purpose, cannot be accepted by school authorities. It is the desire of the department that the physical examination of school children be conducted by private physicians as far as possible, the medical inspectors assigned to duty in the schools examining only children whose parents are unable to afford the services of a private physician.

**New York and New England Association of Railway Surgeons.**—The twenty-fifth annual meeting of this association will be held in New York on October 21st and 22d, with headquarters at the Hotel Astor. As this meeting celebrates the quarter century anniversary of the organization of the association, special care has been taken in preparing a program of unusual interest. Railway surgeons, attorneys, and officials, as well as members of the medical profession are invited to attend. Dr. W. H. Marcy, of Buffalo, is president, and Dr. George Chaffee, of Brooklyn, is corresponding secretary.

**Personal.**—Dr. Paul E. Bechet removed on October 1st to 531 Madison Avenue, New York, becoming associated in practice with Dr. L. Duncan Bulkley.

Dr. Alexander Spingarn and Dr. George W. Beatty have been appointed assistant pediatricists in the service of Dr. Le Grand Kerr at the Methodist Episcopal Hospital, Brooklyn.

Dr. R. G. Pearce, associate in physiology, Western Reserve University, Cleveland, has been appointed assistant professor of biology in the college of medicine, University of Illinois, Chicago.

Dr. James Craig Neal has been appointed instructor in obstetrics and gynecology in the University of California medical school.

Dr. Thomas B. Shay has been appointed chief of the medical division of the Department of Health of Boston.

**An Interstate Commission to Fight Mosquitoes in 1916.**—In order to avoid a repetition of this year's mosquito experience, Commissioner Goldwater proposes the formation of an interstate commission to fight mosquitoes in 1916. New York city was not alone in its suffering from mosquitoes during the past summer; the situation was no better in the neighboring States. No permanent relief from the nuisance can be expected by New York, unless vigorous preventive measures are simultaneously prosecuted in Connecticut, New Jersey, and Westchester county. For these reasons, the formation of an interstate commission is proposed. It will be organized, if Doctor Goldwater's plans are carried out, at the end of this year. The United States Public Health Service has been invited to join and has been requested to nominate a chairman to direct the work of the commission.

**Deserved Credit to a Pioneer.**—Although "good milk" was distributed to the sick poor of this city as far back as 1873 by the New York Diet Kitchen Association, and milk pasteurized and modified to a set formula was dispensed to sick babies in the summer of 1891 by the Good Samaritan Dispensary, the credit for most of the effective pioneer work in the establishment of the present system of infants' milk stations belongs to Mr. Nathan Straus, who in 1892 established his pasteurized milk laboratories with depots in various parts of the city. During the year ending September 1, 1915, Mr. Straus maintained eighteen milk stations in Manhattan, eight of them open throughout the winter.

At these stations there were supplied 2,175,208 bottles of modified and pasteurized milk and 1,441,580 glasses of pasteurized milk. In addition medical advice was supplied at each station. There is no doubt that this work has been an appreciable factor in the reduction of the infantile death rate in our city.

**Medical Society of Virginia.**—The forty-sixth annual meeting of this society will be held in Richmond, October 26th to 29th, with headquarters at the Jefferson Hotel. Plans are being made by the local committee of arrangements, of which Dr. Thomas W. Murrell is chairman, for the entertainment of the visiting physicians, and it is expected that the meeting will be largely attended by the physicians of the State. The program will include papers on diseases of the biliary tract by Dr. S. B. Moon, of Richmond; Dr. Hugh Trout, of Roanoke; Dr. Hugh McGuire, of Alexandria, and Dr. L. Gwathmey, of Norfolk, and a general discussion will follow. There will be a symposium on cancer, in which Dr. William L. Rodman, of Philadelphia, and Dr. Thomas S. Cullen and Dr. Joseph C. Bloodgood, of Baltimore, will take part. Dr. Harry T. Marshall, of the University of Virginia, is arranging a symposium on tuberculosis. A specially interesting feature will be a series of clinics and demonstrations arranged by Dr. J. Shelton Horsley and his committee. Dr. Samuel Lile, of Lynchburg, is president of the society, and Dr. Paulus A. Irving, of Farmville, is secretary.

**Kentucky State Medical Association.**—Dr. Ap Morgan Vance, of Louisville, was elected president of this association, at the annual meeting held in Louisville, September 21st, 22d, and 23d. Other officers were elected as follows: First vice-president, Dr. M. F. Hoag, of Quick-sand; second vice-president, Dr. Amos Davis, of Earlington; third vice-president, Dr. J. B. Mason, of London; secretary, Dr. A. T. McCormack, of Bowling Green. Dr. C. W. Hibbit, of Louisville, was elected councillor for the Fifth District. Dr. C. V. Aud, of Cecilian; Dr. D. M. Griffiths, of Owensboro, and Dr. R. C. McChord, of Lebanon, were nominated for State Commissioner of Health, and the governor in filling the post will appoint one of these men. Dr. E. A. Stevens, of Mayfield, was named orator in medicine, and Dr. W. L. Gambill, of Letcher County, orator in surgery for next year's meeting, which will be held in Hopkinsville.

**War Raises New York's Death Rate.**—An analysis of the mortality figures compiled by the department of health shows that during the past week, there were seventy-seven more deaths reported than during the corresponding week of last year. Over forty of these, however, are accounted for by the increase of the city's population. The diseases principally responsible for this increased mortality were diarrheal diseases, particularly under five years of age, whooping cough, heart disease, and pulmonary tuberculosis. On the other hand, measles, diphtheria, bronchitis and bronchopneumonia, and diseases of the nervous system showed a decrease. The total number of deaths reported during the week were 1,209, with a rate of 10.86, compared with 1,132 deaths and a rate of 10.58 for the corresponding week of last year. The rate for the first forty weeks of 1915 is 13.37, compared with 13.81 for the first forty weeks of 1914. According to the statistics of the department of health, the death rate of the city has unquestionably been affected by the changes in immigration and emigration that have occurred during the past year as the result of the European war, particularly as the city has lost large numbers of inhabitants between the ages of fifteen to forty years, i. e., at the age period when the death rate is the lowest.

The effect of the war upon municipal vital statistics is also reflected in a report of the city of Hamburg for March, 1915, which has just reached the department of health. In that city there was a falling off of 210 marriages during the month, compared with the previous March and a difference of 2.2 in the marriage rate. The Hamburg birth rate for March, 1915, was 2.6 lower than the average for the previous ten years.

**Civil Service Examinations.**—Among the positions for which examinations will be held by the Civil Service Commission of the State of New York, on October 30th, are the following:

Assistant bacteriologist, quarantine laboratory, Department of the Health Officer of the Port of New York. Men and women. Salary \$1,200 per annum. Open only to candidates who have satisfactorily completed a systematic course in bacteriology and have also had not less than eight months' practical experience in laboratory work, including work in the bacteriology of cholera and plague. Two years' practical work in bacteriology at full time in a laboratory will be accepted as the equivalent of a systematic course in bacteriology. Candidates will be examined on the technical procedures used in the study of the pathogenic bacteria of infectious disease. These positions will require full time attendance and incumbents will be required to be on call for additional night service should emergencies demand such service.

Assistant physician, State Charitable and Reformatory Institutions. Men only. Open only to licensed physicians of New York State. At least six months' experience in a general hospital is required. Preferred ages twenty-five to forty years. Subjects of examination: Anatomy, physiology, chemistry, materia medica, therapeutics, obstetrics, surgery, theory, and practice. Vacancies at \$1,200 and maintenance exist at the Hospital for Crippled Children, West Haverstraw, and at the Syracuse Institution for Feeble-minded Children.

Coroner's physician, Albany County. Paid by fees; for each post mortem examination, \$20; for examination of body when post mortem investigation is unnecessary, \$5. Candidates must be legally licensed medical practitioners and residents of Albany county.



# Pith of Current Literature.

## BERLINER KLINISCHE WOCHENSCHRIFT.

**Value of the Flotation Test of the Lungs, by S. Schuchberg.**—This is generally regarded as the most valuable sign of life in the newborn, as evidence that the child breathed. Certain rare instances are cited from the literature in which air was found in the lungs of stillborn infants. In all of these there had been an early rupture of the membranes with probable entrance of air into the uterine cavity. Bacterial invasion of the fetal sac with the production of gas and the employment of methods of artificial respiration may also lead to the entrance of air into the lungs of truly stillborn infants. A case is cited from the author's observation in which the lungs of a dead fetus, removed from its intact membranes twenty-four hours after the death of the mother, showed unmistakable evidence of air or gas in the alveoli. No infection of the uterine contents could be proved to account for the gas. Evidence of the inhalation of some of the amniotic fluid into the lungs was also present. No explanation can be given to account for the presence of the gas or air. This, together with the other conditions mentioned, shows that the flotation test cannot be regarded as absolute evidence that an apparently stillborn infant had lived and breathed.

**Treatment of Empyema by Irrigation and Drainage, by Erich Leschke.**—Rib resection with open drainage and lavage through a single cannula have given good results in the treatment of empyema, but each has several serious disadvantages. These may be overcome by a new and simple method. Under local anesthesia, two cannulas are thrust through an interspace fairly low down over the empyema; through these are passed rubber catheters the ends of which are cut obliquely with lateral openings near the tips. One of the catheters is connected with an irrigator and the other with a siphon tube which dips below water; thus no air enters the pleural cavity. The pus is siphoned out and its removal is made complete by irrigation with normal salt solution. Large masses of fibrin when they occlude the outlet catheter can either be withdrawn by suction with a large syringe or the current through the catheters reversed. Siphonage with irrigation can be performed two or three times a day at first and later reduced in frequency as the pus formation subsides. The catheters should be clamped when the irrigator and siphon tubes are disconnected between operations to prevent the entrance of air. As the empyema subsides, the catheters may be gradually withdrawn from the pleural cavity until finally they are removed entirely and the wounds allowed to close by cicatrization. This method of treatment leaves a normally functioning lung after the empyema is cured.

## MEDIZINISCHE KLINIK.

**Origin and Significance of So Called Hunger Fever in the Newborn, by A. Mayer.**—Characteristic features of this condition are an abrupt rise in

temperature and a corresponding fall in the body weight. The maximum temperature and the minimum weight usually occur on the same day. With the subsequent fall in temperature there is a concomitant rise in the weight curve during recovery. The height of the disturbance is usually on the third or fourth day of life, seldom the sixth. The disturbance is short, rarely over two or three days. Large, strong infants are more frequently affected than the weak and small. There is no evidence of any disease; recovery is usually prompt and complete. The causation is unknown, but the author thinks that it is a protein intoxication through an abnormal permeability of the intestinal mucosa. Such permeability occurs to a certain extent in all very young infants; that large infants are more apt to have hunger fever suggests that congestion, which occurs in their abdominal bloodvessels during parturition, plays an important part in increasing this permeability. There may also be some hereditary factor, for the condition has been observed in two children of the same mother. Some peculiarity in the composition of the milk is also probably a factor in many cases. Prognosis is favorable. Apart from attention to the food and the use of cold applications during the height of the fever there is little to be done in the way of treatment.

**Trichinosis, by Lipowski.**—It is suggested that every patient with symptoms of acute muscular rheumatism should be examined for trichinae; the condition is much commoner than usually suspected. After the development of the disease, a man is not fit to resume severe muscular work until the trichinae have become capsulated, a period of five to six months in mild cases, nine months to a year in medium cases, and two years in the very severe. No form of treatment has been of much avail in limiting the spread of the young broods of parasites; in three cases the author gave injections of 0.3 gram of neosalvarsan and observed a drop in temperature. His patients came under observation too late for the best results, but he suggests that salvarsan or neosalvarsan may destroy the young parasites if given at the time of their liberation, that is, between the seventh and ninth days of the disease.

## CORRESPONDENZ-BLATT FÜR SCHWEIZER AERZTE.

August 7, 1905

**Early Diagnosis of Pulmonary Tuberculosis, by O. Amrein.**—It is not to be expected that the general practitioner will become able to make the diagnosis as early as the specialist, but much could be gained by special courses devoted to this purpose. First the history must be taken with regard to hereditary taint, then the symptoms complained of by the patient. A tendency to fatigue, irritability, anemia, lack of appetite, especially for breakfast, palpitation of the heart on climbing stairs, panting in rapid walking or climbing, perspiration of the hands, loss of weight, and an unhealthy appearance, all suggest tuberculosis, though they may occur in other diseases. A hoarse or easily tired voice may be a very early symptom, caused perhaps by a reflex irritation of the vagus fibres in the lungs, by compression of the recurrent laryngeal nerve by enlarged glands, or by actual injury of the upper air passages. Coughing may be produced by the same

causes, and is to be noticed particularly when it appears as a dry hacking cough in the morning especially, but also in the evening and in warm rooms after talking or walking. Expectoration comes later and does not necessarily contain bacilli. Instability of the vasomotor system, alternating blushes and pallor, hectic cheeks, may be explained as the result of toxins, while the blood pressure often is low. The temperature should be watched minutely, for it is of extreme importance. The disappearance of a subfebrile temperature during rest in bed is an almost certain sign of tuberculosis. Spitting of blood that does not come from the throat, and night sweats also are indicative of the disease. Amrein also deals with the findings on physical examination in the early cases, discussing those obtained by inspection, palpation, percussion, and auscultation. Finally he groups together as important points for an early diagnosis the history of hereditary taint, behavior of the temperature, especially the rectal after exercise, the changes found on physical examination, muscular spasm, rhachialgia, deepness and reduction in area of the apex resonance, shortening of sound to dullness, rough, impure, weakened, accentuated, or jerky respiration, prolonged expiration, weakened inspiration, slight crepitation to distinct rhonchi, and an increased whispering voice. Both sides should always be compared in the physical examination.

#### BULLETIN DE L'ACADÉMIE DE MEDECINE.

July 27, 1915.

**Acute Meningitis in Military Practice**, by Saquépée, Burnet, and Weissenbach.—The proportion of cases of acute meningitis to 100,000 men was observed to be the same in war as in peace, viz., thirty to thirty-five cases in six months. The nature of the causal microorganisms, however, was different; in peace between eighty and ninety per cent. of cases were due to the meningococcus, but in the 121 cases met with in this war this organism occurred in sixty per cent. In the remaining cases of suppurative meningitis, a variety of germs occurred, including the parameingococcus, Diplococci crassus and flavus, Micrococcus catarrhalis, streptococcus, staphylococcus, pneumococcus, colon bacillus, pneumobacillus, etc. In six cases, the cerebrospinal fluid exhibited an aseptic puriform condition. Meningococcus carriers were detected in the proportion of only 1.33 per cent., against four or five per cent. during peace. The large number of the non-meningococcic meningitides witnessed is ascribed to the subjection of the soldiers at the front to secondary causes such as fatigue, sleeplessness, constant nervous tension, and especially the frequently repeated commotions of the cerebrospinal tissues caused by the explosion of shells, which predispose these tissues to pyogenic or other infection. An unusual proportion of cases of nonpurulent meningeal reaction was also met with.

**Motor Reeducation in the Aftertreatment of Wounds**, by P. Kouindjy.—The efficacy of motor reeducation in improving locomotion and other functional impairments in the wounded is emphasized. Relief from the use of crutches, as well as from incapacity to work due to inability to apply correctly the muscular power remaining in the sub-

ject's extremities, may thus be procured. Details are given of the procedure required in accustoming a man with a useless leg to walk with a single cane instead of with a pair of crutches. Compensation for the loss of certain muscles by the proper training of others, in case of injury of either the upper or the lower extremities, is considered an important step forward in the management of these cases. Thus the tensor fasciæ femoris may be caused, by training, to assume the functions of the quadriceps; the trapezius, of the deltoid; the deltoid, of the triceps; the supinator longus, of the biceps, etc. Motor reeducation in addition exerts a favorable influence on the mental state.

**Treatment of Wounds**, by H. Reynès.—A recent addition to the customary wounds by shells or bullets has been the extensive series of injuries due to hand grenades, torpedoes, and similar devices, which usually cause multiple wounds and in which the prognosis is bad owing to marked general shock, anemia, bony lesions, and phlegmonogangrenous infection. Reynès believes irrigation has been overdone in the majority of wound cases, and recommends especially the careful removal with the scissors of all traumatized, disintegrated tissues, almost inevitably a nidus of purulent liquefaction or necrosis. Even the most extensive wounds may thus be caused to heal under any form of topical application or under none at all.

#### PRESSE MÉDICALE.

July 8, 1915.

**Symptomatology and Operative Indications in Nerve Injuries in the Extremities**, by Déjerine and Mouzon.—Nerve irritation is characterized clinically by the absence of complete paralysis and of dysesthetic disturbances—anesthesia and hypesthesia—by the customary presence of hyperesthesia, and by the presence in pronounced degree of either pain or of trophic disturbances. Slight nerve irritation is manifested in pain, most severe at first, then gradually diminishing, or by tingling; pressure or percussion of the nerve trunk below the lesion or of the muscles causes sharp pain; there is hyperesthesia to pricking with a pin and sometimes to touch, heat, cold, or osseous vibration. Muscular atrophy may be very marked and take place in a few days. Electric reactions show a variable degree of deviation from the normal. Motor impairment is much less marked than the sensory. In severe nerve irritation there is added either causalgia—burning of the skin—or marked trophic disorders such as ankylosing arthritis and glossy skin. In no case of nerve irritation examined by the authors was the actual nerve lesion a considerable one. Operative treatment is indicated only where a perineural cause of irritation is believed to exist, e. g., a fragment of a projectile, a splinter of bone, callus, an abscess, etc.; the operation should be limited to the perineural tissues. Cold packs or baths are useful for causalgia. Early and systematic passive movements are advisable. In the case of a purely sensory nerve, resection may be done above the presumed site of the lesion. Nerve compression is distinguished from nerve interruption by tenderness of the muscles and nerve trunks, and from nerve irritation by the fact that the amyotrophy is propor-

tional to the paralysis and by the substitution of anesthesia and hypesthesia for hyperesthesia. Operative treatment is always indicated in the absence of signs of spontaneous restoration of function, and consists in freeing the nerve from perineural compressing structures, though abstaining from interference with an interstitial sclerosis of the nerve, unless this is very marked, in which case the connective tissue sheath of the nerve should be incised.

**Treatment of Traumatic Hemorrhage and the Irrigation of Wounds**, by J. Gautrelet.—Experience in the last twenty years has shown that much more is required of artificial saline solutions than mere isotonicity with the body fluids. Locke's solution should henceforth be substituted for so called physiological saline solution in the treatment of all cases of traumatic anemia. The formula used by the author and others was: Sodium chloride, eight grains; calcium chloride (dry), potassium chloride, and sodium bicarbonate, of each 0.2 gram; glucose, one gram, and distilled water, 1,000 c. c. After dissolving the solid components the preparation was filtered and sterilized in the autoclave or by boiling. The calcium in the solution is considered useful to increase blood coagulability, the sodium bicarbonate for its alkalinity, and the glucose as a food to the heart muscle. Clinical trials in several series of cases clearly showed the value of this solution for intravenous or subcutaneous injection. Its use is also advised for the irrigation of infected or other wounds, the combination of salts it includes tending to excite the tissue cells and hasten repair.

## RIFORMA MEDICA.

September 11, 1915.

**Ataxia in Walking and Swimming**, by A. Murri.—Ataxic patients who are unable to walk four steps without falling can nevertheless swim. The capacity of adaptation to this persists in spite of atonia, asthenia, and astasia, if the cerebellum is uninvolved. However, the cerebellum seems to be concerned only with the muscles used in walking or maintaining the erect posture. In dogs with the cerebellum removed there remains the power of co-ordinate movements of the extremities provided that the animals are in a lying position. The cerebellum seems not to be an organ of equilibration in the true sense of the word, but rather it controls the tone and contractions of the muscles which are involved in walking and standing.

**A New Serum Coagulation Reaction**, by S. Scigliano.—Extensive experiments were undertaken to test the assertions of Hirschfeld and Klinger in 1914 that they had evolved a new method of serum diagnosis of syphilis utilizing the phenomenon coagulation of the serum of a given animal. These writers established that syphilitic serums annulled or retarded the coagulation of other normal serums. The material required for this test consists of five factors; an emulsion of organ extract; a serozyme; a solution of the chlorides of calcium and sodium; an oxalate of plasma, and, finally, the serum to be examined. Scigliano concludes that serums which are definitely syphilitic inhibit or retard the coagulation of other serums and that the strength of the Wassermann reaction coincides exactly with the de-

gree of retardation of coagulation; also, that definitely nonsyphilitic serums from healthy individuals with a negative Wassermann do not influence this coagulation period in the least.

## ROUSSKY VRATCH.

June 20, 1915.

**Experiment with the Use of Fetal Cord to Repair Defects in Mucous Membrane**, by W. A. Perinoff.—In two cases the author employed successfully pieces of fresh cord to repair defects in mucous membranes. He states that the cord with its smooth, velvety skin surface and underlying mucosa forms an ideal tissue for such repairs.

June 27, 1915.

**Honey in the Treatment of Diabetes**, by A. Ia. Davidoff.—The author made the accidental observation that the ingestion of honey by diabetics does not seem to increase the amount of sugar in the urine. He then permitted a number of diabetics to add honey to their diet, and he found that far from increasing the glycosuria, the excretion of sugar diminished considerably in some cases. The conclusion reached by the author is that honey is a very useful, and certainly very palatable article of food in diabetes.

July 4, 1915.

**Symptoms of Basedow's Disease and Tuberculous Infection**, by F. P. Bjalokur.—The author maintains that in many cases of tuberculosis, especially in women, there is an associated hyperthyroidism, the latter being caused by the irritating tuberculous toxins. He thus explains the emaciation, rapid pulse, extreme nervousness and the irritating cough in many cases of pulmonary tuberculosis. Symptoms of Basedow's disease, according to the author, frequently point to latent tuberculosis. In the treatment of pulmonary tuberculosis with hyperthyroidism, attention should be directed to the thyroid gland, and the patient placed under conditions which would tend to diminish the thyroid secretion. Tuberculin is contraindicated, also forced feeding and great altitudes. Arsenic is also contraindicated in cases where there is a disturbance of the gastrointestinal tract; in any case it is of little benefit. The most satisfactory results the author obtained from citrate of iron and strychnine, hypodermically. In severe cases x ray treatment of the thyroid, once a week or every ten days may be of benefit; or thyroidectomy may be considered.

**Gonorrheal Phylacogen in Gonorrheal Complications**, by V. I. Zdanovitch.—The author employed gonorrheal phylacogen in ten cases of gonorrhea complicated with prostatitis, epididymitis, orchitis and arthritis. On the whole, the results were quite favorable, particular benefit having been observed in the diminution of pain and prevention of chronicity.

**The von Pirquet Reaction in School Children**, by M. N. Chafetz.—The author applied the von Pirquet test to 149 boys from a public school and 127 girls from an orphan asylum. In thirty-five per cent. of the boys and sixty-five per cent. of the girls a negative reaction was noted. The predominance of positive tests among the boys, the author explains by the fact that they come from the lower middle class where the environment is not very fa-



variable, while the girls in the asylum live under much better hygienic conditions. Classifying the subjects according to ages, the author found that up to twelve years 44.3 per cent. reacted; from twelve to twenty years, fifty-five per cent., showing that with advancing years the reaction is positive in larger proportion. Further grouping shows that in 23.5 per cent. there were clinical indications of tuberculous infection. In 29.5 per cent. no lesions could be discovered. In seven per cent. the reaction was negative, but other indications of latent tuberculosis were present. The author regards the test as specific and urges its application to all school children.

#### REVISTA DE MEDICINA Y CIRUGIA PRÁCTICAS.

September 14, 1915.

**Medical Study of the Consequences of the Present War**, by A. Espina y Capó.—Apart from the actual physical injuries inflicted by projectiles, asphyxiating gases, etc., there must be studied the illnesses peculiar to armies on active service, and still further the effect of the war on such individuals as escape both medical and surgical mishaps while in the field. Youths are taken for military service whose organs are not developed sufficiently to stand the strain. Again, the rigors of trench life light up latent tuberculous processes and aggravate slight infections, also lowering resisting powers so as to predispose to the disease in after years. The heart is exposed to unaccustomed and abnormal strain from the carrying of heavy equipment, mountain climbing, long fasting and exposure to weather conditions. There is exposure to rheumatic infection of the heart with resulting endocarditis, myocarditis and pericarditis. Going back still further, we must consider the children born or being reared in such times, the terrible conditions in which they are born, the mental impressions of the mothers during pregnancy and lactation, the great spread of syphilis and consequent congenital infection of children and the horde of children born illegitimately and to diseased mothers. Young children are deprived of their proper food to feed the soldiers, thus causing inanition and rachitic conditions with a predisposition to tuberculosis and lowered resistance to other diseases. The shocks to the nervous system during the adolescent period will leave their mark in after life. Epidemics have already arisen which were difficult to check, first in the Serbian army and at present in the Austrian army, typhus, cholera, dysentery, malaria and infectious diseases including the much dreaded pneumonia. Apart from the disgraceful crippling of the present generation there will be consequences and effects lasting through many generations which will destroy after one year of war one hundred years' work in sanitary education and prophylaxis.

#### BRITISH MEDICAL JOURNAL.

September 11, 1915.

**Alveolar Carbon Dioxide Determinations in the Treatment and Prognosis of Diabetes**, by E. P. Poulton.—Many cases of diabetes of varying severity were studied with respect to the action of carbon dioxide in the production of acidosis. The alveolar carbon dioxide tension was determined

both by Fridericia's tensimeter and by either the Haldane-Priestley, or the Hasselbalch-Lindhard methods. The Fridericia method was found to be very simple and easy of execution and to give quite accurate results. It is described in some detail because it is possible to make clinical use of the instrument in private practice. The results of the observations showed that the determination of the alveolar carbon dioxide tension gave a very good index of the severity of acidosis. It is of no use to apply the test in cases free from evidence of acetone bodies in the urine, for the results will always fall within normal limits of five to six per cent. The alveolar carbon dioxide tension proved to be a sure guide to the severity of the condition and indicated with great certainty whether or not coma was impending. The cases could be divided into two groups by its means: The mild group, in which the tension fell within the normal limits and the prognosis relative to coma was fairly good, and the severe cases, in which coma was impending and the carbon dioxide tension was below normal. The actual carbon dioxide pressure was found to be an index of the degree of danger. Where it was as low as two per cent., coma might be expected within twenty-four hours, three to four per cent. indicated that coma was not likely to occur in less than two or three days. A sudden fall in the tension indicated danger, although coma might be averted by treatment. These indications often were not at all parallel with the apparent clinical severity of the cases, the clinical signs not being trustworthy guides. When coma seemed impending within a few days, or even a few hours, judicious treatment and the liberal infusion of sodium bicarbonate often delayed its onset for weeks or even longer. Another method of measuring the severity of the condition of the patient the determination of the ratio of the urinary ammonia nitrogen to the total urinary nitrogen. Normally the figure for this ratio lies between three and four per cent. In severe acidosis it may rise to from twelve to thirty per cent. The disadvantages of this method lie in the time required for the analyses; the procedure is essentially a laboratory one. The tensimeter is as easy to use as the ureometer and is of clinical value at the bedside, for its results are immediate and treatment may begin at once.

#### LANCET.

September 11, 1915.

**Pathology of Trench Frostbite**, by J. Lorrain Smith, James Ritchie, and James Dawson.—This study comprised careful observation of the clinical condition and an experimental investigation in rabbits. Frostbite is produced by prolonged exposure in confined quarters where movement is limited to moderate cold combined with moisture. The patient would often complain of numbness in the feet which would disappear after a day's interval. On second exposure the condition would increase until the typical picture of frostbite was produced. This consisted of a swelling in the toes, slight blush or bluish color, often very persistent pain and pricking and some degree of anesthesia. From the animal experiments, the condition was shown to be primarily an affection of the bloodvessels, the injured

walls permitting an excessive exudation, greatly increased by the application of warmth. Fibrin was deposited in the tissues and their fibrous elements were more or less disintegrated. There was often rupture of the vessel walls with escape of blood. In treatment, prevention is the most important element. This can largely be accomplished by thorough massage of the feet before and after exposure, shortening the period of exposure, avoidance of all constriction of the circulation, provision for drainage of the foot gear and avoidance of moisture as far as possible. The thorough application of an oil with a high boiling point to the feet was found of value in preventing wetting. When frostbite has occurred, the restoration of the circulation should be delayed and heat should not be applied.

**Phenolization in the Treatment of Gas Gangrene**, by Louis Menci re.—Excellent results have been secured in many cases of gas gangrene with preservation of the extremity by the efficient use of phenol. The edges of the wound should be raised to form a cavity into which a mixture of nine parts of pure phenol with one of alcohol should be poured. All the recesses of the wound should be swabbed out with this solution, which should be allowed to remain in contact for one to one and a half minute. Cauterization of the skin should be carefully avoided. The solution should be removed with tampons, the wound irrigated with three or four litres of strong alcohol. After this it should be embalmed with 150 to 200 grams of a mixture composed of one litre of ether, ten grams each of iodoform, guaiacol and eucalyptol, thirty grams of balsam of Peru and 100 c. c. of ninety per cent. alcohol. A permanent dressing should be applied and renewed twice daily for a week. Rarely is a second phenolization required. The permanent dressing should consist of gauze tampons soaked in a solution ten times the strength of the one described. The surgeon should decide whether the wound may be treated by this method or whether amputation is immediately required.

**Succus allii in the Control of Suppuration in Wounds**, by A. D. Serrell Cooke and V. Gabriel.—The favorable effect of garlic juice when inhaled in pulmonary tuberculosis, suggested its use in infected wounds. Twenty cases have been treated with a lotion containing one part of succus allii to three or four parts of distilled water; striking results have been obtained. The lotion was used to wash out the wound twice a day and its application was combined with drainage. Noticeable improvement usually took place within twenty-four hours, and very marked improvement at the end of the second day. Discharge was promptly reduced, the pain relieved and the tissues were not injured in any way. The phenol coefficient of allyl sulphide is given as two; it is possible to use it in concentrations much greater than phenol.

**The Strength of Picric Acid as an Antiseptic**, by H. L. Tidy.—The phenol coefficient was determined by the Rideal-Walker method, using *Bacillus typhosus* as the test organism. The results showed that picric acid had a coefficient of six; that is, a 0.165 per cent. solution of picric acid was the same in bactericidal activity as a one per cent. solution of phenol.

## BRITISH JOURNAL OF CHILDREN'S DISEASES.

September, 1915.

**Congenital Heart Disease and Ulcerative Sore Throat**, by J. D. Rolleston.—The patient, aged eleven months, was admitted to the hospital on the eleventh day of an attack of diphtheria. The child had been blue since birth and was always delicate. The throat culture showed a predominance of cocci and a few bacilli, resembling diphtheria bacilli; a large dose of antitoxin was given. Stridor and a hoarse cough developed and the patient died on the twenty-third day of intercurrent bronchopneumonia. The autopsy showed ulceration of the tonsils and soft palate. Areas of bronchopneumonia were found in the lower lobe of the left lung. The heart showed transposition of the great arterial stems (the aorta arising from the infundibulum of the right ventricle and the pulmonary artery from the left ventricle), marked deficiency of the interauricular septum; an interventricular foramen and stenosis and hypoplasia of the pulmonary artery. The duration of life in complete transposition of the aorta and pulmonary artery is usually very short. In this case the prolongation of life was attributed to the defects in the auricular and ventricular septa, which allowed a free mixture of the arterial and venous blood. Maternal infections and fetal endocarditis play only a small part in the causation of congenital heart disease; it is generally supposed to be due to a developmental error.

**Lymphocytomatosis**, by F. Parkes Weber.—In autopsies it is occasionally found that one or more of the viscera, especially the kidneys, are completely infiltrated with cells like lymphocytes, which separate the essential elements of the affected organ from each other. When the disease affects the kidneys, it is hard to make the differential diagnosis at autopsy from the large white kidney of parenchymatous nephritis. The disease is characterized by the appearance of swellings which consist of cells like lymphocytes. The blood change may not be characteristic.

**Education of Children with Defective Vision**, by N. Bishop Harman.—The author is opposed to the introduction of the Montessori system into England for the reason that the grounds of its success in Italy do not exist in England. The English are inclined to be individualists and uniformity is foreign to the mental habit of the inhabitants. As regards the training of children, poor eyesight is not discovered until they are too old to be fit subjects for such an elementary scheme of teaching. In the Montessori system, children with defective vision are taught by the method of touch—things are handled and touched, but not looked at. To supplant the use of the sense of vision by that of touch is a retrogression in British methods.

## BOSTON MEDICAL AND SURGICAL JOURNAL

September 16, 1915.

**Surgical Experiences in France**, by William Jason Mixer.—When a soldier is wounded in the French trenches, a first aid dressing is applied and he is carried back as soon as practicable to a dressing station, where his dressing is reinforced if necessary, a diagnosis card tied to his clothing, if not

already done, and then, unless moribund, he is sent to one of the first line hospitals, or if the wound is slight, and transportation is at hand, to the distributing point in the rear. Here he is looked over again and sent to some hospital in the army zone, or by rail to Paris, or to some of the larger base hospitals in the south of France. Most of the wounds are caused by shell or shrapnel, about fifteen per cent. by rifle balls, a few by hand grenades. The writer has seen but one bayonet wound and no sabre cuts. Nearly all shell and shrapnel cases were septic and are of interest chiefly as a constantly changing problem in immobilization and sepsis, though the nerve injuries are only slightly less in importance. Both overshadow the operative point of view. The gas bacillus varies tremendously in virulence; it shows clinically in only a moderate number, but if sought for carefully can be found in ninety per cent. Immobilization of fractures in the presence of septic wounds forms a difficult problem; plaster, either in the form of a bivalve or with large bows built over wire netting, is usually the best. Mixer's experiences lead him to conclude that gunshot wounds do best if let alone as much as possible, unless there is some direct indication for intervention. All war wounds except those caused by bullets which do not "upset," will almost certainly be septic. Gunshot fractures, even if septic, show remarkable powers of repair. Military surgery is so different from civil surgery that those of us who expect to serve, were this country to find itself at war, should have some definite training to fit us for our duties.

**The Common Shoulder Injuries**, by Edward H. Risley.—Emphasis is laid on the following points: Diagnosis in shoulder injuries is not made by clear cut signs and symptoms, but by a careful process of exclusion and x ray examination in every case. The x ray is of the utmost importance, as it often reveals the underlying cause of a persistent bursitis to be some of the frequent lesions of the greater tuberosity or acromion which are often overlooked. About sixty per cent. of subacromial bursitis cases are of the occupational type; most of the others depend on some lesion of the greater tuberosity or acromion. The diagnosis of ruptured supraspinatus tendon should not be made until at least three months of nonimprovement have elapsed. Cases of long standing bursitis with adhesions give a picture identical with that of ruptured supraspinatus tendon and satisfactory results from operation. Calcareous deposits in the subacromial bursa may be absorbed spontaneously. Occupational neurosis *per se* does not exist in the shoulder joint. Injuries to the brachial plexus are rare. Slight injuries to the greater tuberosity and acromion and arthritis of the acromioclavicular joint are of far greater importance than is generally supposed in prolonging disability after shoulder injuries.

*Continued on p. 785*

**Acute Perforations of Ulcers of the Stomach and Duodenum**, by Irving J. Walker.—The history of disturbance of the stomach or duodenum should always be sought for in cases of suspected perforation. The most constant symptom is a sudden, severe epigastric pain. Shock is inconstant, and the value of the absence of liver dullness as a sign

of perforation probably has been overestimated. Simple closure of the perforation with drainage of the peritoneal cavity is the safest procedure in the majority of cases. The mortality can be diminished by greater care in the diagnosis and treatment of chronic lesions of the stomach and duodenum; few are allowed to reach the stage of perforation, and by giving these the benefit of surgical measures, the chances of recovery are still good.

**Relation between the Genetic Factors and the Age of Onset in Hereditary Epilepsy**, by D. A. Thom.—With the exception of alcoholism all of the maternal traits were manifested in the offspring at an earlier date in the form of epilepsy than traits transmitted by the father. When both parents had the same defect, the onset was at an earlier date than when only one parent was defective. There was practically no difference between the average age in cases in which two or three defects were inherited and in those in which the family history revealed only one. Cases with direct heredity had an earlier onset than those with collateral heredity.

**Blood Pressure**, by Cadis Phipps.—A difference of five or ten mm. in the blood pressure reading may be observed, depending on whether the pressure is determined by palpation or auscultation. The reading may vary in the same individual between the right and the left arms, thighs, or calves, or between these parts; this variation is in no way uniform. The variations appear to be as great in young persons as in old, in those showing healthy arterial walls as in those showing sclerosis. The relation of the artery to other structures probably is of more importance to the blood pressure reading than the thickness of the overlying tissues. Difference between the right and left brachial pressures is by no means diagnostic of aortic aneurysm. The presence of a higher pressure in the leg than in the arm is not diagnostic of aortic insufficiency, and blood pressure in the vessels of the leg and arm is not practically the same in normal persons, although such assertions have been made.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

*September 25, 1915.*

**The Decomposition of Food Products as Cardiovascular Poisons**, by Robert N. Willson.—The decomposition of food in the intestine leads to the liberation and absorption of toxic substances which may be in part strictly chemical, in part purely bacterial, and in part normal end products which may be poisonous to a given individual. These toxic materials act in one of three ways; either through a chemical toxemia, a bacteriemia, or by virtue of the formation of toxic gases which are partly absorbed and which partly act by mechanical disturbance of neighboring viscera including the heart. Irrespective of the form of food intoxication the first effects are manifest in the cardiovascular system and consist in a rise in the rate of the heart beat and an elevation of both systolic and diastolic blood pressures. In some cases, however, the blood pressure is abnormally low, falling to 100 mm. Hg. for the systolic and seventy-five for the diastolic. Some of the poisonous substances specially likely to be produced are the amines and aminoacids. Observation leads the author to state that an excess of food is



of more importance in producing the toxins than is any single food element, although proteins are perhaps more often the source of these substances than other constituents.

**The Role of the Nose, Throat and Accessory Sinuses in Chronic Infectious Arthritis**, by Richard Hammond.—Sixty-one unselected cases of chronic arthritis were investigated. Twenty-eight gave negative evidence regarding nose and throat infection and thirty gave positive evidence. Many giving positive evidence of infection showed involvement of the tonsils. In twelve of the positive cases, operation for removal of the source of the infection was performed, and of these, two cases improved markedly, three showed slow improvement, two showed no improvement and two were made worse. The results of operative treatment were not encouraging.

**Clinical Type of Arthritis Originating about the Teeth**, by Thomas B. Hartzell.—Careful examination was made of the extracted teeth of 220 patients; in every instance *Streptococcus viridans* was isolated. The same result was obtained in the examination of the roots of normal living teeth in a considerable series. The arthritis of dental origin seems to be always due to *Streptococcus viridans*. It is characterized by slow onset with exacerbations and remissions, the exacerbations apparently being coincident with the filling of dental pockets with pus or the retention of pus in pyorrhea pockets. Curettage and evacuation cuts off the constant supply of organisms and toxins and gives the patient an autoinoculation of a large number of organisms which act as a vaccine. From three to six days should elapse between the treatment of each of a number of teeth to avoid danger of lighting up the disease and to make the best use of the autoinoculations. This dental type of arthritis is easily controlled if the teeth are properly treated. When deformity has occurred, the best thing that can be secured is limitation of the progress of the disease.

**Quinine and Urea Hydrochloride Injections in Hypothyroidism**, by Leigh F. Watson.—Repeated injection into different portions of the gland of from one to four c. c. of a thirty to fifty per cent. solution of this drug leads to the destruction of a considerable portion of the gland substance with an amelioration in the symptoms. The technic is difficult and the method is not suited for use outside a hospital or by one who has not thoroughly mastered its difficulties and learned its possible dangers. It is suitable for the severe toxic cases.

**Treatment of Syphilis of the Brain**, by Guy O'Neil Ireland and C. Stuart Wilson.—Using the method of Byrnes, the authors found that the intradural injection of one fiftieth grain of mercuric chloride in serum was safe. The reactions were a little greater than after the Swift and Ellis treatment. Clinical improvement followed the first five injections in seventy-five per cent., and relapse occurred in about forty per cent. of these cases.

#### MEDICAL RECORD.

**Amputation of the Great Toe and the Muscular Physiology of the Leg**, by John Schapps—Schapps describes an operation devised by himself

to avoid the permanent deformity and disability which frequently follow amputation of the great toe. His method is to avoid cutting away the tendons of the toe but rather to approximate them over the stump, thus retaining the muscular function of the arch of the foot.

**A Single Stitch Appendicectomy**, by W. Frank Fowler.—This is merely a method of tying off the appendix, inverting the stump and approximating the mesentery in an appendicectomy operation by means of one strand of catgut. Fowler has devised a special form of clamp, curved almost to a right angle to facilitate this procedure.

**Neuritis**, by T. McCall Anderson.—It is striking to note the variety of the symptoms of this disease and also the great number of patients whose trouble had been considered as rheumatism and had been so treated, often for years. In neuritis the pain is caused by muscular spasm, while in rheumatism it is due to congestion or inflammation, therefore the pain of neuritis is easier to relieve than that of rheumatism. In a typical neuritis we have nerve strain or nerve exhaustion and toxemia with contraction of muscular tissue from the absorption of toxins. Treatment consists in removing the underlying cause such as, a sluggish intestine, a congested liver, overwork, or abdominal adhesions. The salines are of service in flushing out the colon, while, as a palliative as well as a curative measure, the secondary faradic current is of great service, especially when followed by deep massage.

**Treatment of Gallstone Disease**, by Otto Lerch.—Jaundice makes the prognosis more grave. The treatment of the colic is clear. Pain has to be stopped and for this morphine is the supreme remedy and is best given hypodermically. Atropine acts in a similar way by relaxing muscular spasm and may be given alone or combined with morphine. The salicylates in large doses are occasionally useful. Rest, both physical and mental, is of the utmost importance to influence the circulation. Next in importance is heat, in the form of a full hot bath, a sitz bath, poultices or an electric thermophore. An ice bag may be used in cases where heat is not well borne. Massage and electricity when skillfully given ease pain and favor the expulsion of a stone. A pure and free flowing bile prevents the formation of stones and dissolves them after they have been formed and this is the only solvent of biliary calculi so far found. The acute attacks require liquid diet and in all cases frequent small meals should be given, as the passing of chyme stimulates the papilla to open and discharge bile into the duodenum. Olive oil may be given in the dose of a wineglassful, night and morning. It acts as an antispasmodic and a laxative by keeping the stools soft. Calomel, as well as the mineral waters are of great service. These mineral waters represent an alkaline solution which given warm or hot one hour before meals bathes the mucous membrane of stomach and bowel, freeing it from mucus and also subduing inflammation. Surgical methods should be preceded, combined, and followed by medical treatment.

**House Infection: A Potent Source of Tuberculosis**, by I. W. Brewer.—Housing enters into the tuberculosis problem in three ways: The house itself, with its furnishings, may be infected; it may

contain a careless consumptive, and, thirdly, the general sanitary condition of the house may be such as to lower the resistance of those residing therein. The death rate in all cities falls in proportion to the size of the house.

#### LANCET-CLINIC.

September 18, 1915.

**Tuberculous Meningitis in Adults**, by H. T. Ratterman.—That there have been remissions and apparently permanent cures in cases with a definitely established diagnosis of tuberculous meningitis is granted after a review of the literature of the subject in the last fifteen years. The disease is seemingly arrested in one out of every two hundred cases. As no specific treatment is known, such fortunate terminations appear to depend upon low virulence of the organisms present or to an increased resistance to them. The author's case, occurring in a man forty-three years of age, terminated fatally. Tubercle bacilli had been found in the cerebrospinal fluid during life.

**Utility of the Bárány Functional Tests**, by C. E. Shinkle.—These tests are deemed most frequently valuable in the diagnosis of complications of mastoid disease, but are also occasionally of importance in obscure cerebellar cases. Though the results may be negative in certain cases, indications furnished prove definite enough to warrant an exact local diagnosis in the absence of other definite symptoms. A summary of the technic of the tests is given by the writer, and a table of the various possible results supplied.

#### AMERICAN JOURNAL OF TROPICAL DISEASES AND PREVENTIVE MEDICINE.

July, 1915.

**Verruga and Its Insect Transmission**, by Charles H. T. Townsend.—An investigation was made of the nature of the insect transmitting *Bartonia bacilliformis*, which infests the red blood cells in Peruvian verruga. The vector was found to be a new species of phlebotomus, *Phlebotomus verrucarum*, a nocturnal bloodsucking gnat existing only in the verruga district of Peru. The disease was produced in a monkey and in man if the subjects were bitten by the phlebotomus. Injections of ground phlebotomus bodies into various laboratory animals produced symptoms similar to those observed in man as well as infection of the erythrocytes with the *Bartonia* bodies. Lizards were found to act as a reservoir for these bodies, and are considered to have been the original host for them, the phlebotomus manifestly preferring reptilian to mammalian blood. The theory of Strong and his associates, that Oroya fever and the verruga eruption are distinct diseases, is combated. Prophylaxis against verruga consists in the application to the exposed parts of the body, just before dark, of a mixture in equal parts of oils of anise, eucalyptus, and turpentine in boric acid ointment. It is well to sleep under a tight muslin net, taking care that the edges are firmly tucked in.

**Sprue as a Moniliasis of the Digestive Tract**, by Bailey K. Ashford.—The disease process shifts from bowel to tongue and back again, the clinical picture depending entirely on what part of the di-

gestive tract is in eruption at this time. After well developed sprue, chronic intoxication supervenes, the liver atrophies, and secondary anemia makes its appearance. Periods of latency with decided betterment or apparent cure are apt to occur. Drugs were found of little use save when employed symptomatically for definite clinical crises. Sprue occurs almost exclusively in Porto Rican towns and cities where bread is a staple food; there appears to be a racial predisposition to sprue in persons of Northern birth. The tongue lesions of sprue are often indistinguishable from ordinary thrush, a disease as a rule due to *Monilia albicans*, and Ashford was led to suspect a poisonous yeast as the cause of the infection.

#### Proceedings of Societies.

##### NEW YORK NEUROLOGICAL SOCIETY.

*Regular Meeting, Held at the Academy of Medicine, June 1, 1915.*

Dr. WILLIAM M. LESZYNSKY, in the Chair.

(Continued from page 733.)

**The Cutaneous Zone of the Facial Nerve**.—Dr. J. RAMSAY HUNT, in making this presentation, reviewed briefly his contribution to the symptomatology of the sensory system of the facial nerve (*Jour. Nerv. and Ment. Dis.*, 1909, p. 321): 1. The geniculate otalgia (idiopathic, reflex, postherpetic, and tabetic); 2, pain in the ear and mastoid region with hypesthesia of the concha, in cases of facial palsy (Fallopian neuritis); 3, the sensory system of the facial as a reflex mechanism in facial twitchings and spasms; 4, herpetic inflammations of the geniculate ganglion, a syndrome characterized by herpes zoster oticus, facial palsy, and auditory symptoms. Anatomically, the sensory system of the facial nerve consisted of the geniculate ganglion; a posterior root, the nerve of Wrisberg, and peripheral divisions on the distal side of the ganglion, viz., the great and small superficial petrosal nerves with their deep tympanic branches, the chorda tympani, and somatic sensory fibres coursing in the trunk of the nerve and destined for the central portions of the external ear (the cutaneous representation of the seventh nerve). Doctor Hunt referred to the confirmation of his views by many observers, and notably the case of tic douloureux of the geniculate system reported by Clark and Taylor to the Neurological Society in June, 1909. This was an obstinate and very severe otalgia of geniculate origin, cured by section of the nerve of Wrisberg. It had been observed by a number of trained neurologists who were agreed as to its distinctly neuralgic character and limitation to the area which Doctor Hunt had outlined for the geniculate system. After section of the sensory root of the seventh nerve, the relief from pain was immediate, complete, and permanent. A more definite clinical proof of the pain functions of the sensory facial or a more complete confirmation of the views concerning geniculate otalgia, as expressed by Doctor Hunt (*Arch. of Otolaryngology*, 1907), could hardly be desired. The pain in this case was localized in the depths of the ear and on the anterior wall of the external meatus, with occasional stabbing pains in front of the ear. Following

the nerve section all sensory examinations of the face and external ear proved negative, with the exception that the former area of pain seemed to the patient to be a little less sensitive in the tests.

In a subsequent study (*Arch. of Intern. Med.*, June, 1910), Doctor Hunt had also described various syndromes and complications resulting from herpetic inflammation of the geniculate, auditory, glossopharyngeal, and vagal ganglia. An attempt was made at that time to indicate the respective cutaneous and intraoral zones of the seventh, ninth, and tenth ganglia by the herpes zoster method. The geniculate area was found to correspond to the following anatomical landmarks on the external ear: The concha, tragus, antitragus, incisura, intertragica, antihelix, fossa of the antihelix, and the superior portion of the external surface of the lobule. The cutaneous area of the ganglia of the ninth and tenth nerves corresponded to the posterior portion of the tympanum, the posterior wall of the auditory canal, and a cutaneous strip on the posteromesial surface of the auricle and the adjacent mastoid. More recent studies had made it probable that the geniculate had also a slight representation within the auditory canal and on the tympanic membrane, as well as on the posteromesial surface of the auricle and the adjacent mastoid, thus sharing with the ninth and tenth nerves in the innervation of these areas.

The intraoral zones of the glossopharyngeal and vagal ganglia were represented clinically by herpes zoster pharyngis and herpes zoster laryngis respectively, which corresponded to the mucous membrane distributions of the ninth and tenth nerves. There was evidence to show that the geniculate might also retain an intraoral remnant of innervation indicated by the occasional presence of herpes in the chorda distribution and in the region of the soft palate in conjunction with the typical distributions of cutaneous herpes in the geniculate area.

In the description of the zones, the importance of anomalies, variations, and overlap of innervation were especially emphasized by the speaker, as well as their vestigial characteristics. Since his last publication in 1910, fourteen cases of isolated herpes zoster oticus had been available for analysis, including eight personal observations. Of this number all were associated with facial palsy and eight with auditory disturbances as well. As was the case in the earlier series recorded, the eruption of herpes was distributed on one or more of the following landmarks of the external ear, viz., the concha, antitragus, tragus, incisura intertragica, antihelix, fossa of the antihelix, superior portion of the lobule, and the external meatus. In two of the cases the herpetic vesicles were also distributed on the posteromesial surface of the auricle and adjacent mastoid. This area, therefore, represented topographically the geniculate zone on the external ear.

It was found that the herpetic eruption varied considerably in size and distribution in different cases, so that this vestigial sensory zone was regarded as presenting many anomalies and variations, as might be expected from its phylogenetic history and gradual submergence beneath the encroachment of the trigeminal and cervical areas. For the same reason the absence of any clear cut area of anes-

thesia was doubtful, from the fact that the geniculate zone was vestigial and its area interlaced with and was conjointly innervated by the other nerves of this region, the ninth, tenth, fifth, and auricular branches of the cervical nerves.

From a study of the anatomy and phylogeny of the facial nerve, the speaker concluded that the fibres for the cutaneous zone course with the motor fibres in the Fallopian canal, finding their way to the auricle by way of the auricular branch of the vagus, the posterior auricular nerve, and, with the motor fibres destined for the innervation of the minute intrinsic muscles of the external ear. These muscles, like the cutaneous sensory zone, were more or less vestigial in character. It was especially significant that the cutaneous sensory zone, which was phylogenetically very old, should correspond so closely in distribution to the small cutaneous muscles of the external ear which were themselves vestigial and regressive.

Some observers, notably Déjerine, had included certain hypesthetic areas of the face and occipital region in the geniculate area. Doctor Hunt, however, believed that these objective sensory disturbances were produced by concomitant inflammatory changes in the Gasserian and upper cervical ganglia, and therefore did not properly belong to the geniculate zone. The objective sensory disturbance within the geniculate zone in cases of facial palsy, herpetic inflammation of the ganglion, and afferent section of the nerve of Wrisberg, were, for the reasons stated above, very slight (hypesthesia), and might even be absent, because of the vestigial character of this cutaneous zone and the overlap from adjacent distributions of the fifth, ninth, tenth, and cervical nerves. Just as the comparative anatomists had done, the students of cranial nerve components had found somatic sensory fibres in the facial nerves, but, true to the old anatomical tradition, had referred them to the neighboring trigeminal and vagal systems. Recently, however, Norris had demonstrated such a cutaneous component in the facial nerve of Siren, and Judson and Herrick had described similar fibres in amblystoma. The speaker believed that if the eye was fixed upon the possibility of a vestigial cutaneous component in the seventh nerve, these might be demonstrated in the entire vertebrate series.

Doctor LESZYNSKY said that as he recalled the original case referred to by Doctor Hunt, there was no involvement of the auditory or facial nerve. The pain was limited to a small area anterior to the meatus and was different from any form of trigeminal neuralgia.

Doctor TILNEY, in listening to Doctor Hunt, had been convinced, somewhat against his will. He came prepared to attack the proposition that there was a sensory zone in connection with the facial nerve in man. There were still, he thought, questions to be answered. Doctor Hunt had yet to prove where the fibres from the geniculate ganglion terminated, in order to demonstrate to which component they belonged. It had been held by such men as Herrick, Strong, Landacre, and others, who had done much to advance the component theory of the nervous system almost to its ultimate conclusions, that the seventh nerve did not contain gen-



eral somatic sensory components, but comprised only afferent special cutaneous fibres from the lateral line, splanchnic sensory fibres from the tongue, and, perhaps, the palate for taste, and efferent branchial motor to the facial musculature. Doctor Hunt's correspondence with Professor Herrick was more recent than any views of his with which Doctor Tilney was familiar, and Herrick, according to Doctor Hunt, seemed inclined now to concede a somatic sensory area in the seventh nerve innervation. Doctor Hunt's arguments were cogent and he had given excellent reasons for believing that this cutaneous facial area corresponded phylogenetically to the old zone of the spiracle. From the clinical standpoint, however, it seemed that cases of otic herpes might not be exclusively due to involvement of the geniculate ganglion. The clinical history of this syndrome showed, in the majority of instances, that they were dealing rather with a pluriganglionic disease. The interpretation that Doctor Tilney would give of the cochlear and vestibular symptoms, would be an involvement of the ganglion connected with the divisions of the eighth nerve, namely, the ganglion of Scarpa and the spiral ganglion. Furthermore, the pain and hyperesthesia so commonly present along the distribution of the trigeminus, would indicate involvement of the Gasserian ganglion; in certain instances there was evidence of vagal involvement. One saw vagospastic conditions as well as vagotonic symptoms—nausea, vomiting, and bradycardia were not unfrequent accompaniments. Anatomically they could recognize the relation of the auricular nerve of Arnold to the ganglion nodosum of the vagus. This latter nerve had been ascribed by anatomists to the innervation of the ear in an area between the tragus and antihelix, the region in which herpes most frequently occurred, so that it might be possible that they were dealing with an inflammation of the ganglion nodosum, not only because of the vagal symptoms, but because the distribution of Arnold's nerve corresponded so nearly to the herpetic zone of Hunt. Doctor Tilney was much indebted to Doctor Hunt for the light which he had brought to bear on this subject and believed that his argument held good.

**Family Periodical Paralysis.**—Dr. JOSEPH BYRNE said that the case reported, occurred in a family of eight, five males and three females. So far the females had escaped. Three of the males had had attacks. The eldest, thirty-six, and the third, thirty-two years, had so far escaped. The father, Jewish, born in Russia, died nineteen years ago, aged forty years. He was one of twins, was healthy until a few years before death, when he had stomach trouble, which was alleviated by staying at Carlsbad. He returned to New York, and six months after return, had a supper of delicatessen and beer. He awoke at 4 a. m., feeling very ill. At 7 a. m. he became paralyzed, followed by loss of speech; he tried to vomit, but failed to do so, was unconscious all day, and died at 6 p. m. after convulsions. This was the only attack the patient had. The mother, a Russian Jewess, had diabetes mellitus for the past four years. She appeared healthy, but was uncommunicative. Her grandfather died suddenly thirty-seven years ago, the cause being un-

known. The father's brother died twelve years ago, of an illness similar to the father's. Nothing was known of the collaterals. In the family under consideration, three sisters were alive and well, one had five healthy children; five brothers, A, twenty-two and a half years old; B, twenty-five years; C, thirty-two years; D, thirty-six years. A, the youngest, saw Doctor Byrne in December, 1914. He was a student and had five attacks of paralysis in five years, the first attack coming on at seventeen and a half years. All were severe, but the last was the worst and lasted twenty-four hours. He quoted the patient: The attack was preceded by headache, indigestion, and fever. The joints and muscles stiffened and the limbs became heavy. In from one to three hours he was completely paralyzed, entirely helpless, with the exception of being able to roll his head from side to side. Even the slightest movement elsewhere was impossible. His mind was clear, he could speak and understand what was going on. His body was abnormally heavy to those who lifted it. He wanted his body turned and moved every few minutes. He wanted to vomit, but could not. He could not urinate. After an emetic the vomitus was green. After vomiting his condition was better and improvement set in with the desire to urinate. When he took a purgative it acted if he did not vomit, but he had no desire to go to stool until the paralysis passed away. In the last attack he had cramps in the stomach. He was placed on the toilet and the bowels moved. This helped him as in one hour he fell asleep. He awoke after three hours and could then move a little. Half an hour later the paralysis was entirely gone, but some weakness in the joints and muscles of the limbs remained. An hour later he was out of bed and walking around. On the night previous to the last attack, he slept little on account of fever and indigestion, and he was somewhat delirious. On other occasions should he eat a heavy meal half an hour before going to bed, his limbs would be very stiff in the early morning. This passed away and when his stomach was in good condition, he had no such trouble.

The order of the paralysis was, lower limbs, trunk, upper limbs, neck. Power returned as follows: Hands and arms, thigh rotators and feet, simultaneously. Patient tried to urinate, but could not in an attack. Patient A had a peculiar deformity of the hands. At the metacarpophalangeal joint the four fingers markedly deviated to the ulnar side, leaving a large prominence on the radial aspect of the knuckle of the index finger. The fingers were "double jointed." This was apparently inherited from the father, who had similar hands. One brother, B, had also similar hands.

Patient B was five feet eleven inches tall and weighed 145 pounds; had had two attacks, the first at twenty-two and the last at twenty-five years. They were similar to those of A. He was a clerk, and became quite helpless at office and had to be carried home. He had slight neuropathic traits. C, thirty-two years old, had had no attacks so far. D, thirty-four years old, had had over a dozen. In one year he had three attacks. He liked to vomit in attacks, as he thought it relieved him. The speaker saw him in an attack, April 6, 1915, which

proved fatal. I had had no attacks, was healthy, married, and had one healthy child.

As to D's fatal attack, he never drank. He smoked cigarettes in moderation. His habits were regular and temperate, but he frequently dined at restaurants. This was regarded by his family (orthodox Jews) as dissipation. He was in the army in Porto Rico, at his first attack, at twenty years. The last, the thirteenth, proved fatal, April 6, 1915. On April 5th, there was a heavy fall of snow, and the patient stayed home on account of gripe. He had high fever, and his doctor prescribed powders and advised rest for a week. Though forbidden meat he took roast beef, and had chicken broth and two bottles of fermented milk. On April 6th he was irritable in the morning; at noon he went to purchase the milk, and on his return met his employer, who had come to inquire about him. This episode upset the patient. At 1 p. m. he took two bottles of the sour milk and went to bed. At 6.30 p. m. he was stiff, although he could still stand and walk. He knew the attack was inevitable. He took a mustard foot bath with relief. By 7.30 p. m. he was completely paralyzed. The order of paralysis was lower limbs, trunk, upper limbs, neck. He was given a bottle of citrate of magnesia to move the bowels. At 10.00 p. m. he was put on a commode and the bowels moved freely, there being nothing unusual about the movement. It was liquid, well mixed, of greenish golden color, no marked odor. No excess of mucus or undigested food. After this his clothing was changed. He complained of cold. At 11.30 p. m. he saw the patient.

Neurological examination. Motor: Could wrinkle forehead and close eyes tightly. Showed teeth poorly, but equally on both sides and with manifest effort. Strained when asked to open mouth and did not separate teeth more than half an inch. Facial expression on laughing, feeble but symmetrical. Putting out tongue cost an effort. Unable to trill tongue against hard palate. Could whistle feebly. Said, Ah, but could not raise pitch. Swallowed with difficulty. Could not open mouth against resistance. Could make slight lateral movements of head. Trunk and limbs powerless, but barely noticeable movement of wrist. Position of hands, one fourth closed. With wrist extended, he could almost close hand. Interossei and lumbricals were powerless. Could rotate left thigh, but not right. Could wriggle toes a little. Trunk muscles were flaccid. Attempts to cough, laugh, or vomit were feeble. Did not urinate. No flatus passed at any time.

Patient was left by him at 1.30 a. m., with instruction for continual watching, by younger brother, himself a victim of disease. The patient asked to have throat swabbed out and later made signs to have this done. Later, about 2.30 a. m., patient became very quiet and turned blue. The brother tried to swab throat, but patient became rigid and bit off the swab. The brother tried artificial respiration, but the patient died. The cause of death was failure of the respiratory mechanism through involvement of the diaphragm or exhaustion of the diaphragmatic neuromuscular mechanism; the latter was the more probable. Autopsy was refused.

The disease must be classed with conditions due

to inborn errors of metabolism, such as albuminuria, cystinuria, pentosuria, etc. It developed along with other defects than those related to metabolism. The attacks were associated with improper diet or mode of living affecting the defective mechanism. It had been taken for hysteria with fatal results to the sufferer. The lives of the patients should be most carefully regulated. Individuals in a family afflicted, who themselves escaped, did not seem to transmit the condition, but consanguineous marriages should be especially guarded against.

In treatment, the alkalies (citrate of potassium) seemed to shorten the attacks. Flexner and Edsall got negative results from diet, lavage, intestinal antiseptics, quinine, bromides, strychnine, bicarbonate of sodium, and hypodermoclysis. Purgatives and diuretics seemed to act favorably. One thing was certain, that persons afflicted should have at hand some effective means of carrying on artificial respiration, such as the pulmotor, the O'Dwyer tube, or some similar contrivance. As the attacks were self limited, the indications for all methods likely to keep the heart and respiratory mechanisms going were unequivocal.

Dr. C. E. Atwood said that in a family which he had reported, one patient choked to death during an attack, from vomited matter which Doctor Atwood was unable to clear from the throat. Another died in syncope when a vein was opened to obtain a specimen of blood. Another was burned to death by fellow soldiers in the Russian army, who thought his attack of paralysis was evidence of malingering. During attacks which Doctor Atwood had himself witnessed, the patient's heart action was weak. This was shown especially when the patient was held in a sitting or standing posture, faintness occurring or even fainting, and during two attacks of one of his patients which he had witnessed, a cardiac bruit was distinctly heard, and there was slight increase of the area of cardiac dullness, due probably to dilatation. The intercostal muscles were involved in severe attacks, and the breathing was usually shallow.

**The Relation of Landry's Paralysis to Poliomyelitis.**—Dr. M. NEUSTAEDTER said this disease had been described, in 1859, by Landry; owing to the more advanced methods of examination, the conception of the etiology and pathology of the disease had undergone marked changes. Although Landry was inclined to ascribe the affection to a toxic process, Westphal had first demonstrated it to be a fact. In the majority of cases there was an enlarged spleen, swelling of the lymph glands, hemorrhagic foci in the lungs and intestines, and a nephritis, which pointed to a toxic or infectious process. Chantemesse and Ramon had observed a large number of cases of paralysis, clinically not dissimilar to Landry's, in an epidemic at an institution for the insane, suggesting a possible infection. Baumgarten found in one case *Bacillus anthracis* in the blood, and Curschmann had cited a case in which typhoid bacilli were found in the spinal cord, of which pure cultures could be grown. Centanni found in a case of interstitial neuritis, bacilli in the endoneural lymph spaces. Eisenlehr had reported a case of Landry's, due to a mixed infection. He had

found *Staphylococcus pyogenes* and *Staphylococcus cereus albus* in the spleen and sciatic nerve. In another case he had found several types of bacilli. Remlinger had found *Streptococcus longus* and *Marinescu diplococci* which were partially enclosed in leucocytes. In a case of Marie and Marinescu a bacillus similar to that of anthrax has been found in the blood. A virulent pneumococcus had been shown to be present in the cases of Roger and Josue and of Gourment and Benne. McNamara and Bernstein had grown a tetracoccus from the blood and cerebrospinal fluid of their patient, and Sheppard-Hall a streptococcus from his. F. Buzzared had isolated a coccus from the dura, which produced a flaccid paralysis in animals. Wochenius had found *Staphylococcus pyogenes albus* in the spleen and peripheral nerves.

On the other hand, in recent years, cases of Landry's paralysis were reported in which no germs were found. Since the peripheral nerves began to engage the attention of investigators of these cases, some authors had been able to demonstrate extensive neuritic changes as the basis of this disease. Déjerine and Goetz, Nauwerck, Barth, Ross, Putnam, Klumpke, Binet, Rolly, Pelnar, and E. D. Fisher reported such types. In recent years the greater majority of cases reported were characterized by myelitic, or rather poliomyelitic changes in the cord and mid-brain, namely, by a perivascular and pericellular infiltration of various types of cells, hemorrhages, thrombosis and softening. In a few instances, however, a combination of the neuritic and poliomyelitic changes was reported, as in the cases of Krewer, Mills-Spiller, Guizetti, and Knapp and Thomas. In these cases, some argued, the inflammatory process of the peripheral nerves was extended to the cord and bulb, and thus this gave rise to the symptom complex of Landry. With such a varying etiology and pathology of a disease, a uniform nosological character could certainly not be thought of. The disease might follow diphtheria, pneumonia, typhoid, variola, anthrax, or influenza and manifest itself as a puerperal polyneuritis. Some even reported cases that developed after cystitis, alongside of uremia; others believed alcohol and syphilis to be etiologic factors, and a few had observed the affection to follow traumata, complicated by septic cellulitis. Another important fact was that one did not know the point of entrance of the germ, nor had one any proof of its manner of dissemination. Furthermore, there was no proof whether the toxin alone, or the virus, or both were responsible for the changes in the tissues.

The symptomatology of poliomyelitis was by no means uniform. In all case, it was true, fever was the first symptom, but only one third were accompanied by gastrointestinal disturbance. Headache and pain along the spinal column were, as a rule, a constant accompaniment. Meningeal symptoms were present in the large majority of cases. Stupor was rare. The intellect was clear. The focal symptoms, as was well known, were not uniform. The spinal, cerebral, bulbar, pontine, cerebellar, and mixed types had become recognizable. In the spinal type there was the flaccid paralysis or one or more extremities, with marked atrophy, according to

which segments might be involved. It was rarely of an ascending character. In cases that ended fatally there was a simultaneous involvement of the bulb and spinal cord. The cerebral cases, it was quite obvious, resulted in a spastic hemiplegia, with or without epileptiform convulsions. The purely bulbar or pontine types showed cranial nerve involvement. A peripheral facial paralysis was the most common result. Ataxia and tremors with nystagmus were found in the cerebellar cases. In the mixed types the symptom complexes varied with the site of the lesions. Some authors described a poliomyelitic type, but this was rare and was observed only in large epidemics, and finally a large percentage of so called abortive types was recorded. The etiology was uniform. The disease was preeminently an infantile one; it occurred in epidemic form, and showed very definite seasonal variations in its incidence. All agreed that it was both infectious and contagious. Flexner and Noguchi had definitely proved that there was a distinct coccus that produced the disease. Many important data about the character of the virus were available. The fact had been established by Doctor Neustaedter that the nasopharynx was the point of entrance into the system. The pathological changes of poliomyelitis were uniform in every case, no matter what part of the central nervous system was affected, and this was true of clinical and experimental cases as well. Macroscopically there was a pronounced hyperemia of the cord and meninges; the vessels of the brain were congested; and there was a fair amount of edema of the brain and cord. There was little, if any, increase of the cerebrospinal fluid. On section, the brain and cord had a moist, translucent, edematous appearance, and the gray matter of the cord was often swollen so that it projected above the level of the white matter. Frequently punctate hemorrhages could be discerned with the naked eye. The virus was propagated by the lymphatic system, and there were foci of congestion in various glands. Histologically, the disease was characterized by a perivascular, interstitial, and pericellular infiltration of round mononuclear, polymorphonuclear, and endothelial cells. The ganglion cells involved were those of the anterior horns, Clarke's columns, spinal ganglia, nuclei of the cranial nerves and basal ganglia and the cortex. Chronologically, the perivascular lymph spaces of the pial vessels in the anterior longitudinal fissure of the cord and the pericellular lymph spaces of the spinal ganglia were the first to be involved, sometimes as early as the third day of infection. Next came the involvement of the central vessels of the cord, then the vessels of the white matter. Hemorrhages were always present. It was important to show whether the germ or its toxin, or both were at work. Whatever exotoxin there was, was evidently a negligible quantity, nor was the endotoxin very toxic. Lastly, the cytological findings in the blood and spinal fluid were typical. The blood showed leucocytosis with many mononuclears. The spinal fluid was clear, contained eighty-five per cent. or more lymphocytes, the cell count ranging from thirty to 900 cells per c. mm.; the globulin content was increased. The conclusions of Doctor Neustaedter were, therefore: 1. Landry's paralysis



was a clinical entity with varying pathological changes, which might be peripheral, myelitic only, or neurocutaneous. Polio-myelitis was a pathological entity with varying symptom complexes. There might be flaccid paralysis with muscular atrophy, or spastic paralysis, or cranial nerve involvement; also ataxias and tremors, or mixed types.

Doctor HUNT was inclined to make a clinical distinction between poliomyelitis of the Landry type and the true Landry's paralysis. He recognized, however, that the clinical type of Landry's paralysis might be caused by a number of conditions, among them poliomyelitis. He had had one case different from poliomyelitis in its clinical course and in which pathological study failed to reveal any evidences of inflammatory lesions. He had always felt, therefore, that there was a true Landry's disease, of obscure etiology and bearing no relation to poliomyelitis. The case which he referred to was that of a mulatto, who came from the South Sea Islands. On admission to the hospital, he had weakness of the legs, gradually progressing; no fever (or occasional subnormal temperature). From day to day the motor weakness gradually increased and gradually ascended. As the weakness progressed there was gradual obliteration of the tendon reflexes. The muscle responses were retained and also the electrical reaction, although diminished. The man finally died of respiratory failure on the ninth day. There was a gradual increasing motor lethargy, and the mental state was of apathy, increasing with the progress of the disease. There was no disturbance of the sphincters. A complete post mortem examination showed no lesions in the spinal cord, except an occasional degeneration of the anterior horn cells. The peripheral nerves showed degeneration, and there were curious changes in the muscles. He regarded the condition as a profound intoxication of the peripheral motor neurones.

Doctor NEUSTAEDTER was inclined to view Landry's paralysis as a clinical entity, a syndrome, without definite etiology or a uniform pathological picture. Poliomyelitis was, on the other hand, a pathological entity, its etiology was known, but was of divers symptom complexes. That poliomyelitis could not be reproduced at times was a known fact. Various factors might militate against the experiment. The refractoriness of the animal was a frequent factor. But, because one was unable to reproduce it in some instances, one was not justified in denying the presence of poliomyelitis as long as the pathological picture was characteristic.

## Letters to the Editors.

### BACKACHE.

New York, September 30, 1915.

#### To the Editors:

In recent issues of your esteemed JOURNAL, there are several articles on backache by different authors. All the gentlemen, like so many others who have written on the subject, have overlooked my numerous publications on backache caused by a peculiar circumscribed chronic periostitis with characteristic symptoms, distinguishing it from any other affection and yielding to antiperiostitic treatment. This form of backache is by no means a rare occurrence but, unfortunately for the patients, it is not always recognized.

A. ROSE, M.D.

## Book Reviews.

All the publishers full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*Case Histories in Diseases of Women.* Including Abnormalities of Pregnancy, Labor, and Puerperium. A Clinical Study of Pathological Conditions Characteristic of the Five Periods of Woman's Life. By CHARLES M. GREEN, A. B., M.D., Professor of Obstetrics and Gynecology in Harvard University, Senior Surgeon for Diseases of Women, Boston City Hospital, etc. With Eleven Full Page Plates, One Cut, and Twenty-five Charts in the Text. Boston: W. M. Leonard, 1915. Pp. x-477.

The present volume is the latest addition to the Case History Series which began, some years back, with the well known *Case Histories in Medicine*, by Dr. Richard C. Cabot. The author of the work before us divides his cases according to the periods of woman's life, viz., infancy and childhood, puberty and adolescence, maturity, the climacteric, and anility. This necessitates a certain amount of repetition and overlapping, but the classification is probably as useful as any that could be devised. In all, 173 cases are considered, and it would be difficult to recall any ordinary gynecological condition which is not discussed in this book. Practitioners desiring to take a postgraduate course in gynecology, without leaving their offices or homes, will find this book invaluable. An index of twenty pages renders the contents of the work readily available.

*A Synopsis of Medical Treatment.* By GEORGE CHEEVER SHATTUCK, M.D., Assistant Physician to the Massachusetts General Hospital. Second Edition, Revised and Enlarged. Boston: W. M. Leonard, 1915. Pp. 185. (Price, \$1.25.)

Primarily intended for use in the teaching of medical students the essential features in the treatment of the more important medical diseases, Shattuck's small volume reflects such a wealth of common sense in therapy that it must prove of considerable value to the practitioner, if only to suggest the many factors which should be considered in helping his patient back to health. It is regrettable that space could not have been found for the inclusion of several other types of disease, for only cardiac insufficiency, nephritis, certain of the more important acute infectious diseases, and some of the commoner alimentary disturbances have been considered. In each case the discussion is merely an outline suggesting the points to be considered, and here and there offering a personal opinion as to the relative value of one or more of the important remedies. The criticism certainly cannot be made that the work is dogmatic or that it deprives its readers of the opportunity of thinking for themselves. The last chapter is devoted to a synopsis of the actions of some of the drugs suggested in the earlier pages. This chapter includes divisions dealing with valuable drugs and nonmedicinal preparations, drugs valuable for occasional use, a list of drugs in common use, and some brief tables of weights and measures. The fact that this is the second edition of this small work is evidence of its value, at least in the field of teaching, and we are inclined to think that not a few clinicians would discover helpful suggestions between its covers which would quite repay the small expenditure of time required for its perusal. Alternate pages have been left blank so that personal notes may be added to the text.

*Compendium der Arzneimittellehre, mit besonderer Berücksichtigung der neuen Arzneimittel, der Organotherapie, Serologie, und Nährpräparate.* Von Dr. LIPOWSKI, Chefarzt der inneren Abteilung der Städtischen Diakonissenanstalt in Bromberg. Berlin und Wien: Urban & Schwarzenberg, 1914. (Through Rebman Company, New York.) Pp. 256. (Price, Marks 5.)

The brevity of this book is quite uncommon; so too are the clearness and practical character of its matter. The author has added many new and useful details to our knowledge of drugs, at least, they do not appear in any of the larger works that we can at present recall. These details make up the ordonnance of therapeutics, that is to say,

they are to therapeutics what syntax is to language composition—well chosen remedies and carefully picked cases marking the author's method. Another fault which he avoids is vagueness. How common and how vexatious a fault this may be seen from reading the larger works on therapeutics. When we have got through the long list of "finds" reported we do not know what special property a drug has; such property is lost in the exceptions and counter-exceptions to its main or characteristic property. The author's description of the action of digitalis is a case in point. He accurately classifies its effects and has not added a single platitude! This is a useful book.

*The Practical Medicine Series for 1915.* Comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Under the General Editorial Charge of CHARLES L. MIX, A.M., M.D., Professor of Physical Diagnosis, Northwestern University Medical School. Volume III: *The Eye, Ear, Nose, and Throat.* Edited by CASSY A. WOOD, C.M., M.D., D.C.L., ALBERT H. ANDREWS, M.D., and WILLIAM L. BALLENGER, M.D. Volume IV: *Gynecology.* Edited by EMILIUS C. DUDLEY, A.M., M.D., Professor of Gynecology, Northwestern University Medical School, and HERBERT M. STOWE, M.D., Assistant Professor of Obstetrics, Northwestern University Medical School. Volume V: *Pediatrics.* Edited by ISAAC A. ABT, M.D., Professor of Pediatrics, Northwestern University Medical School; *Orthopedic Surgery.* Edited by JOHN RIDLON, A.M., M.D., Professor of Orthopedic Surgery, Northwestern University Medical School, with the Collaboration of CHARLES A. PARKER, M.D. Chicago: The Year Book Publishers, 1915.

These three volumes of the admirable Practical Medicine Series have just been issued and will be welcomed by the subscribers, who have come to rely upon them as second only to a weekly medical journal in importance. This series is almost the only thing of its kind in the United States, and although larger and more ambitious compilations exist in Europe, probably our impatient practitioners find this well suited to their needs. In volume III there is a curious portrait of Lincoln, showing that he suffered from left hyperphoria; if the great President had ever exhibited eccentricities of conduct, doubtless they would have been blamed upon this trifling ocular defect. In volume V there is an important and interesting, if rather short department of diseases of the nervous system in children.

## Interclinical Notes.

Among the specialties in the *Survey* for October 2, 1915, is a handsome page with reproductions of medallions made by Victor David Brenner; the examples include portrait medallions of Dr. John Hewetson, Dr. Rupert Norton, and Dr. William H. Welch. Mr. Brenner designed the Lincoln penny. There is also a picture of his fountain, A Song to Nature, which contains certainly the jolliest and most wholesome looking satyr one would want to see in a day's walk. The frontispiece represents his commemorative tablet to Dr. Emily Blackwell, of whose life there is a sketch by Dr. Elizabeth M. Cushier.

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Apropos of the two recent accidents in the new subway, the *Survey* for October 2 points out that the road is being constructed by men who ask profanely, "How in hell can a man live and support his family on the dollar and a half a day that is offered on this job?"

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"We would not order a remedy that we did not know of what it consisted," remarks the editor of the *Medical World* in the October, 1915, issue, page 403.

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In the *Outlook* for September 22d, there was a handsome picture of part of Brussels, showing the Palais de Justice. The translator fell into the perpetual trap and called this building the Palace of Justice, whereas its name in English is nothing more inspiring than courthouse.

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In K. Mrs. Reinhart's excellent story of hospital life, the adventures, a nurse, is equipped with French heels, which make an appropriately villainous noise on the floors

of the corridors and wards. The head nurse, who impressed us as an efficient person, should have forced this creature to wear soft slippers, or at least rubber heels, as is the custom in all first class hospitals.

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The article of greatest interest to physicians in the *Outlook* for September 29th is undoubtedly the report on conditions in the warring countries condensed from Dr. Alice Hamilton's remarks in the *Survey*. Doctor Hamilton talked with Delbrick, Maximilian Harden, officers, privy councillors, clergymen, noblemen, and others in Germany and Hungary, and, despite statements to the contrary, found a few people opposed to the war. Hungary she found to bear a singular resemblance to the United States. In Paris, Doctor Hamilton found Americans and former pacifists to be most bitter in their determination to continue the war to a finish. There was real freedom of speech only in England, and criticism was as free in Hyde Park as in times of peace.

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The September issue of *Child Betterment and Social Welfare* opens with an article on the Training of Children by Dr. George F. Butler, of Kramer, Ind., which turns out to be an essay on moral and social rather than physical training. Part of the program of this journal is published as follows: Roof gardens and more playgrounds for children in our large cities; farm treatment for feeble-minded boys and girls; physical training as the basis of education of children; rearing and education by the State of illegitimate children; rearing and education by the State of young children of poor families that are compelled to make the children labor for their own support; laws preventing the sale of poisonous fly killers; and old age pensions for government employees.

## Meetings of Local Medical Societies.

MONDAY, October 11th.—New York Ophthalmological Society; Society of Medical Jurisprudence, New York; Roswell Park Medical Club, Buffalo (annual); Association of Alumni of St. Mary's Hospital, Brooklyn; Williamsburg Medical Society, Brooklyn; New Rochelle, N. Y. Medical Society (annual).

TUESDAY, October 12th.—New York Academy of Medicine (Section in Neurology and Psychiatry); Federation of Medical Economic Leagues of New York; Medical Society of the County of Wyoming (annual); Ontario County Medical Society (annual); Medical Society of the County of Schenectady; Medical Society of the County of Rensselaer; Buffalo Academy of Medicine (Section in Medicine); Medical Society of the County of Oneida.

WEDNESDAY, October 13th.—New York Pathological Society; New York Surgical Society; Alumni Association of Norwegian Hospital; Schenectady Academy of Medicine; Medical Society of the Borough of the Bronx; Richmond County Medical Society; Dunkirk and Fredonia Medical Society; Rochester Academy of Medicine; Medical Society of the County of Montgomery; Medical Society of the County of Dutchess (annual).

THURSDAY, October 14th.—New York Academy of Medicine (Section in Pediatrics); Gloversville and Johnstown Medical Association; Physicians' Club of Middletown; West Side Clinical Society, New York; Brooklyn Pathological Society; Blackwell Medical Society of Rochester; Jenkins Medical Association, Yonkers; Society of Sanitary and Moral Prophylaxis, New York; Buffalo Ophthalmological Club; Jamestown Medical Society; Society of Physicians of Village of Canandaigua; Medical Society of the County of Alleghany.

FRIDAY, October 15th.—New York Academy of Medicine (Section in Orthopedic Surgery); Mount Vernon Medical Society; University of Virginia Medical Society; Clinical Society of the New York Post-Graduate Medical School and Hospital; New York Microscopical Society.

SATURDAY, October 16th.—New York Medical and Surgical Society; West End Medical Society; Lenox Medical and Surgical Society.

## Official News.

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the week ending September 29, 1915.*

**Brown, O. W., Surgeon.** Granted seven days' leave of absence from October 2, 1915. **Carter, H. R., Assistant Surgeon General.** Directed to report at the United States Army Medical School, Fort Sam Houston, Tex., for duty in connection with malaria investigations. **Draper, W. F., Passed Assistant Surgeon.** Granted one day's leave of absence, September 27, 1915. **Frost, W. H., Passed Assistant Surgeon.** Granted eight days' additional leave of absence from September 24, 1915. **Herring, R. A., Passed Assistant Surgeon.** Relieved at the Marine Hospital, New Orleans, La., and directed to take charge of the Marine Hospital at Louisville, Ky.; granted two days' leave of absence en route to station. **Hetterick, R. H., Assistant Surgeon.** Granted one month's leave of absence en route to the United States. **Kempi, G. A., Assistant Surgeon.** Granted twenty-five days' leave of absence from October 1, 1915. **Lanza, A. J., Passed Assistant Surgeon.** Detailed to attend the meeting of the Mississippi Valley Conference on Tuberculosis at Indianapolis, Ind., September 29-October 1, 1915. **Lumsden, L. M., Surgeon.** Directed to inspect the investigations of rural sanitation in Wilson County, Kans., and Walter County, Ala. **Rucker, W. C., Assistant Surgeon General.** Detailed to attend a meeting of the Association of Railroad Chief Surgeons at Chicago, Ill., October 12, 1915. **Safford, M. V., Assistant Surgeon.** Directed to proceed to Worcester, Mass., for the examination of an alien woman. **Thompson, L. R., Passed Assistant Surgeon.** Granted four days' leave of absence from September 21, 1915, under paragraph 193, Service Regulations. **Williams, Louis L., Jr., Assistant Surgeon.** Granted seven days' leave of absence from September 29, 1915. **Young, G. B., Surgeon.** Detailed to attend the Fourth National Housing Conference at Minneapolis, Minn., October 6-8, 1915.

#### Boards Convened.

Board of commissioned medical officers convened to meet at Ellis Island, N. Y., for the purpose of editing certain manuscripts contributed to the proposed manual of mental diseases. Detail for the board: Surgeon C. H. Lavinder, chairman; Passed Assistant Surgeon E. H. Mullan, member; Assistant Surgeon W. L. Treadway, recorder.

### United States Army Intelligence:

*Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the week ending October 2, 1915:*

**Ashford, M., Captain, Medical Corps.** Ordered to proceed to Harlingen, Texas, for temporary duty. **Bailey, Howard H., Captain, Medical Corps.** Ordered to proceed to Fort Leavenworth, Kansas, and report to the commander of the Army Service Schools for duty at the schools. **Blanchard, R. M., Captain, Medical Corps.** Ordered to proceed to Harlingen, Texas, for temporary duty. **Clark, Frederick E., First Lieutenant, Medical Reserve Corps.** Ordered to active duty and will report to the commanding officer at Fort Ethan Allen, Vermont, for temporary duty. **Coffin, Jacob M., Captain, Medical Corps.** Ordered to proceed to Fort Riley, Kansas, and report for temporary duty. **Dowdle, Edward, First Lieutenant, Medical Reserve Corps.** Relieved from duty at Fort Ontario, New York, and ordered to return home. **Foster, George B., Jr., Captain, Medical Corps.** Ordered to proceed to Fort Banks, Massachusetts, and report to the commanding officer of that post for duty. **Hall, James F., Major, Medical Corps.** Relieved from duty with Field Hospital No. 6, and will report to the chief of the Division of Militia Affairs, for duty as inspector-instructor with sanitary troops of the organized militia. **Hardaway, R. M., Captain, Medical Corps.** Assigned to temporary duty in the office of the Department Surgeon, Western Department. **Hogan, D. D., First Lieutenant, Medical Corps.** Ordered to proceed to Fort Sam Houston, Texas, for

temporary duty. **McDaniel, A. A., First Lieutenant, Medical Reserve Corps.** Ordered to proceed to Kingsville, Texas, for temporary duty. **Metcalfe, Benjamin H., First Lieutenant, Medical Reserve Corps.** Ordered to active duty, and will report to the commanding officer at Fort Banks, Massachusetts, for temporary duty. **Metcalfe, Raymond F., Major, Medical Corps.** Ordered to proceed at once to Fort Sam Houston, Texas, and report to the commanding general, Southern Department, for assignment to temporary duty. **Peed, George F., Captain, Medical Corps.** Ordered to report to the commandant, Army Service Schools, for duty at the schools. **Powell, William A., Captain, Medical Corps.** Ordered to proceed to Fort Ethan Allen, Vermont, and report to the commanding officer of that post for duty, and by letter to the commanding general, Eastern Department. **Pratt, J. M., First Lieutenant, Medical Reserve Corps.** Granted twenty-one days' leave of absence. **Richard, Charles, Colonel, Medical Corps.** Ordered to proceed about October 15, 1915, to New York City for duty in the Medical Supply Depot. **Robbins, Chandler F., Major, Medical Corps.** Ordered to report at the proper time to the commanding officer, Company D, Signal Corps, for duty with that organization en route to Fort Leavenworth, Kansas, and upon completion of this duty with Company D will proceed to Fort Riley, Kansas, for duty. **Roberson, H. M., Captain, Medical Corps.** Ordered to proceed to Fort Clark, Texas, for temporary duty. **Sanford, J. L., First Lieutenant, Medical Reserve Corps.** Granted leave of absence for one month, effective October 8, 1915. **Shaw, Herbert G., Major, Medical Corps.** Relieved from duty at Fort Banks, Massachusetts, and ordered to proceed and report in person to the commanding officer of Plattsburg Barracks, New York, to command Field Hospital No. 6. **Siler, Joseph F., Captain, Medical Corps.** Granted eight days' leave of absence, effective October 9, 1915.

The following named officers will report to the commandant of the Army Medical School, Washington, D. C., to take the course of instruction: First Lieutenant Charles G. Sinclair, First Lieutenant Herbert H. Baucus, First Lieutenant Joseph L. Farden, First Lieutenant Luther M. Ferguson, First Lieutenant Clarence S. Ketcham, First Lieutenant Walter E. Koppenbrink, First Lieutenant Edward A. Noyes, First Lieutenant Frederick H. Petters, First Lieutenant Robert P. Williams, and First Lieutenant Frank W. Wilson.

## Births, Marriages, and Deaths.

### Married.

**Lyons—Mack.**—In Salem, Mass., on Wednesday, October 6th, Dr. George A. Lyons, of Lynn, Mass., and Miss Alice Margaret Mack. **Nordstrum—Voss.**—In Huron, S. Dak., on Wednesday, September 22d, Dr. Royal F. Nordstrum, of Humboldt, Iowa, and Miss Lila M. Voss.

### Died.

**Boucher.**—In Woonsocket, R. I., on Saturday, September 25th, Dr. Joseph H. Boucher, aged fifty-seven years. **Burroughs.**—In Boston, Mass., on Monday, September 27th, Dr. Amelia Burroughs. **Burtis.**—At Sea, on Monday, September 6th, Dr. Frederick F. Burtis, formerly of New York, aged thirty-eight years. **Eberle.**—In Webster City, Iowa, on Monday, September 20th, Dr. C. I. Eberle. **Fenneman.**—In Canfield, Ohio, on Wednesday, September 22d, Dr. Prudence Fenneman, aged fifty-one years. **Foster.**—In Vimville, Miss., on Wednesday, September 22d, Dr. J. B. Foster, aged seventy-six years. **Junor.**—In Toronto, Canada, on Sunday, September 26th, Dr. Kenneth F. Junor, of Brooklyn, N. Y., aged sixty-nine years. **Krickbaum.**—In Danville, Pa., on Tuesday, September 21st, Dr. William H. Krickbaum, aged thirty-seven years. **Marr.**—In Washington, D. C., on Sunday, September 26th, Dr. Samuel Stewart Marr, aged seventy-two years. **Settle.**—In Greenburg, Ky., on Friday, September 17th, Dr. W. A. Settle, formerly of Athertonville, Ky. **Washburn.**—In Clinton, Ind., on Thursday, September 16th, Dr. Aquila A. Washburn, aged fifty-seven years.



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NEW YORK, OCTOBER 16, 1915.

WHOLE No. 1924.

### Original Communications.

#### RECTAL FISTULA.\*

By J. RAWSON PENNINGTON, M. D.,  
Chicago,

Professor of Proctology, Illinois Postgraduate Medical School,  
Proctologist, West Side Hospital; Attending Surgeon,  
Sheridan Park Hospital.

I submit herewith the following notes on a few of the more important points in connection with the subject of fistula:

1. The etiology, classification, and treatment of fistula as presented in our textbooks are not satisfactory.

2. *Definition.* A fistula is an abnormal communication between the skin and the serous or mucous membrane of a normal cavity. It has two or more openings. A sinus is an abnormal channel, connecting the skin or mucous membrane with an abnormal cavity. It has, as a rule, one opening only.

3. *Classification.* Custom and usage have divided fistula into two principal varieties, viz., complete and incomplete. The latter is still further subdivided into blind external and blind internal fistula, neither of which, in accordance with the foregoing definition, is a fistula. Each in reality is a sinus, one an internal, and the other an external rectal sinus. Complete or true fistula should be classified according to the anatomical site of the internal opening. It is obvious then that such a classification necessitates a brief reference to the embryology and anatomy of the rectum.

4. *Embryology.* The rectum is developed from the postallantoic gut. The anal canal is formed by the growth inward of the proctodeum toward the postallantoic gut, which it perforates. The fusion of the postallantoic gut and the proctodeum forms the anorectal strait and the pectinate line. It is obvious because of the difference in the relative sizes of these two blind ends that there will be some pleating of the tunics involved when they fuse, likewise a slight variation in the relative position of the pectinate line, distally or proximally, to the surrounding structures. The fusing and pleating of these tunics forms the crypts and the columns of Morgagni.

4. *Location of rectum and anal canal.* The rectum extends from the termination of the sigmoid, at a point opposite the middle of the third sacral vertebra, to the pectinate line. The anal canal extends from this line to the anus.

A fistula then with the internal opening in the

anal canal should be classified as an anal fistula, or fistula in ano. A fistula with the internal opening in the pectinate line or junction between the rectum and anal canal, partakes of both of these structures, the rectum and the anal canal, and should be known as an anorectal fistula. Cases with the internal opening in the rectum proper, should be known as rectal fistula. Complex, compound, horseshoe and other so called varieties of fistula are simply expressions of complexity, position, or shape of one or the other of the foregoing divisions, or a combination of them.

6. *Frequency of fistula.* Embryology furnishes an explanation of the frequency with which fistula attacks the rectum and the contiguous structures, by showing that the junction of the anal canal and the rectum is one of the points of coalescence of the two primitive germ layers—the ectoderm and entoderm. The line of cleavage thus formed between the rectum and the anal canal presents a condition which is favorable to the reception and penetration at this junction by foreign bodies and bacteria, i. e., little catch basins or pockets are formed as a result of this fusion. These pockets serve to catch foreign bodies and bacteria which may find lodgment in the perirectal tissues with an abscess and fistula as a sequel.

Embryology also furnishes an explanation for the tortuosity, multiplicity, and irregularities of the fistulous tracts. The line of cleavage formed by the fusion of the postallantoic gut and proctodeum gives direction to the fascial planes and lymphatics, and they in turn furnish the routes the infection travels.

7. *Pathology.* Pathology teaches us that every true suppurating focus is due to some pus producing organism. Hence it remains for us to determine the species and the route by which they invade the perirectal tissues. From researches that have been made it seems that the bacteria most frequently causing abscesses in connection with the rectum and anus are the tubercle bacillus, *Bacillus coli*, *Staphylococcus pyogenes*, and *Streptococcus pyogenes*. These bacteria gain access to the perianal and perirectal tissues through the lymphatics or the bloodvessels or by continuity of tissues. The constitutional condition of the patient exerts considerable influence on the possibilities of pus formation. A healthy individual whose physiological resistance is normal, may receive injuries and suffer no ill effects in consequence, whereas in one whose resistance is impaired by disease, the same injuries may be followed by far reaching effects.

8. *Etiology; stages in the development.* There are three stages in the development of fistula: *a*, The stage of infection; *b*, the abscess stage; *c*, the fistula stage.

\*Read before the American Proctological Society, San Francisco, June, 1915.

*a. Infection stage.* The stage of infection begins with the invasion of the tissues by pyogenic organisms, and continues until the formation of an abscess is inevitable. The duration of this stage is about four days. Books tell us that fistula is due to an abscess. If so, what causes the abscess? Infection. Then does not the infection cause the fistula, and is not the abscess only one of the stages in the formation of the fistula? If the abscess stage is recognized early, the abscess opened carefully, and no attempt made to curette or swab it with phenol, iodine, bichloride solution, peroxide of hydrogen etc., as advocated in our textbooks, but it is simply opened and drained and kept open with a piece of gauze or other means, for about twenty-four hours, and then carefully filled with subnitrate of bismuth ointment (Beck's paste), and this treatment is repeated as often as necessary, the fistula, in a very large percentage of the cases, will be aborted. *Do not forget that too much meddling with an abscess has caused many a fistula.*

*b. Abscess stage.* This stage begins when suppuration is inevitable and ends when the pus begins to be discharged. It matters not whether the discharge of pus is brought about by some surgical procedure or otherwise. The site of the abscess depends on the position of the atrium of invasion, where the lymphatics lead, the relation of the fascial planes, and the nature of the infection, e. g., staphylococcus infection will not travel far via the lymphatics before it is arrested and localized, while streptococcus infection will not be so readily arrested and may continue its progress throughout the system with a fatal issue.

*c. Fistula stage.* This stage begins with the discharge of pus from the abscess cavity and ends when the fistula is cured.

*9. Diagnosis.* There is but one point under this heading to which I wish to refer and that is how to trace a fistula. The tract is seldom straight and the calibre varies at different points in its course; sometimes there is a sharp angle at the distal end, leading at first toward and then away from the rectum, and then another sudden turn toward the bowel, and just before entering the cavity of the rectum it makes another sudden change, laterally, upward, or downward.

In some cases it becomes necessary to inject peroxide of hydrogen or other solution into the tract to aid in locating the internal opening. When it is located, a hook director may be passed through it and along the channel until it meets the director passed in from the external opening. Then one director may be made to follow the other and traverse the full extent of the channel with little difficulty.

*10. Treatment.* The intelligent treatment of fistula can be accomplished only when the operator is familiar, 1, with the cause, duration, and severity of the attack and the condition of the patient; and, 2, with the numerous fascial planes and other structures likely to give direction, primarily, to the course of the infection, and, secondarily, to the pus.

*11. Objective point.* The objective point in the treatment of fistula is the internal opening. With that closed the fistula becomes an external rectal sinus and is amenable to treatment by the use of

subnitrate of bismuth ointment and other medication. The number of external openings and the number, length, and tortuosity of the tracts have but little to do with the severity of the case, provided that all of them can be located and removed. The position of the internal opening, however, is quite different; it has much to do with the severity of the case. In fact, all things being equal, the gravity of the case depends upon the position of the internal opening. Let us bear in mind, that one of the most important points in the treatment of fistula is finding and eliminating the internal opening. With this opening closed, the source of stercoral infection is cut off and the fistula becomes an external rectal sinus.

*12. Methods of treatment.* Many methods have been proposed for the treatment of fistula. I desire to submit herewith another and one which I believe to be far more important than any as yet presented, viz., the preventive treatment. All methods may be classified under three general heads, viz., the preventive treatment, the palliative treatment, and the curative treatment. Under the first may be considered the prophylactic and the abortive treatment. Under the last the injection and the operative treatment.

*a. Prophylactic treatment.* It is said that an ounce of prevention is worth a pound of cure. This injunction is as apropos in the treatment of fistula as in the treatment of any other malady. A complete history and careful examination usually elicit the fact that practically every individual who has fistula has or has had hemorrhoids, cryptitis, fissure, pruritus ani, proctitis, or some other form of curable rectal disease. These conditions favor the invasion of the perirectal tissues with pyogenic organisms, which is usually followed by an abscess and fistula. Hence if people were educated to keep their rectums in a healthy state and did so, fistula would become less frequent. Since the number of cases may be reduced by education, it becomes our duty as proctologists to launch a campaign for the prevention of this loathsome affliction.

*b. Abortive treatment.* The time to abort a fistula is during the infection or abscess stage. If the abscess is opened early, the pus allowed to escape, and the abscess wall is not interfered with in any way by means of instruments or drugs, but the cavity is freely drained and gently filled with subnitrate of bismuth ointment and this treatment repeated every two, three, or four days, according to the indications, the fistula will, as a rule, be aborted. Any-way should this not be so when fifty per cent. of all cases of fistula that have existed for months or even years may be cured without surgical interference?

*c. Curative treatment.* The injection treatment and operative technic have been referred to in previous articles.

31 NORTH STATE STREET.

**Colchicum in Gout.**—O. Crouzon, in *Bulletins et mémoires de la société médicale des hôpitaux de Paris*, April 22, 1915, calls attention to the fact that after administering colchicum in gout, a rise in blood pressure from 140 or 170 mm. Hg. to 190, 200, and even more takes place a day or two after the beginning of medication.

# THE EXCITING OF THE CARDIAC REFLEX IN THE TREATMENT OF ENLARGEMENT OF THE HEART AND AORTA.\*

By MYER SOLE CORN, A. B., M. D.,  
Philadelphia.

It seems reasonable to expect that physicians should be willing and anxious to use every therapeutic measure that will aid in bringing about the effect they desire to produce, especially when the

one of the phenomena that have been mentioned by many who might be supposed to have given up means of their treatment to help them, is the heart reflex of Abrams. This is a contraction of the heart and aorta produced in various ways, most effectively by means of concussion of the spinous process of the seventh cervical vertebra. In provoking the reflex, a pleximeter (which may consist of a rubber eraser or a piece of soft rubber or linoleum about six inches long,

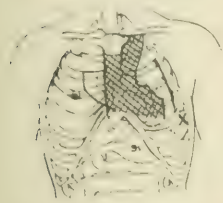


Fig. 1.

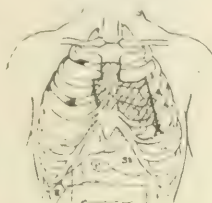


Fig. 2.

Fig. 1, Case 1.—P. R., male, aged sixty years, private. Diagnosis: endocarditis, myocarditis, dilatation of heart and aorta, nephritis. Marked improvement of symptoms until May 13, 1915, when, excited by an accident, developed uremic attack. May 15th, with recovery. April 2, 1915, before and after excitation of cardiac reflex.

Fig. 2, Case 1.—April 12, 1915, no excitation of cardiac reflex.

measure is simple and easy of application. Yet in some quarters there appears to be a prejudice against employing anything that is new or that has



Fig. 3.

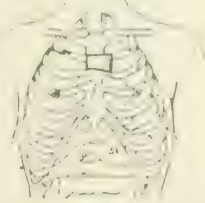


Fig. 4.

Fig. 3, Case 11.—M. O., female, aged fifty-two years, private. Diagnosis: endocarditis, dilatation of heart and aorta. March 23, 1914, disappeared after excitation of cardiac reflex.

one and a half inch wide, and about a quarter of an inch thick) is placed over the spinous process of the seventh cervical vertebra and given a series of sharp and vigorous blows with a plessor having a large

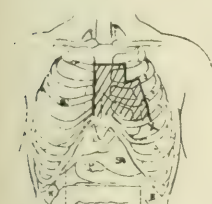


Fig. 5.



Fig. 6.

Fig. 5, Case 1.—April 22, 1915, no excitation of cardiac reflex.

Fig. 6, Case 1.—April 29, 1915, no excitation of cardiac reflex.

not had the endorsement of the medical profession as a whole. Many will not even try out a new remedy, though it may have been suggested and

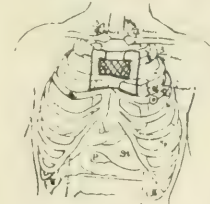


Fig. 7.

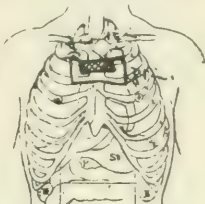


Fig. 8.

Fig. 7, Case 11.—March 23, 1914, before and after excitation of cardiac reflex.

Fig. 8, Case 11.—March 26, 1914, before and after excitation of cardiac reflex.

piece of thick rubber or with an ordinary hammer with a rubber tip, or with a jeweler's hammer. In

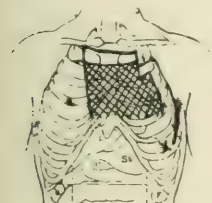


Fig. 9.

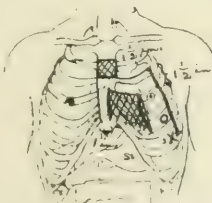


Fig. 10.

Fig. 9, Case 1.—May 7, 1915, before and after excitation of the cardiac reflex.

Fig. 10, Case 1.—May 14, 1915, X, apex beat before excitation of cardiac reflex; O, apex beat after excitation of cardiac reflex.

ported upon favorably by reliable investigators, until a large number of observers have given corroboration.

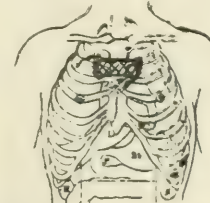


Fig. 11.

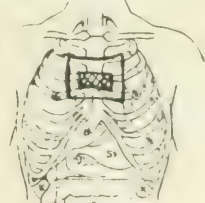


Fig. 12.

Fig. 11, Case 11.—March 23, 1914, before and after excitation of cardiac reflex.

Fig. 12, Case 11.—April 2, 1914, before and after excitation of cardiac reflex.

an emergency the palmar surfaces of the fingers of one hand can be applied to the spine, while the dorsal surfaces of those fingers are struck with the clenched fist of the other hand. This normally is followed by a contraction of the heart and aorta.

\*Read before the Section in General Medicine, the College of Physicians, Philadelphia, May 24, 1915.



Also using the fluoroscopic shadows of the heart and aorta contract and dilate as Doctor Abrams concussed one or another of the vertebrae at a demonstration given at the Philadelphia General Hospital, some years ago, I have been exciting

spont—my right border usually extending further to the right than his—both showed the same amount of change after the excitation of the cardiac reflex.

I am reporting sixteen cases with notes sufficiently complete to be of value. Unfortunately in most of the hospital cases where I employed this re-

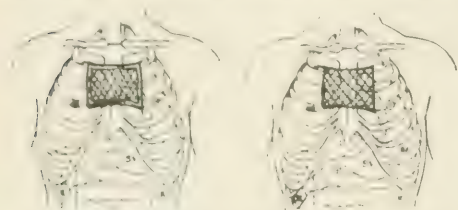


FIG. 10. Case 10.—July 10, 1913, before and after excitation of cardiac reflex.

in both private and hospital practice. There were several failures, chiefly in children suffering from severe endocarditis and resulting myocarditis, with loss of compensation, conditions in which the heart and aorta usually failed to contract on concussion

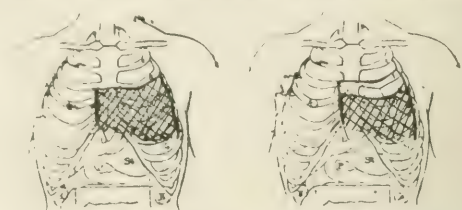


FIG. 11. Case 11.—July 10, 1913, before and after excitation of cardiac reflex.

flex, the interns failed to transfer the outlines from the patients' chests to their charts, leaving available only the few I drew myself. In private practice I have also frequently proved negligent in not recording the observations, which were consequently lost.



FIG. 12. Case 12.—November 23, 1914, no excitation of cardiac reflex.

of the seventh cervical spinous process. In most other cases the response was marked—a lateral contraction of over an inch being usual and of over two inches being not uncommon. Before performing venesection on a patient with acute cardiac dilata-

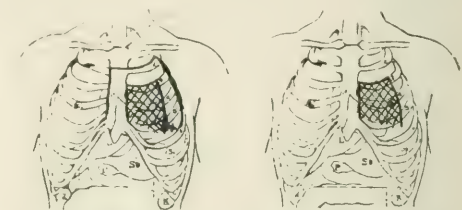


FIG. 21. Case 21.—W. G. W., male, aged forty-eight years, private. Diagnosis, cardiac dilatation and chronic myocarditis. September 3, 1913, before and after excitation of cardiac reflex.

FIG. 22. Case 19.—September 4, 1913, before and after excitation of cardiac reflex.

Eleven private and five hospital patients have sufficient data for analysis. Eleven were male and five female. One was under ten years of age, four were between eleven and twenty years, three between

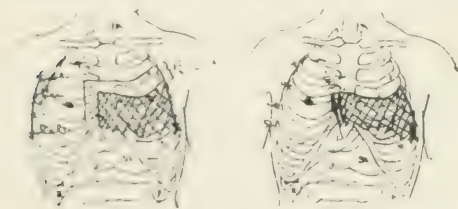


FIG. 17. Case 17.—L. H., male, aged sixty-seven years, private. Diagnosis, vertebral tuberculosis, chronic myocarditis. July 5, 1913, before and after excitation of cardiac reflex.

FIG. 18. Case 11.—July 7, 1913, before and after excitation of cardiac reflex.

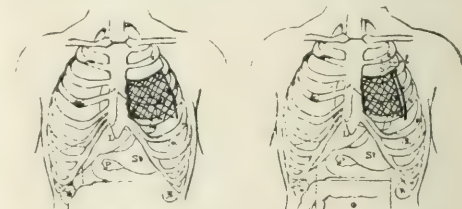


FIG. 23. Case 19.—September 5, 1913, before and after excitation of cardiac reflex.

FIG. 24. Case 19.—September 6, 1913, before and after excitation of cardiac reflex.

tion, I concuss the seventh cervical spine, often with such success that venesection proves unnecessary.

When outlining the heart in hospital cases I always had the intern make an independent outline; and although our markings did not always corre-

thirty and forty, one between forty-one and fifty, three between fifty-one and sixty, two between sixty-one and seventy, and one was seventy-one years old. A diagnosis of chronic myocardial weakness (myocarditis) alone was made in six cases, of endocarditis

with complications in five, of aneurysm and complications in two, of slight cardiac hypertrophy in one, and of a neurotic heart due to tobacco in one. One patient was healthy. Cardiac dilatation was slight in three, moderate in two, marked in three, and very marked in eight.

tracted on two occasions and failed to contract further on a third.

The upper border of the heart was unaffected on seven occasions, came down half an inch on one occasion, three quarters of an inch on one, one inch on three occasions, an inch and a quarter on five, an inch

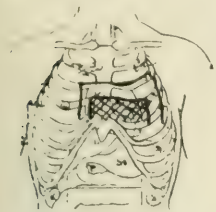


Fig. 25.

Fig. 25, Case v.—G. A., female, aged thirty-seven years, private. Diagnosis, cardiac hypertrophy and chronic myocarditis. December 3, 1913, before and after excitation of cardiac reflex.

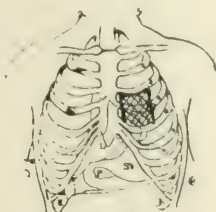


Fig. 26.

Fig. 26, Case v.—December 8, 1913, before and after excitation of cardiac reflex.

In each patient the heart contracted when the seventh cervical spinous process was percussed intermittently for three or five minutes. The contracted heart failed to contract further upon eliciting the cardiac reflex in two cases, and in one a partially



Fig. 31.

Fig. 31, Case vi.—July 3, 1914, before and after cessation of cardiac reflex.

Fig. 32, Case viii.—G. L., male, aged fifty-three years, Philadelphia General Hospital. Diagnosis, cardiac dilatation, chronic myocarditis, cardiac decompensation, auricular fibrillation, pulmonary edema. April 28, 1914, before and after excitation of cardiac reflex. Heart beats 188 a minute, not affected. Pulse (less than as given above) not affected. Both irregular.

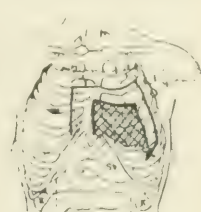


Fig. 32.

and a half on one, an inch and three quarters on one, and two inches and a half on one. It went up half an inch on one occasion. The lower boundary came

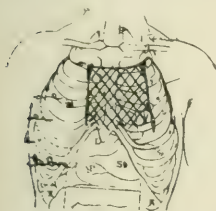


Fig. 27.

Fig. 27, Case vi.—J. F. O., Jr., male, aged eighteen years, private. Diagnosis, cardiac enlargement, myocardial weakness, tobacco heart. August 2, 1914, before and after excitation of cardiac reflex.

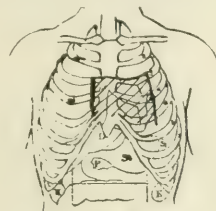


Fig. 28.

Fig. 28, Case vi.—August 10, 1914, no excitation of cardiac reflex.

contracted heart failed to contract further on one occasion. In every other instance percussion of the seventh cervical spine was followed by a contraction of the heart. Similarly, excitation of the cardiac reflex almost invariably produced a contraction of

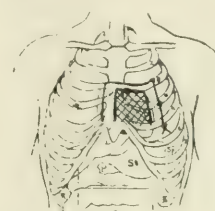


Fig. 33.

Fig. 33, Case viii.—May 5, 1914, before and after excitation of cardiac reflex.

Fig. 34, Case ix.—J. M., male, aged sixty-three years, Philadelphia General Hospital. Diagnosis, aneurysm, arch of aorta. May 26, 1914, before and after excitation of cardiac reflex. Was able to lie down afterward, although orthopneic previously. Attacks of dyspnea became less severe and of shorter duration.

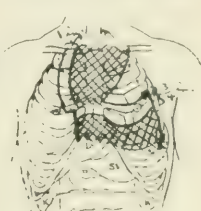


Fig. 34.

up one inch on the two occasions the cardiac reflex was excited in one patient, and went down half an inch in another patient. The transverse diameter

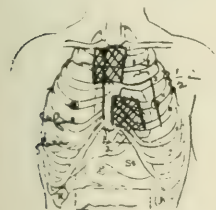


Fig. 29.

Fig. 29, Case vii.—M. D., male, aged fourteen years, private. Diagnosis, cardiac enlargement due to exercise, healed pulmonary tuberculosis. April 18, 1914, before and after excitation of cardiac reflex. Sternal dullness probably enlarged bronchial glands. No change on percussion of seventh cervical vertebra.

Fig. 30, Case vii.—June 18, 1914, no excitation of cardiac reflex.



Fig. 30.

the aorta in the three patients whose aortas were enlarged. The only exceptions were in one patient whose aorta contracted on six occasions and failed to respond on two, and in one whose aorta con-

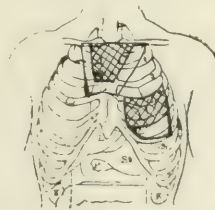


Fig. 35.

Fig. 35, Case ix.—May 28, 1914, before and after excitation of cardiac reflex. Felt better and slept better afterward, and spells of dyspnea were less frequent.

Fig. 36, Case ix.—May 30, 1914, no excitation of cardiac reflex.

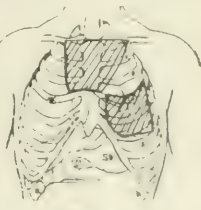


Fig. 36.

was unaffected four times, was decreased by half an inch once, by one inch three times, by an inch and a quarter three times, by an inch and a half once, by an inch and three quarters three times, by two inches once, by two inches and a quarter twice, by two

inches and a half once, by two inches and three quarters once, by three inches once, and by three inches and a quarter once.

The right boundary remained the same on six occasions, was moved to the left half an inch on three occasions, three quarters of an inch on two, one inch on five, an inch and a quarter on three, an inch and a half on one, an inch and three quarters on one, and two inches on one. The left border did

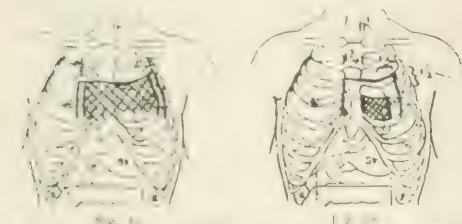


FIG. 40. Case xiv.—R. C., female, aged sixteen years, private. Diagnosis, chronic endocarditis, dilatation of aorta, pericarditis, nephritis. May 5, 1915, before and after excitation of cardiac reflex. (Retraction of right border after excitation of cardiac reflex.)

not move on six occasions, moved over to the right half an inch once, three quarters of an inch on two occasions, one inch on four, an inch and a quarter on three, an inch and a half on two, and two inches on one occasion. The left border moved half an inch to the left in one case, and one inch to the left in another.

The duration of the contraction could not be determined on twelve occasions, owing to the absence of fairly recent secondary observations. The contraction was maintained at least two days on two occasions, at least three days on one occasion, at least

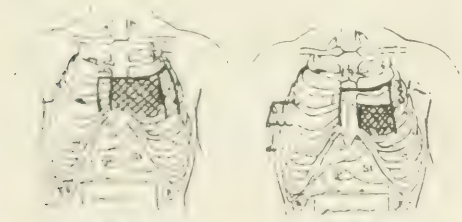


FIG. 41. Case xvi.—R. C., male, aged sixteen years, private. Diagnosis, post-liphtheritic, myocarditis, cardiac dilatation. January 6, 1915, before and after excitation of cardiac reflex.

FIG. 42. Case xvii.—A. B., male, aged seventy-one years, private. Diagnosis, myocarditis, accompanying bronchopneumonia, nephritis. December 28, 1914, before and after excitation of cardiac reflex.

four days on one, at least five days on one, at least seven days on two occasions, at least eight days on one occasion, and at least twenty-two days on one. When the heart was observed to be still contracted at the end of five days and again dilated at the end of ten, it was impossible to do more than state that the contraction was maintained at least five days. In five instances the heart was smaller several days after the excitation of the reflex, than it was immediately afterward: five days after in two instances, four days in one instance, seven days in one, and fifteen days after in one.

I can find no figures as to the duration of the cardiac reflex in the third edition of Abrams's *Spondylotherapy* except a quotation from Heitz that in cardiectasis it persists for several hours. All Abrams says himself is that it is "of varying duration," "not always sudden and of momentary duration," in children "not less, as a rule, than two minutes," and in subjects with dilated hearts "of much longer duration than in healthy hearts."

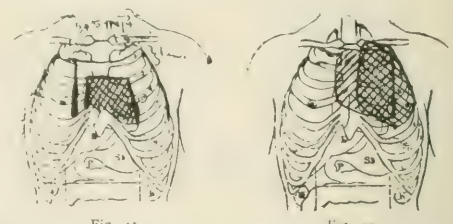


FIG. 43. Case xix.—L. C., female, aged twenty years, Philadelphia General Hospital. Diagnosis, chronic endocarditis, cardiac decompensation, lobar pneumonia. May 5, 1915, before and after excitation of cardiac reflex. Less dyspneic and felt and looked better afterward.

FIG. 44. Case xv.—J. T., aged thirty-six years, Philadelphia General Hospital. Diagnosis, chronic endocarditis, myocarditis, nephritis, either aneurysm or mediastinal tumor. (Retraction of right border after excitation of cardiac reflex points rather to aneurysm.) May 21, 1914, and May 26, 1914, // = before, \\\ = after excitation of cardiac reflex. Patient slept better that night, and voice was stronger for a short time.

The dilated aorta was unaffected by concussion of the seventh cervical spine in one case. The upper border remained the same on four occasions, came down three quarters of an inch on two, and an inch and a half on three. The lower border showed no change in five instances, went up three quarters of an inch in two, one inch in one, and an inch and a half in one. The transverse diameter was unaffected

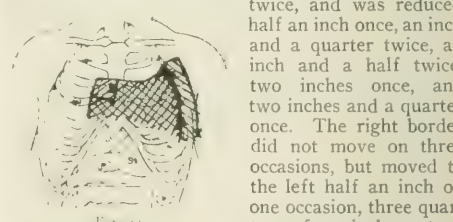


FIG. 45. Case xvi.—H. C., male, aged seventeen years, Philadelphia General Hospital. Diagnosis, endocarditis, pericarditis, pulmonary tuberculosis. May 5, 1914, // = before, \\\ = after excitation of cardiac reflex.

The left boundary remained stationary four times, retracted to the left half an inch once, three quarters of an inch twice, and an inch and a quarter twice. The dullness of the aorta completely disappeared on one occasion and was unaffected on two occasions. In one case the aorta was smaller five days after the excitation of the cardiac reflex than it was immediately after. A few patients described an improvement in their symptoms after excitation of the cardiac reflex, such as feeling better, sleeping better, and being less dyspneic. One looked better, and in one the voice was stronger.



Short descriptions of the cases, with diagrams showing the size of the heart and aorta before and after the excitation of the cardiac reflex, appear herewith. The larger outline represents the size of the heart before five minutes' intermittent concussion of the spinous process of the seventh cervical vertebra. The heavily shaded area represents the size of the heart after the concussion. A cross marks the position of the apex beat. A clear outlined area represents dullness that disappeared on excitation of the cardiac reflex. Light shading represents the size of the organ when the cardiac reflex was not elicited.

In addition to concussion of the spinous process of the seventh cervical vertebra, the patients received the other therapeutic measures, physiological and medicinal, that had given good results in cases where spondylotherapy had not been resorted to. Of the former the one most frequently employed was rest and the application of a hot water bag to the precordia for three minutes, immediately followed by the application of an ice bag to the precordia for twenty to forty minutes. The drugs most used were digitalis, strychnine, and cactus. In nearly every case the treatment seemed to be distinctly aided by the mechanical contraction of the heart and aorta produced by means of the excitation of the cardiac reflex.

2113 CHESTNUT STREET.

## ACID AUTOINTOXICATION ACCOMPANYING HYPEREMESIS OF PREGNANCY.

### *Report of a Case,*

By EDWARD E. CORNWALL, M. D.,  
New York.

Acid autointoxication is a recognized complication of hyperemesis of pregnancy, and when marked, it may well be an indication for terminating the pregnancy. A case is described here of hyperemesis gravidarum accompanied by an acidosis of considerable severity, in the management of which it was found possible to carry the patient through the period of intoxication without interfering with the pregnancy, thereby affording an especially favorable opportunity to observe the clinical features of this metabolic perversion, and also to test practically certain therapeutic procedures.

CASE. The patient was a married woman, aged twenty-six years. She had suffered from chronic constipation and periodical headaches for many years, and had had two miscarriages, both in the second month of pregnancy, but no children at term; otherwise her previous history was without particular morbid significance. She first consulted the writer on April 17, 1915, for indigestion, being then in the second month of pregnancy.

Physical examination, April 17, 1915, revealed nothing of special note. The blood pressure was 130 mm. Hg. systolic, and 80 mm. Hg. diastolic. Examination of the urine, April 20th, showed an excretion of eleven grams of urea in twenty-four hours, and a trace of albumin; otherwise it was negative.

The indigestion grew worse and was attended with vomiting, which increased in severity until, by April 25th, it became persistent. Even small quantities of fluid given by mouth were rejected, and vomiting of clear or yellowish fluid frequently took place when the stomach was apparently empty of food.

On April 26th, rectal feeding was instituted. The nutritive enemata prescribed contained pancreatized milk and predigested cereal. Drink enemata of normal saline solution were also given and an occasional colonic irrigation.

During April 27th, 28th, and 29th, the patient continued to vomit anything swallowed, and frequently also, a clear or yellowish fluid which was intensely acid. Continual nausea and occasional headaches were complained of. The enemata were for the most part well retained. Examination of the urine on April 29th showed a large amount of acetone. On April 30th, the nutritive enemata were changed so as to contain only predigested cereal, fruit juice, sodium bicarbonate, and normal saline solution. Sodium bicarbonate was also given in water by mouth, but was promptly vomited, as was also a small amount of predigested cereal given by mouth. The patient suffered much from restlessness.

On May 1st examination of the urine showed a very large amount of acetone and a large amount of diacetic acid, also a few hyaline casts, a trace of albumin, and an excretion of sixteen grams of urea in twenty-four hours. The patient was no longer restless, but lethargic. She expelled a large quantity of gas from stomach and intestines. On May 2d solutions of sodium bicarbonate and predigested cereal were given in small quantity by mouth, but they were mostly vomited. The nutritive enemata, however, were fairly well retained. The latter now consisted of a ten per cent. solution of dextrose or levulose with sodium bicarbonate and a small amount of grapefruit juice. The daily dose of sodium bicarbonate was between half an ounce and an ounce. On May 3d the patient's condition began to improve. Sixty-three ounces of fluid were swallowed, mostly solutions of predigested cereal and sodium bicarbonate, and twenty-four ounces were vomited. Examination of the urine on this date showed:

Quantity in twenty-four hours, 1,110 c. c.; acidity, 2.5 c. c.; specific gravity, 1.020; urea and ammonia in twenty-four hours, one per cent. or eleven grams; indican, in excess; albumin (serum), a trace; albumin (nucleo), a trace; glucose, none; acetone, a very large amount; diacetic acid, a very large amount; casts, none; red blood cells, none; leucocytes, numerous; squamous epithelial cells, numerous; crystals, none. Nitrogen partition: Total nitrogen, 0.03 per cent.; urea nitrogen, 0.378 per cent., or sixty per cent. of total nitrogen; ammonia nitrogen, 0.126 per cent., or twenty per cent. of total nitrogen; purin nitrogen plus uric acid, 0.0153 per cent., or 2.4 per cent. of total nitrogen; creatinine nitrogen, 0.0193 per cent., or 1.8 per cent. of total nitrogen; rest nitrogen, 0.0986 per cent., or 15.3 per cent. of total nitrogen. No leucin or tyrosin was found.

Blood: Hemoglobin, seventy-five per cent.; red blood cells, 4,000,000; leucocytes, 7,400. Differential count: Polymorphonuclears, 69.3 per cent.; lymphocytes, 22.1 per cent.; large mononuclears, 0.7 per cent.; mast cells, 0.7 per cent.; transitionals, 6.5 per cent.; eosinophiles, 0.7 per cent.

On May 4th further improvement was noted: the lethargy was much less. The quantity swallowed was sixty-four ounces and the quantity vomited was fourteen ounces. Examination of the urine showed the same large amounts of acetone and diacetic acid as before, and an elimination of nine grams of urea in twenty-four hours.

On May 5th the patient felt decidedly better, al-

though the nausea was present much of the time, being worse in the afternoon than in the morning. The excretion of urine was free; the acetone was still present, though in less quantity than before, but no diacetic acid was found. The nutritive enemata were discontinued because the patient was able to retain a considerable amount of food and the rectum began to show signs of irritation. Milk toast and milk-vegetable soups were added to the diet of predigested cereal. The quantity swallowed on this day was sixty-four ounces and the quantity vomited was seventeen ounces.

On May 6th, the dietary was further enlarged by addition of creamed vegetables and zwieback, which were fairly well retained. Sixty-eight ounces were swallowed on this day and ten were vomited.

During the next few days the diet was further increased, notwithstanding the vomiting, which still persisted. The principal articles in the diet thus enlarged were, cereal preparations, milk-vegetable soups, and a few green vegetables. Fruits were not liked nor well borne, nor was milk except in the form of vegetable purées, of which considerable quantities were taken. The sodium bicarbonate was given in diminishing doses until after the urine had become alkaline, which was on May 10th. The acetone was found in the urine on May 11th, but not on May 13th or thereafter.

On May 12th, the patient was allowed to get out of bed, and after that her convalescence progressed steadily. The nausea was less intense and occurred less frequently. She was able to take a fairly extensive diet, which, however, was restricted as regards fats until several days after the disappearance of the acetone, and as regards animal food, except milk and its products, until the present time. Now, August 10, 1915, she is practically free from nausea and is otherwise feeling well. Examination of her urine on August 9, 1915, showed an excretion of thirteen grams of urea in twenty-four hours, and no albumin or casts.

Among the observations made on this case the following seem of special interest:

1. The hyperemesis developed with considerable rapidity, lasted about a week and a half, and was followed by irregularly recurring nausea and vomiting, which lasted for about two weeks.

2. No acetone nor diacetic acid were found in the urine five days before the hyperemesis appeared, but were found on the first examination made after it appeared, which was four days later; they persisted in large quantity until two days after the hyperemesis began to abate; and the acetone, not the diacetic acid, was found in the urine in gradually diminishing quantity for a week after the abatement of the hyperemesis and for one day after the urine had become alkaline.

3. The patient craved alkalies in everything taken by mouth during the period of the acidosis.

4. During the height of the acidosis, twenty per cent. of the total nitrogen excreted in the urine was found to be ammonia nitrogen.

5. Half pint enemata of a ten per cent. solution of dextrose, given every four hours, were fairly well retained, but an attempt to administer this solution by Murphy drip produced irritability of the rectum.

The dextrose solution was retained better than a corresponding solution of levulose.

6. The nausea and vomiting which persisted after the abatement of the hyperemesis, occurred more frequently in the afternoon than in the forenoon.

7. Three months after the disappearance of the acidosis the patient appeared to be in good general condition.

1218 PACIFIC STREET, BROOKLYN.

## NEW GROWTHS OF THE PROSTATIC URETHRA IN RELATION TO TUBERCULOSIS.

*With a Report of Cases.*

By P. STARR PELOUZE, M. D.,  
Philadelphia,

Cystoscopist, Jefferson Medical College Hospital.

During the last two years it has been our opportunity to study, among a fair number of urethral growths, nine cases that were of particular interest. They all presented urethroscopically almost an exact isomorphism; the symptoms bore a marked similarity, and the evidences of a coexisting tuberculosis were too constant to suggest mere coincidence.

The growths in question were found only in the prostatic urethra, confined almost entirely to the roof and lateral walls, being most numerous just external to the vesical sphincter. They ranged from about one twelfth to one quarter the size of the average normal verumontanum; they were paler than the mucous membrane from which they sprang, which was usually healthy in appearance; were generally arranged in clusters, though at times isolated; were either moderately pedunculated or sessile; had none of the watery, translucent appearance of oedema bullosum or the usual benign papillomata; and tiny bloodvessels could be distinctly seen passing over their perfectly smooth surfaces.

In the first cases these growths were apparently solid, and in some of the patients we have since found that they appear to have undergone a cystic change, and when ruptured a thick white substance exudes. The solid growths, as will be seen by the histological findings, were lymphoid in character and probably much the same as the so called urethral "adenoids."

That the ends of brevity might be served, we have, in reporting these cases, omitted all but the points that seem to have direct bearing upon the condition.

CASE I. Father died of pulmonary tuberculosis and patient lived with tuberculous mother-in-law. No previous urological complaints. For the last eight months he had had a burning pain at the vesical neck and, upon voiding, in the anterior urethra. Nocturnal frequency three to five, and diurnal, six to eight times. Cystourethroscopy: Bladder and ureteral orifices normal. Clear jet of urine from both kidneys. Both lateral walls of the prostatic urethra covered with moderately pedunculated masses, springing from an apparently healthy mucous membrane. Small ulcerated area on the right near the junction with the membranous urethra. Floor of posterior and entire anterior urethra apparently normal. Tubercle bacilli were found in the urine upon several occasions.

CASE II. Had been continuously treated for a chronic posterior urethritis since a gonorrheal infection several years ago. Chief complaint was constant burning pain at the vesical neck and in the anterior urethra during urination. Cystourethroscopy: Practically the same as Case I except that there was no ulceration. Urine showed tubercle bacilli.

CASE III. Patient was referred from the Department for Diseases of the Chest, where he had been under treatment for moderately advanced bilateral pulmonary tuberculosis, on account of burning pain at vesical neck and ardor urinae. Nocturnal frequency, three times. Cystourethroscopy: Identical with Case II. Urine upon one examination showed no tubercle bacilli. (Patient failed to return for further study.)

After an absence of one and a half year he returned for treatment. Examination revealed the following conditions: Personal appearance suggested advanced tuberculosis which was borne out by study of chest. The bladder was normal, but the left ureteral orifice was distinctly "hooded," suggesting, according to Fenwick, dilatation of the corresponding kidney pelvis. Catheterized urine from this kidney showed pus cells and tubercle bacilli. The urethral growths were still present, but had changed from the apparently solid, moderately pedunculated form to the sessile cystic form and were easily ruptured.

CASE IV. No previous urological complaints. For the last two months the patient had had slight burning pain at the vesical neck, slight ardor urinae, and a nocturnal frequency of twice. Cystourethroscopy: Similar to the foregoing, except that the masses were fewer in number. Tubercle bacilli were not found in the urine.

A probable diagnosis of tuberculosis was made from the urethral findings, and further studies revealed tuberculosis of both pulmonary apices.

CASE V. Patient had gonorrhea fifteen months ago, which, he stated, was never cured. Chief complaint was burning pain at vesical neck and ardor urinae. Cystour-

disappeared. A perfectly clear urine came from the left kidney. Urethral picture was the same as in the other cases, except that there was greater involvement. No pus nor tubercle bacilli were found in the perfectly clear urine. At this writing the patient was in a hopeless condition; there was a freely discharging sinus in the left groin and an advanced pulmonary tuberculosis.

CASE VII. Patient had gonorrhea one year ago and was considered uncured as shreds persisted in the urine. He was strong, apparently robust, and presented absolutely no subjective symptoms. Cystourethroscopy revealed an abundance of urethral masses, with a normal bladder and ureteral orifices. Urine was loaded with tubercle bacilli, and guinea pig inoculation proved positive.

Examination of this patient three months after the foregoing record showed the urethral condition unchanged, but there was what appeared to be a tuberculous nodule in the right epididymis, with beginning thickening of the vas deferens. Re-examination after a period of six months showed an active pulmonary tuberculosis and slightly larger nodule in the left epididymis.

CASE VIII. Patient had contracted gonorrhea two and a half years before and was considered uncured as shreds were present in the urine. There had at times been slight burning in the anterior urethra on urination. He also complained of pain over lower portion of right lung upon deep breathing and had lost some weight. Cystourethroscopy showed a normal bladder, a slightly reddened right ureteral meatus, and normal left. The prostatic urethra showed a few cystic masses. The sediment from the urine from the separate kidneys showed no pus nor bacilli, but the twenty-four hour urine showed a fair number of tubercle bacilli. Physical examination of the chest showed a probable tuberculous lesion.

In none of these cases was there a hazy urine; all but Case VI showed shreds, but remarkably few pus cells; none of them gave any evidence per rectum

TABLE. PROSTATIC GROWTHS, PROBABLY TUBERCULOUS.

|                                     | CASE I. | CASE II. | CASE III. | CASE IV. | CASE V.                      | CASE VI. | CASE VII.    | CASE VIII. | CASE IX. |
|-------------------------------------|---------|----------|-----------|----------|------------------------------|----------|--------------|------------|----------|
| Increased frequency.                | Yes     | Yes      | Yes       | Yes      | No                           | Yes      | No           | No         | Yes      |
| Burning pain at vesical neck.       | Yes     | Yes      | Yes       | Yes      | Yes                          | Yes      | No           | No         | No       |
| Ardor urinae.                       | Yes     | Yes      | Yes       | Yes      | Yes                          | Yes      | No           | Yes        | Yes      |
| Tubercle bacilli in the urine.      | Yes     | Yes      | Yes       | No       | No (found in tissue section) | No       | Great number | Yes        | Yes      |
| Tuberculosis elsewhere in the body. | No      | No       | Yes       | Yes      | Yes                          | Yes      | Yes          | Yes        | Yes      |

ethroscopy: Identical with previous cases, except that there were a few growths on the floor of the urethra just external to the vesical neck. Urine showed no tubercle bacilli upon a number of searches. Several of these growths were removed, the laboratory report upon which was as follows: "Histologically in some areas were villous-like structures covered entirely by columnar epithelial cells. Immediately adjacent to this structure was a mass composed almost entirely of small round cells, of capillary loops, and newly forming bloodvessels, and a very small amount of developing fibrous tissue. In some areas a layer or two of epithelium could be seen covering this mass, while in others the mantle of epithelium ranged anywhere from one to a number of layers of columnar cells. Bacteriologically a few organisms which possessed the morphology and staining characteristics of tubercle bacilli, were found in this mass."

This patient was seen again after an absence of a year, during which interval he had experienced an attack of gonorrhea, and his condition was as follows: He had lost much weight and there had developed an active tuberculous lesion of the lung, which could not be found at the former visits. The bladder and ureteral orifices were normal and a clear jet of urine came from both kidneys. The urethral growths, while present, had become sessile and cystic and were easily ruptured.

CASE VI. Patient, for the last fifteen years, had nocturnal frequency of from one to four times. During the last nine years, had burning pain at vesical neck and ardor urinae. Seven years ago, a tuberculous right kidney was removed; one year ago, a left perinephritic abscess was drained and again in May of this year. Cystourethroscopy: Bladder was normal, except that right ureteral orifice had

that would have suggested tuberculosis of the prostatic substance or seminal vesicles; most of them had continuous burning pain at the vesical neck and at some point in the anterior urethra upon voiding (two symptoms strongly suggestive of the condition); four patients had had a previous gonorrhea.

Just how deeply into the prostatic substance this condition extends we are unable to say, but, as there was no marked change in the contour and consistency of the gland per rectum, and the excessive tenderness of tuberculosis of the prostate was not present in the foregoing cases, the assumption is that it did not extend much, if at all, beyond the urethral mucosa.

To the previously cited cases might be added the ninth case, which seems to exhibit even a closer relationship between these new growths and tuberculosis.

CASE IX. Family history negative, except that patient lived with grandmother who "had a bad cough and asthma." No previous urological complaints. Four months ago, he noticed a burning pain at head of penis on urination and a diurnal frequency of eight to fifteen times. This burning, he said, was relieved by medicine, but returned, and was then most intense after urination. One month previous he had had an attack of severe pain along the course of the right ureter and in the head of the penis, which lasted about twenty minutes and suddenly ceased. After its cessation he passed a yellowish, blood streaked



place and, later in the day, a considerable quantity of blood. He had since had several such attacks and now had burning pain during and after urination. Cystourethroscopy. Right ureteral orifice emitted flaky urine, was greatly pouted, and surrounded by an area of intense redness and edema which also extended across the trigonum and upon the left bladder wall. The left ureteral orifice was normal, as was also the rest of the bladder, and it emitted clear urine. The prostatic urethra showed many of the masses in question. Per rectum the prostate was round, fairly hard, decidedly tender, and had lost its median furrow. The left seminal vesicle was palpable and very tender. From the clinical picture alone this was unquestionably a case of genitourinary tuberculosis. This diagnosis was confirmed by the finding of enormous numbers of tubercle bacilli in the urine.

The accompanying table gives, perhaps, a better idea of the points of similarity in these cases than the brief case records.

From the findings in these cases and the fact that in the rather large cystoscopic service at the Jefferson Medical College Hospital, we have never, since Case I was studied, encountered these masses in a patient in whom there was not very strong evidence of the existence of tuberculosis, we feel that they are in themselves sufficient warrant for a probable, if not a positive diagnosis of tuberculosis. Certainly in their presence a most careful study should be made to prove or disprove its presence. It is also obvious that no cystoscopic study is thorough that does not include the entire urethra.

In these studies we feel certain that we are dealing with the tubercle bacillus and no other acidfast organism, and that the reputed confusion of the smegma bacillus should not occur when the urine is obtained carefully and studied by a careful observer, and when the sediment has been stained by the method suggested by Dr. R. C. Rosenberger, viz., carbol fuchsin fifteen minutes, Pappenheim's solution at least twenty minutes, followed by five minutes each of glacial acetic acid and sweet spirit of nitre.

It is also appreciated that guineapig experimentation is useful and apparently crucial, but we must take into consideration the resistance of these animals to few organisms and, where the bacilli are few in number, the guineapig may not show lesions, as has been proved by Webb, who has inoculated guineapigs with known numbers of tubercle bacilli without producing the disease.

In concluding, we wish to express our sincere thanks to Dr. H. R. Loux for the privilege of reporting such of these cases as were seen in his service, and to Dr. R. C. Rosenberger for his very kind help in the laboratory studies.

ADOLPH STERN

**Intravenous Injection of Radium.**—J. B. Bissell, in the *Pennsylvania Medical Journal* for November, 1914, reports his experiences with this measure in cases of rheumatoid arthritis, arteriosclerosis with high blood pressure, and malignant growths. Radium bromide dissolved in sterile physiological saline solution was used. In a series of forty cases, the largest dose of the radium salt given at one time was 100 micrograms, and the smallest fifty micrograms. Little or no local pain or reaction was produced by the injections.

## THE IDENTITY OF PECULIAR TRAITS AND NEUROSES.\*

BY ADOLPH STERN, A. B., M. D.,  
New York.

I reported this case one year ago, at a time when the patient had been under treatment for six months and was still in a transitional state; that is, progressing toward a cure, but still far from well. At that time some of his numerous fears and doubts were still present; he was still in a morbidly anxious condition; seclusive, suspicious, shut up within himself, and fearing persecution. Though he was much improved, still we were not justified in predicting a favorable outcome.

At the present writing, the patient is perfectly well and he has been practically so for the past twelve months, but I have refrained from reporting the case again until at least some of those reconstructive changes had taken place which would, with some show of justice, permit me to predict a permanent cure. For from the viewpoint of the psychiatrist, a cure means not merely the disappearance of the symptoms which constitute a neurosis, but a more or less complete change in those psychic (emotional) processes of the individual, which have rendered possible the occurrence of the illness. For neurotic symptoms very frequently disappear spontaneously; and no treatment which claims credit merely for the removal of symptoms, can be considered radical or even effective.

I devoted the preliminary report to a consideration of the early life of the patient and to an analysis of his symptoms. I analyzed also a nervous breakdown which took place some three years before that attack for which the patient came under my care. We saw that during the analysis, those of his symptoms which appeared last, disappeared first, and those which appeared first were the last ones to go. His illness came on suddenly after he had had intercourse with the same woman on a number of occasions and without logical reason he became obsessed with the fear that he had impregnated her. Around this fear as a nucleus was built the fabric of the neurosis. Many tormenting fears, states of morbid anxiety and depression, uncertainty and doubt, distrust and suspicion, and even delusions of persecution developed in the course of the next three months—so that in about six months after the onset of his trouble he gave up work entirely.

Knowing that all functional neuroses are attempts at a solution of a problem in the emotional life of an individual, I sought a reason for the present illness in his emotional sphere. In going over the intimate family life of the patient, I learned that just about the time of the onset of the illness, the patient's sister, for whom there existed a strong unconscious love clearly evident in his thinly veiled dreams, was about to announce her engagement. Often during his illness, it had occurred to the patient that because of his illness his sister might delay her engagement and indefinitely postpone the marriage, or at least, she would wait till the patient recovered. Moreover, since the patient had for many years been the main support of the family, his enforced (?)

\*A preliminary report of this case appeared in the *New York Medical Journal*, September 5, 1914.

illness would tend at least to put off the sister's marriage, because she would necessarily (so the patient thought) work to help make up the deficit caused by her brother's illness.<sup>1</sup>

The patient's solution of the problem was a flight into a neurosis. He effected the compromise between his repression and his desire, a totally unconscious (or subconscious) process. A full, conscious realization on the part of the patient, of this heretofore unconscious process, was a decided advance toward recovery. It gave him a good insight into his real (or subconscious) motives. All the symptoms were analyzed and the important ones detailed in my preliminary report. The analysis of the symptoms gave me a very intimate knowledge of the early life of the patient, and it is to an account of the analysis and interpretation of that portion of the patient's history preceding any neurosis that I wish to devote the main part of this paper.

Analytic scrutiny into the patient's early boyhood discloses many features in the emotional sphere, which underwent no change whatsoever as the patient matured; in other words, while apparently the patient developed, in reality, in fundamentals, he was still in an infantile state. These traits at that time were at variance with the conscious and voluntary desires (better side) of the boy, and more so as he grew into manhood. To quote from my preliminary report of the case:

He was never sociable, made but few acquaintances, and in reality, no friends. He was reserved, bashful, and uneasy in company, even in that of his schoolmates. At about twenty years, he attempted intercourse for the first time, and thereafter irregularly, but never with psychic satisfaction, ejaculation being always premature. Throughout his whole life, from about the ninth year, he was conscious of the fact that there was something present in him which made him do things he consciously opposed. He was jealous and envious of another's good fortune. He was considered quiet, even tempered, indifferent to women and acquaintances in general; to the casual observer he was so, but in reality he felt quite otherwise, but could not for some unconscious reason act as he felt. Between the ages of eighteen and twenty-two years and even at an earlier period, he committed petty thefts contrary to all reason. He was bashful, especially in the presence of children and women, to such an extent that he would cross the street to avoid a woman whom he actually wanted to meet. He kept away from people, when in reality he wanted to be in their company. He hated his father and also other relatives, though he felt there ought to be some feeling between them other than hate. He told stories and fabrications which did him no conceivable good, when he vowed again and again to give up the habit. To sum up, he was conscious that throughout his life there was something unknown, unconscious, but potent, nevertheless, which prevented him from being his own real conscious self. This unknown factor influenced him more than his conscious will, more than his conscious judgment and determination. As a social human being he was to a great extent, but a sham, a pretext, a make believe.

The symptoms for which the patient came to me for treatment, have, through an analysis entirely disappeared. If, then, in addition, we can analyze and thus remove this all too potent unconscious factor which has prevented the boy from developing in his entire emotional make-up, into a man, we are reconstructing the individual from the very foundation; we are striking at the very basis of his emo-

tional instability. We shall see that these early traits have the same etiological basis as the symptoms of the neurosis in his later years. We call these traits (bashfulness, envy, hate, etc.) defense reactions, because they come into being so as to effect an adjustment between the patient's desires and his repression; acting in this respect, just like neurotic symptoms. They serve the patient as a means of defense against his own impulses, at the same time adjusting the individual in his own way to his surroundings.

Conductive, as much as any other single symptom, to his emotional unrest and discontent, was the patient's inability to feel at ease in the presence of his fellow beings and his inability to make friends. This failure, emotionally, to be one of the rest of mankind is an important indication of an individual's asocial and sometimes even antisocial make-up, and is a characteristic trait of the neurotic.

I shall describe in detail the patient's nearest approach to the consummation of a friendship. His most intimate acquaintance was A, a boy of his own age. The two, distantly related, had grown up together, attended the same school, and had been as intimate for many years as two young men usually are. In this respect the relations between the two were perfectly normal; the pathological aspect is evidenced by the following: In the ordinary course of events, the patient acquired other acquaintances, but took pains to see that the latter did not become friendly with A; if there were any likelihood of this taking place, the patient at once severed all associations with his acquaintances. He acted so as to keep A's friendship to himself and not share it in common with others. Jealousy prompted our patient to act thus, as if "friendship" were more correctly replaced by the word "love." More conclusive proof of this is given by an incident which happened when the patient was about twenty-three years of age.

At that time A was offered a position which had advantages in every way superior to those connected with his present position. However, its acceptance meant A's leaving the city for many months at a time. The patient, being considered by A his very intimate friend, was asked for his advice in the matter. Though clearly seeing the distinct gain to his friend, and even though, after thinking it over, he intended advising A to accept, yet, when speaking to A, the patient advised him to reject the offer. One naturally asks, why?

The patient's refusal to have friends in common with A, depicts a state of affairs found in the case of lovers, not of friends. If we conceive of the friendship that the patient exacts from A as love, we can readily understand why no outsider is tolerated within the small circle of friends; we can also readily see why patient counselled against A's accepting the position in a distant city; for A's acceptance would mean the departure, not of a friend, but of a lover. Though consciously deciding to advise as a friend would under the circumstances, yet the prospect of separation was so intolerable that the unconscious love proved stronger than the conscious friendship.

This loverlike attitude between individuals of the same sex we call a homosexual love; unconscious in this instance, because it manifests itself as a symp-

<sup>1</sup>One must not conceive of these psychic processes as conscious ones with the patient. Though he often thought to himself that his sister would wait till he got well before marrying, it never consciously occurred to him that he did not wish his sister to marry; nor that he stopped working to hinder her marriage.

tom, it is a psychic love, because in the symptom there is nothing to suggest the desire for physical contact.

This sudden, impulsive, unexpected, and to the patient at the time inexplicable action, in opposition to his conscious determination to advise as one friend should advise another, illustrates the force and determining influence of the unconscious impulses which are present in all of us; and at times make us act contrary to our better selves. Surely a knowledge of these unconscious factors cannot but be a help to an individual.

How does the analysis of this symptom help the patient? As we have seen, on the part of the patient there was present the conscious (normal) desire to form friendships in the normal way and to act as a friend on all occasions; though he had intended to advise as his better self prompted, yet when he actually gave advice, he was prompted by his unconscious "repressed" motives, i. e., to prevent a separation from his lover. As a grown up mature being, this course of action was very unsatisfactory to the patient, even though by means of it, he fulfilled an unconscious repressed wish. The action was intensely selfish or egotistic, and characteristic of the neurotic or infantile. Through the analysis the patient sees that, instead of acting toward his friend as he consciously desired, namely, as a friend, he acted unconsciously as a lover, and since he now sees what he had been doing and why, and since his conscious desire is the normal one, he eagerly accepts the means whereby he can act as a normal social human being.

This, as we saw, represents the homosexual impulse which was brought into being among other causes by sexual experiences the patient had had with his brother between the ages of ten and twelve years; these experiences aroused erotic desires which, even though repressed from his consciousness, craved fulfillment in some form; in this instance as a repressed psychic homosexual love.

In my preliminary report I analyzed a fear which had obsessed the patient for some months and traced it to his unconscious repressed mother love and hatred for his father. The unfriendly feeling for the father was present with the patient as far back as his memory went. At five and six years of age he idolized his father, but this soon changed to dislike and hate, expressed, at times, in openly hostile acts, a desire to run away from home, saving up money to take care of his mother when his father should leave home, etc.

His unfriendly feeling for his brother and sisters, lasting many years, we can explain by the patient's intense craving for love, attention, and affection, and the necessity for sharing these with them. Toward the members of his family, his emotions were varied and conflicting; he loved and hated them at the same time. His love frequently turned to hate and jealousy; for instance, when his brother sought the companionship of other boys, the patient's previous fondness turned to strong dislike. Also when one of his sisters was about to marry, he became estranged from her, and to prevent or at least to put off the wedding, developed his neurosis.

To be ill at ease or uncomfortable in the presence of children certainly does not conduce to peace of

mind, and is indicative of some emotional conflict. The presence of children aroused, in the unconscious mind of our patient, associations with repressed emotional content, causing embarrassment and unrest. His early experiences with his sister took place when she was a child. Many were the criminal impulses directed against his smaller brothers and sisters (patient is the oldest); he frequently had fancies in which they were pictured dead. Three of them died in early childhood and at the time of their death, the patient went into deeper mourning than even his mother did. He manifested more grief than he actually felt, as a (defense) reaction to his original impulses. The patient's prevalent attitude was one of distrust, often of envy, jealousy, and a desire to revenge himself for some fancied slight. The reason for this attitude is quite apparent. The foregoing also explains the patient's emotional reaction in the presence of children.

The patient's extreme embarrassment in the company of women and his impulse to shun their company may be explained as originating in several ways. The sight of a woman aroused erotic desires carried into fulfillment in his fancies. In the mind of our patient erotic desires were unconsciously associated with erotic impulses long ago directed toward his mother and later on (at fourteen years and thereafter) toward his sister. He knew what sex meant, mainly as he had learned to realize it from his own fancies in which these individuals were pictured as the love objects. To our patient erotic desire carried with it a feeling of shame; that is, the sex impulse was a repressed impulse. As I have attempted to show<sup>2</sup> in many individuals masturbation is accompanied by strong emotion of shame and self condemnation. If, however, we trace back by means of association the causes of masturbation (in this instance listening to the act of intercourse between his parents; fancies, reproducing scenes that actually had taken place between patient and his sister, etc.) we can more justly place the emotion where it belongs; namely, on the cause of masturbation and not on the act of masturbation.

Since to our patient every erotic desire carried with it a feeling of shame (normally it should not), we infer that something of a repressed nature existed in the mind of the patient connected with things sexual. It is not normal thus to repress emotion on every occasion, in the presence of women, so that one is embarrassed sufficiently to shun their company in order to avoid such an unpleasant recurrence. To our patient, however, a woman unconsciously brought up associations of his erotic desires toward the members of his family, and as a defense to protect himself against such a repetition, he shunned the company of the opposite sex.

As far back as he could remember our patient was, to use his own words, "a notorious liar"; not a deliberate one, for his lies were in the nature of a compulsive act. For instance, he did not determine or plan in advance to tell a lie; on the contrary, he always meant to tell and frequently was on the point of telling the truth, but lied instead. At times his fabrications meant no apparent gain to him, yet he

<sup>2</sup>A. Stern, *Night Terrors*, NEW YORK MEDICAL JOURNAL, May 8, 1915.



hed in spite of his conscious desire to do otherwise. Let me illustrate this apparently purposeless fabricating by the following incident. After a short absence from work, due to the death of his youngest brother, a child of four years, his employer expressed his condolence to the patient and asked him which member of the family had died. The patient, instead of stating the facts, said that the brother next to himself in age had passed away. Why should our patient not have told the truth? In the first place, the little fellow that died was a great favorite with the patient, and substituting another as the dead brother would bring (unconsciously, it is true) the dead to life; again, the patient and the brother next in age were not always on friendly terms; this boy was a healthy minded fellow, happy, carefree, with no very serious thought for the morrow; a favorite among the girls. The patient was exactly the opposite, and envied his brother for what he himself lacked. In addition, the two boys in their early childhood had had sexual practices together, of which the patient was very much ashamed, and feared lest his brother divulge the secret. It is quite apparent, then, that this "meaningless" lie was full of sinister import, and, like fancies, dreams, and symptoms, a repressed wish fulfillment.

What we lack in actual life, especially what we dare not for ethical or moral reasons divulge as desires to others, we can readily attain in our fancies or day dreams. To a limited extent, to a degree which does not interfere materially with an individual's power to accomplish his normal amount of work with satisfaction, indulging in fancies may be considered physiological.<sup>3</sup>

The emotional life of our patient was confined to, wrapped up in his fancies. In actual life he indulged in intercourse at irregular intervals, but always without gratification on account of premature ejaculation. He supplied this want, however, by having fancies in which he indulged in intercourse; also by narrating to some of his acquaintances his numerous (imaginary) conquests with the female sex; he did this so often and with such enjoyment that, as he puts it, "I came to believe them real." His strong, repressed desire to exhibit he gratified by picturing himself a wonderful runner, winning the admiration of his female acquaintances. He performed great feats of strength (in his fancy) before an admiring multitude, in which were many women. He described these many fabrications to his friends as if they had actually happened. But what of the untold fancies, of repressed ambitions, revengeful, erotic, which took up much of his leisure time, and at times interfered with his work, about which he breathed no word to anybody and which he tried to suppress from his own consciousness? Surely his emotional life was rich—in his fancy. This took the patient away from real life, into a world of his own: he was thus enabled to draw away from his associates, supplying to himself

what the normal man seeks from his fellow beings.

As far back as he can remember, the patient always felt that he was different from other people, that he was not as good or as competent as they; so that as a defense reaction to this feeling of self depreciation, the fabrications took shape, to make up in his own and in the eyes of others, that which he thought he actually lacked.

As far as I have been able to ascertain, a neurosis never occurs in an individual in whom we cannot discover a so called neurotic tendency; that is, emotional reactions which have been the means of preventing that individual from being as happy as he may reasonably expect. In other words, the individual on account of an unstable emotional equilibrium, has not been able to fit smoothly or without undue conflict, into his environment. We do not say that individuals who have these emotional peculiarities (undue feelings of hate, jealousy, self depreciation, and depreciation of others) are predisposed to a neurosis. The fact is, it is much more correct to say that they are already suffering from a neurosis, but that they are as yet able to control these conflicting impulses and maintain their station in society. If, however, any undue strain is brought to bear, i. e., if they are brought to face a problem of life beyond their power to solve, something gives way, the patient is no longer able to adjust himself as well as before, he regresses—infantile fantasies regain control and a flight into a neurosis (or a psychosis) results as a compromise or as a way out of the conflict. The patient still maintains his station in society, but at the cost of a neurosis.

That is what had happened to our patient. He had many peculiarities, the most troublesome of which, and those against which he strove most earnestly, though vainly, we have analyzed. We have found that they were his reaction to repressed wishes which as a social human being he could not fulfill as such; he effected a compromise, and became "peculiar." In other words, he maintained his position in society, but as a peculiar individual. However, when he learned that his sister for whom he bore an unconscious repressed love, akin to the love which one bears to a stranger, was about to marry,<sup>4</sup> he took refuge in a neurosis, for which he came to me for treatment; his hope being that his sister would put off her marriage until he became well. He could not gratify that love as such, but through his illness he could still retain his sister's love (unconsciously, it is true). His early peculiarities, more properly symptoms, and his later neurosis are both due to the same repressed wishes. We have brought their causes into the patient's conscious mind, and have connected cause and effect. Throughout his whole life, as far back as he can remember, the patient has attempted to correct his symptoms; he failed, however, because he did not know how; he had no knowledge of those unconscious impulses which made him do that against which his whole conscious being strove. To him

<sup>3</sup>Freud maintains that the normal adult does not indulge in fancies. I am inclined to agree with him, though it is very difficult to say where the normal ends and the pathology begins. Surely the day dreams of the normal are few and not of long duration. On the contrary, the neurotic lives as much in his fancies as in reality and more important still, his fancies to him, if not in content, at least, in emotional effect, are real. In this respect, as in so many others, he resembles the child to whom play (or fancy) is reality.

<sup>4</sup>The normal man has the same problems to face; to him, however, the marriage of a sister is an occasion for rejoicing, for he acquires in this way more relatives or friends, or acquaintances as the case may be. He suffers no loss; on the contrary, he gains. The difference in the reaction between normal and neurotic is due to the difference in attitude the two bear to their environment.

has now been given that knowledge of himself, which, added to his ever present desire to be like other human beings, has helped him attain his goal.

120 WEST EIGHTY-SIXTH STREET.

## CREATININE AS A TEST FOR RENAL FUNCTION.

*A Preliminary Report,*

BY A. K. DETWILER, M. D.,  
Omaha,

AND MARY L. GRIFFITH,  
Omaha.

In the study of the physiology of the kidney, we assume that the glomerulus filters or secretes the water salts and glucose, and that the epithelium of the tubules secretes the nitrogenous constituents of the urine, and possibly by absorbing water, concentrates it. To get the best idea of kidney functional activity, we must test the elimination in quantity or time or both, of water salts and glucose or lactose, for glomerular function; and also the elimination of nitrogenous waste in order to test the function of the tubules.

We think that uremia is due to the failure on the part of the kidney to eliminate some products of protein decomposition or splitting which are nitrogenous; and we believe that the use of some approximately harmless normal nitrogenous constituent of the urine, as a test substance, would give us a better idea of the function of the urinary tubules and also of the onset of uremia and kidney failure, than any foreign substance such as a dye stuff or drug.

Van Hoogenhuijze (1) reported to the Hollandische Gesellschaft für Chirurgie, October 6, 1912, his work on the subject of creatinine as a test for kidney function in the Utrecht Clinic, and reports sixty cases, thirty of which were operated in with no death.

It is found by Kraus (2) and Fitz and Folin (3) that creatinine injected into normal dogs is excreted *in toto*, but that in dogs with uranium nitrate nephritis, not only is the normal elimination of creatinine diminished, but that there is a great retention and slow, long continued elimination of the injected creatinine.

Heretofore, the various methods of testing the kidney functional activity have been entirely in the hands of the surgeon, and their use has been limited to the recognition of one sided kidney lesions; but in internal medicine these tests are only now coming into general use for the decision of questions of a general pathological nature and the practical diagnosis and prognosis of individual cases. Since we have found that the investigation of the circulation in the kidney and the study of the albumin and casts, has availed us, as internists, very little in this direction, we have been compelled to take up the study of renal functional tests.

The principle underlying all functional renal tests is the following: The patient is given *per os* or hypodermically a definite amount of the test substance, whose separation time and completeness of

elimination is definitely established for normal kidneys. We now study how the kidneys, in the case being tested, compare with the normal; a slower or incomplete separation is of value, showing a disturbed function (as thirty grains of iodide of potassium will be entirely eliminated in thirty to forty hours by normal kidneys).

We divide the substances which are used in these functional tests into two great groups: 1. Substances which under ordinary circumstances do not occur in the urine, such substances foreign to the body as iodide of potassium and phenolsulphonephthalein; 2, constituents of the normal urine, such as water and creatinine.

The use of foreign substances has a great number of advantages, especially of a technical nature. One can choose from many nonpoisonous substances, those which are most easily demonstrated, and estimated in the urine, for example, dyes, iodide of potassium, salicylic acid, or milk sugar. A further advantage is this, that the beginning and end of the separation is easily decided by simple qualitative tests, so that it is possible to use merely the duration of the elimination as a measure of the capabilities of the kidneys. A further advantage of this class of substances is that no special diet is necessary.

But there are serious disadvantages as well, one that we are estimating the power of the kidneys to separate substances from the blood, which apart from experiments, or the use of the substances as medicine, they never have to eliminate. On the contrary, if we test the kidney capacity with a normal constituent of the urine, we get information about the ability of the kidneys to do their daily tasks, whose insufficient daily accomplishment must lead in the course of time to disease. The result of the investigations offered here may be the foundation for the establishment of dietetic regulations in treatment.

There can, of course, be no functional test with a single substance which will afford a complete picture of the functional soundness of the kidneys. The activity of the kidney is not to be looked upon as a single function, but rather as the sum total of a number of relatively independent separate functions, as elimination of water, sodium chloride, urea, uric acid, creatinine, etc. Experimental investigations, as well as experiences at the bedside, have shown that in kidney diseases these different separate functions will not be equally affected; that most often single functions continue intact, while others are violently disturbed; thus with a completely normal nitrogen elimination, there may be severe disturbance in elimination of the salt constituents of the urine.

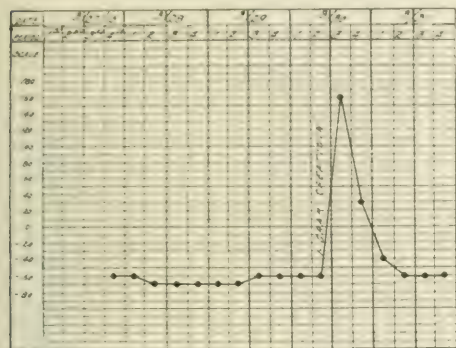
Because of this dissociation of function, it is certain that a complete picture of the functional activity of the kidney in certain difficult cases can be obtained only by testing every essential urinary constituent. Only in this way can a complete diagnosis be made and a broad basis established for dietetic treatment. In private practice this can rarely be carried out, and it is difficult even in hospitals where the laboratories and diets are not entirely under control. If, however, we cannot test all the different kidney functions, we must not abandon

the method, but must select some function which is most generally deranged and simple to test.

The discovery was made by Van Hoogenhuijze, of Utrecht, that the separation or secretion of creatinine is a function of this sort, simple to perform and accurate in its results. The advantages

0.8 to 2.4 grams in twenty-four hours. The technique is simple and with the Hellige colorimeter and by Folin's method, exact estimation is possible in a short time.

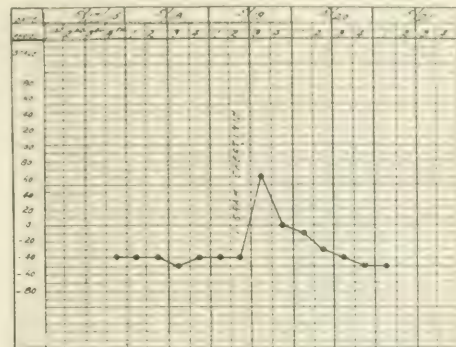
One adds to five c. c. of urine, fifteen c. c. of a saturated solution of picric acid and five c. c. of a



CASE I.—Creatinine excretion of normal kidneys.

of this method are: 1. One needs only five c. c. of urine; 2, a possible blood content does not disturb the reaction; 3, the determined figures beside their relative, have also an absolute value (see Note 1); 4, with a flesh free diet the daily amount of creatinine appearing in the urine is for each person fairly stable and approximately proportional to the body weight. It is chiefly dependent on the protein metabolism of the tissue whereby creatine is formed to be later transformed into creatinine by the liver. In other words, creatinine is the product of the endogenous protein metabolism.

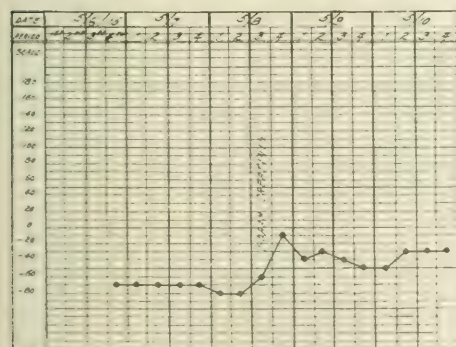
With the consumption of meat, the daily quantity



CASE II.—Delayed creatinine excretion (nephritis).

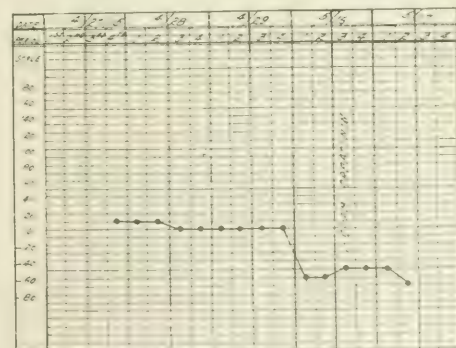
ten per cent. sodium hydroxide solution; allow this mixture to stand five minutes and dilute to 250 c. c. with water. The color is then compared with a one half normal solution of bichromate of potassium.<sup>1</sup> If the color is too dark for the scale, the specimen is diluted two or more times. All colorimetric observations should be repeated.

By a study of the value of the scale, one may estimate the creatinine value in mgs. or in the twenty-four hour quantity (See Note 1). It is surprising and especially favorable for our purpose that the elimination of creatinine in contradistinction to other urinary constituents shows very little variation in



CASE III.—Creatinine excretion of normal kidneys.

of the discharged creatinine is somewhat greater, but the difference is so slight that it does not come into consideration. In consequence of this, the maintenance of a uniform diet during the test is unnecessary and it is possible to carry out this test in ambulatory patients. An ordinary healthy man secretes eight mg. in ten c. c. of urine, a total of



CASE IV.—No increase of creatinine output (retention).

consequence of meals or exercise, and runs in a nearly horizontal line.

In carrying out the test with creatinine, we have found the following method satisfactory: The urine is collected and creatinine estimated for three suc-

<sup>1</sup>N/2 = 24.56 gms. potassium bichromate to the litre. The color of this solution is absolutely permanent.



cessive days in six hour periods, one day before and one day after the test day. We count the single days from 9 a. m. to 9 a. m., and have not ordered any special diet, but have avoided extremes in the consumption of animal protein and fluids during the test.

At the beginning of the first day at 9 a. m. the bladder is emptied, and the urine is collected in six hour periods thereafter. If each specimen does not amount to 300 c. c., distilled water is added to make that amount. The creatinine is then estimated in each and the curve plotted.

On the morning of the second or test day at 9 a. m. the patient takes *per os* 1.5 gram creatinine dissolved in 100 to 150 c. c. of sugar water or one gram is given hypodermically in ten c. c. distilled water with a few crystals of novocaine, which makes the injections painless.

The urine is again collected as before, by emptying the bladder at the end of the six hour periods. The four portions are measured, made up to 300 c. c. and the creatinine estimated and curve plotted. The comparison with the first day shows how much of the ingested creatinine was eliminated in the six hour periods. The estimation of the creatinine in the same way for the following day is desirable, but not essential. According to this method there have been estimated by Neubauer (4) eighty cases and Van Hoogenhijze, sixty cases, and our own 146 cases.

In healthy people there is a high step up in the creatinine excretion in the first six hour period after its administration, compared with the preceding day. In the second period there is still an elevation of the line, and in the third period the normal level is reached again. In the examination of patients, in whom for any reason there are disturbances of kidney function, variations are seen in the course of this typical curve. Especially is the step up in the first period less marked, so that the line only goes one fourth to one third as high and the elimination goes on to the third or fourth period and even the next day. It is understood that between the normal and the greatly disturbed curves all varieties may occur. Such great variations are especially marked in bilateral kidney disease.

According to our experience up to now the creatinine test shows more perfectly than any other functional test, functional weakness of the kidney. Many times it is the only test which shows disturbance, and it may be that this special function is the one which is damaged especially early. This makes the test of special value in determining whether disease of the kidney exists or not, but as far as we know now it gives us no basis for the classification of the lesion.

A parallel with the amount of albumin does not exist. In general it may be said that the acute hemorrhagic forms show less disturbance than the prognostically unfavorable chronic cases. Especially marked disturbances show in cases which threaten uremia whether there is dropsy or not.

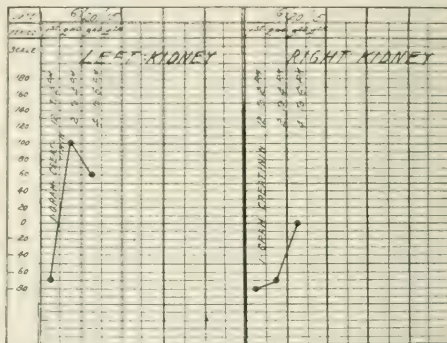
Observations in patients with high blood pressure without other sign of kidney disease, have sometimes shown a disturbance, while in others the elimination was normal. Further study is necessary to determine whether it is possible to differentiate the

cases of chronic interstitial nephritis from hypertension due to other causes. Experiments are under way with toxic kidneys to determine whether disturbances of the creatinine elimination depend upon lesions in a definite portion of the kidney.

In chronic passive congestion there is great disturbance of the creatinine elimination, so that this test is of no more value than the others in differentiating this condition from real kidney lesions.

In one sided kidney lesions, if one kidney is normal, there is no change. In this case the creatinine test like the others is of importance as an indication for operation.

In separated urines the urine of the diseased kidney contains less creatinine. Very slight differences occur in healthy kidneys, but the variation is never



CASE V.—Creatinine excretion, left kidney, in good condition; right, tuberculous.

more than twenty per cent. This is much more marked when creatinine is given as a test.

The normal blood serum contains one mg. in 100 c. c., and when there is retention of creatinine, as in uremia, the content may be twenty mg. in 100 c. c.

#### NOTE 1.

The readings on the colorimeter scale (Hellige) have been determined by actual measurement. Those below zero are called minus, those above plus. If the reaction gives a color too dark to be read on the scale, it should be diluted twice or oftener, and the result computed as follows: Suppose the specimen is diluted three times and the reading is  $-15$ , the result is plus 165, obtained in this way. Each time the specimen is diluted one adds 60 to the reading on the scale ( $60 + 60 + 60 = 165$ ).

#### NOTE 2.

- +180=.0145 gram creatinine to 5 c. c.
- +160=.0135 gram creatinine to 5 c. c.
- +140=.0125 gram creatinine to 5 c. c.
- +120=.0115 gram creatinine to 5 c. c.
- +100=.0105 gram creatinine to 5 c. c.
- +80=.0095 gram creatinine to 5 c. c.
- +60=.0085 gram creatinine to 5 c. c.
- +40=.0075 gram creatinine to 5 c. c.
- +20=.0065 gram creatinine to 5 c. c.
- 0=.0055 gram creatinine to 5 c. c.
- 35=.004 gram creatinine to 5 c. c.
- 55=.003 gram creatinine to 5 c. c.
- 75=.002 gram creatinine to 5 c. c.
- 95=.001 gram creatinine to 5 c. c.

CASE I. Mrs. H., aged thirty years. Chart showed the daily output of creatinine rather low, but when creatinine was given, the reading showed a normal kidney function.

CASE II. Mrs. B., aged nineteen years; eight months pregnant. Urinalysis at the time she entered the hospital

was as follows: Twenty-four hour specimen, 1,600 c. c.; reaction, acid; specific gravity, 1.010; urea, 7 per cent.; blood, negative; albumin, positive (0.105 per cent.); sugar, negative; indican, negative; acetone, negative; numerous granular casts and a moderate amount of pus. After giving ten mgm. of phloridzin, sugar was negative up to fifty minutes and a phenolsulphonephthalein test showed a very low output of the drug. The accompanying chart showed the creatinine elimination delayed and the first six hour output very much lower than normal. Patient went full term and had a normal confinement.

CASE III. Mrs. B., aged fifty-eight years, entered hospital May 6, 1915, suffering from uremia. A uranalysis showed the following: Twenty-four hour specimen 520 c. c., although patient was receiving various kinds of kidney stimulants. The urine was of a turbid straw color and quite bloody. Reaction, acid; specific gravity, 1.015; urea, 1.1 per cent.; albumin, positive; sugar, negative; indican, positive; numerous granular and hyaline casts and large amount of pus and blood. The injection of ten mgm. of phloridzin was entirely negative, and the phenolsulphonephthalein output was very much delayed and during the first four hours a very low percentage was excreted. Chart 3 showed a very low output of creatinine in the first six hours following the injection, and the elimination covering a period of three days instead of one day.

CASE IV. Mr. P., aged sixty-five years, entered the hospital, April 28th. He had been in bed for almost four months with gallbladder trouble. He was in a very weakened condition and markedly jaundiced. Uranalysis showed the following: Twenty-four hour specimen, 900 c. c.; reaction, acid; specific gravity, 1.020; urea, 2.4 per cent.; albumin, negative; sugar, negative; bile, positive (quite marked); color, dark greenish amber; moderate number of mixed casts, also some pus. Ten mgm. of phloridzin gave a positive sugar reaction in thirty minutes. Patient was operated on, April 30th, and progressed very nicely until about May 17th, when kidney involvement became apparent. A twenty-four hour specimen went down to 275 c. c., the urea was two per cent., and the casts became much more numerous. Twenty-four hours before his death, his kidney secretion was only about sixty c. c. The accompanying chart showed no reaction to the creatinine, although one gram of the drug had been given.

CASE V. Mrs. B., aged fifty-two years, entered hospital June 17th with a severe cystitis, which had been present for about five months. She had lost in weight and was unable to be up and around. Her bladder capacity was about seventy-five c. c. and she had almost constant pain and distress in the bladder. She had no pain or symptoms of any kind in either kidney region. Uranalysis showed the following: Twenty-four hour specimen, 1,015 c. c.; reaction, acid; specific gravity, 1.010; blood, negative; urea, two per cent.; albumin, positive; sugar, negative; color, pale green (patient had been taking methylene blue). Microscopically the field was entirely obscured by pus. A stain for tubercle bacilli in a catheterized specimen of urine showed a large number of the organisms. Cystoscopic examination of the bladder by Doctor Condon showed a marked cystitis covering the whole bladder, a normal looking left ureteral orifice and a swollen, injected, and somewhat excavated right ureteral orifice. A ureteral catheter was passed into each ureter. In the left ureter the catheter was easily passed, but in the right ureter there was an obstruction about two inches from the orifice, which prevented the catheter from entering further. These catheters were left in place six hours. Comparison of the separate urines is as follows:

|                            | Left.                  | Right.                |
|----------------------------|------------------------|-----------------------|
| Reaction                   | Acid                   | Acid                  |
| Amount                     | 2 hours, 35 c. c.      | 4 c. c.               |
| Urea                       | Positive (from 1 hour) | Negative              |
| Urea                       | 2 per cent.            | 1.4 per cent.         |
| Albumin                    | Positive               | Positive              |
| Sugar                      | Negative               | Negative              |
| Indican                    | Positive               | Negative              |
| Color                      | Bloody                 | Turbid straw          |
| Microscopical              | Very bloody            | Field obscured by pus |
| Stain for tubercle bacilli | Negative               | Positive              |
| Phloridzin test            | Positive (18 min.)     | Negative (60 min.)    |
|                            |                        | Positive (105 min.)   |
| Phenolsulphonephthalein    | Very low               | Negative              |

The accompanying chart showed the reaction of both kidneys, after the injection of creatinine. (The periods here cover only two hours instead of six.) The conclu-

sion was that the right kidney was tuberculous and the left was in good condition. A right nephrectomy was done. The kidney was about normal in size. The pelvis and ureter were merged into one and were dilated to the size of a child's small intestine, the dilatation extending down to a stricture of the ureter very near the bladder. The cut surface of the kidney showed numerous tuberculous foci, as did also microscopical sections of the kidney.

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## PITUITARY DISEASE

*The Interpretation of Its Clinical Manifestations.*

By WALTER TIMME, M. D.,

New York,

Assistant Physician, Neurological Institute; Visiting Neurologist,  
Randall's Island Institutions; Consulting Neurologist,  
New York Hospital.

In the description of various diseases in medical literature, we usually find typical examples portrayed with the cardinal symptoms standing out prominently. Crises in pneumonia, initial lesions in syphilis, absence of knee jerks in tabes dorsalis, and enlarged thyroid with exophthalmos in Basedow's disease, need but to be mentioned to be recognized as the hall marks of these affections. Few are willing to make a diagnosis until such tag is fastened to the semiology; and so it is that many cases remain undiagnosed during their formative period, and any treatment must be purely of a temporary character and not directed toward any definite end. Proper consideration is not given to the fact that the knee jerks in locomotor ataxia do not disappear at once, but gradually; that the initial lesion in syphilis may be so small or so obscurely placed as to escape notice; that the crises in pneumonia are obscured by fresh extensions of the inflammation or by secondary complicating conditions; and that the thyroid may overfunction without giving external evidences of enlargement. In other words, the disease picture as it occurs in our experience is almost invariably not typical, but transitional. It is these transitional states that are so difficult of interpretation and that need all the acumen of the best mind to explain. So it is with the clinical manifestations of a disturbed pituitary gland. We are all familiar with the textbook pictures of this condition. Here are acromegaly, gigantism, infantilism, adiposis, sex inversion, and eunuchism. The descriptions term with visual field contractions, hemianopsia, papilloedema, and optic nerve atrophy. And if we look for these very definite clinical signs before we recognize pituitary disturbance, then we fall into the error of nonrecognition of transitional, compensatory, and abortive forms of pituitary disease. Such clinical manifestations as are present are then placed to the credit of neurasthenia, hysteria, idiopathic epilepsy, and even of the psychoses. These transitional forms are far more numerous than the well developed, matured cases, and it is just in these formative periods that therapy can accomplish results by bringing the morbid process under some

\*Reprinted from the New York Medical Journal.

control. After the structural changes are once completed, the case is fit only for photographic reproduction in the textbooks, or for the pathological museum. For this reason then, it becomes all important to recognize such transitional periods. In order to do this, the better plan would seem to be to begin our study at the terminal stages of pituitary disease with its well marked features, and work back to their beginnings. Let us therefore first briefly review the end results seen in the various hypertrophies of the hypophysis, whether these are hyperplasia of the gland itself, or tumor or cyst in the sella turcica destroying the gland. To do this properly, the anatomy and physiology of the gland ought to be carefully considered; yet as the title of the paper precludes more than a passing reference to this phase of the subject, I shall content myself by saying briefly that the gland ought really to be considered as heterogeneous, it has three distinct parts: 1. The anterior lobe known as the pars anterior or pituitary gland proper, formed by epithelial cells arising originally from the buccal cavity; 2, a posterior lobe, pars nervosa, or the infundibulum, a true glandular formation whose lumen connects with the third ventricle of the brain; and, 3, a pars intermedia consisting of an investing epithelium for the infundibulum and divided into two distinct parts—pars tuberalis and pars infundibularis and uniting anteriorly with the pars anterior (1). The importance of these distinctions is obvious when we know that their functions (2) are different, although as yet only approximately understood, and that the clinical manifestations of their disease are quite different and their therapy correspondingly altered. The anterior lobe in general is believed to control connective tissue growth in the body, especially the skeletal (3). The posterior is credited with properties stimulating metabolism (4); maintaining blood pressure not only through the agency of a pressor principle, but also of a depressor one, which has been extracted from the gland with alcohol (5). It is also said to increase peristalsis and stimulation of the sympathetic system generally, thereby improving nutrition; it increases the production and flow of the mammary glands (6). It stimulates uterine contractions (7), increases the urinary excretions (8), and has lately been credited with increasing the absorption of cerebrospinal fluid. On account of its great sympathetic stimulating properties, it has become the remedy *par excellence* in surgical shock, being far more efficacious in this regard than adrenaline (9). The pars intermedia is said to produce a diuretic hormone which is the basis of a diabetes insipidus (10). The gland as a whole has a direct influence also in genital development (11), and an inhibitory action upon the activity of the pancreatic juice (12). The numerous physiological properties of the posterior lobe may be perhaps explained by the result of the investigations of Fühner (13), who isolated eight different active substances from the posterior lobe. From this short synopsis of the characteristic activities of the hypophysis, in which most observers are agreed, we can readily see to how intense a general disturbance of the bodily functions a disturbed pituitary gland may lead. However, there must be taken into account the fact that the other endocrine

glands can partially compensate for deficiency and surplus in pituitary secretion. Thus the thyroid partially compensates for the connective tissue control and metabolism in the skin, hair, joints, and so on (14); while the adrenals partially control through their chromaffin content, the maintenance of blood pressure and stimulation of smooth muscle fibre; the gonads largely are likewise linked to the pituitary, for they increase and decrease in their activity synchronously with that gland. The pancreas opposes the pituitary, as may be seen by their contrary effect in sugar tolerance.

From these considerations, it follows that the cases we see and recognize as pituitary in origin are those in which this compensation by other glands is not entirely sufficient to overcome the original disturbance in the hypophysis—a corollary to which statement is the fact, that, as many, or indeed, all the endocrine glands take part in these various compensatory adjustments, it is extremely difficult and often impossible to determine the original gland at fault; for each gland not only performs the complementary task assigned to it, but produces effects in other directions than just the one that is desired, owing to its totally changed activity. The result is then seen in the symptoms produced by this uncompensated excess of the secondarily affected gland which may entirely overshadow the symptoms produced by the originally disturbed gland, and thus lead to a faulty diagnosis. So that, for example, if the adrenals are drawn into compensatory hypoadrenalism to lessen a blood pressure caused by hyperpituitarism originally, then they will by virtue of this diminished activity also produce pigmentation of the skin. If these two were the only glands disturbed, we should then have a normal blood pressure; but there would be pigmentation as the external evidence of the uncompensated adrenals, and from this pigmentation it would be difficult to diagnose the true condition of a diseased pituitary. Heretofore the cause of such a pigmentation had been assigned solely to adrenal disease, but we can now readily understand how it might be the sole evidence of a pluriglandular disease originating in the hypophysis. This simple instance will suffice to show what complexity the integration of the clinical manifestations of internal glandular disturbance may assume. Bearing these considerations and strictures in mind, I wish to sketch as succinctly as possible the clinical manifestations evinced in patients with disturbances of the pituitary as the probable prime factor in the pluriglandular syndromes.

Let us take the extreme cases of disease first as being most easily understood. Here we have, first, the enlargement of the entire mass in the sella turcica, due either to tumor or cyst formation with decrease of the pituitary secretions secondary to the pressure exerted upon the hypophysis; and, secondly, a true hyperplasia of the glandular elements with increase of the secretory activity. In either case there appear similar symptoms of direct neighborhood involvement, but with different secondary systemic symptoms, due in the former class of cases to hypopituitary and in the latter to hyperpituitary activity. The direct pressure symptoms give us effects upon the optic chiasm pro-



ducing bitemporal hemianopsia, that is, blindness upon the temporal side of each visual field, or a primary optic atrophy. The hemianopsia is seen in the early stages for color only and later on for form. If the tumor extends over the edges of the sella, then we get direct pressure symptoms on the sixth cranial nerves, producing paralysis of the external rectus muscles of both eyes, causing internal strabismus; or on the third nerve, causing external strabismus; and still later by pressure on the neighboring crura cerebri, the pyramidal tracts are disturbed, with resulting disturbances of gait and a positive Babinski phenomenon. Of course, such extreme size of the tumor will give intense intracranial pressure with choking of the optic disc, distention of the ventricles, with severe headache accompanied by nausea and vomiting, and, unless relieved by decompressive operations, will result in progressive blindness. The systemic symptoms due to the deficient secretion of the hypophysis under such pressure conditions—that is, those due to hypopituitarism—are increase of body weight, increased tolerance for sugar, a lowered body temperature, a sluggish mentality with slowness of movement and with diminution of sexual activity. If the condition is present in adolescence, and the growth of the tumor rapid, we get infantilism—an undeveloped sexual growth; lack of hair, or a tendency toward the other sex in its distribution, and adiposis; in boys, developed mammary glands with general feminine contour. Should the patient be seen in the very early stages of the new growth and the tumor is slow growing, at a time when as yet only its irritative effects upon the pituitary gland are exerted, and no actual destruction of the gland has taken place, the syndrome is one of hyperpituitarism; and is in this early stage therefore practically the equivalent of a hyperplasia of the gland. Should this hyperplasia arise in early life, before the epiphyses have become ossified and united, then its effect is seen in the rapid growth of the long skeletal bones leading to gigantism; there are also increased sexual tendencies and development, and precocious puberty with an increased growth of hair, and low sugar tolerance with increased urinary output. Should the irritating medium arise later in life after the ossification of the epiphyses, then the gigantism does not appear, but we have a similar effect produced upon the bones of hands and feet instead with resulting acromegaly. With the acromegaly is seen the typical skull—a protruding forehead, prognathous lower jaws, wide molars, cyphotic spine; in short, the picture of the deformed court jester—the skull *en polichinelle*. These people frequently have a highly developed and susceptible autonomic system and are witty and keen. Short of these extremes, we have an infinite number of grades of a disturbed pituitary gland with endless combinations and alternations of hypofunction and hyperfunction. These lower grades, as was suggested in the beginning of this paper, are the important ones to recognize, for only in the prestructural change conditions can we hope to accomplish results with means short of surgical interference.

Let us take up the preadolescent period of life. We see a child that presents one or more of the following characteristics, small stature, adiposities, un-

ited epiphyses, with small sexual organs, perhaps reversible in type, or with cryptorchidism. The skeletal muscles are weak, the teeth malformed, crowded, and irregularly placed, there is a prognathous upper maxillary with a generally deficient bony structure, perhaps even to the extent of acromikria. There may be a weakness of the bladder walls leading to enuresis, with a high sugar tolerance and an abnormal desire for sweets. The boy's temperament is so different from his fellows' that he can with difficulty get along with them in play; he cries easily and is apt to be cowardly. There may be added a dryness of the skin, subnormal temperature, slow pulse, and low blood pressure. Occasionally there are epileptoid attacks. In girls after puberty, there is apt to be amenorrhea. Any of these symptoms may point to pituitary deficiency, but if several are found combined in one individual, then the presumption is strong that such a deficiency exists (15). In the other type of case, hyperpituitary in character, the child is a large, spare, and bony framed individual, eyes wide apart, broad face and large feet and hands, a square protruding chin, with early profuse growth of axillary and pubic hair and perhaps even a general hypertrichosis, with rather thick skin and large sexual organs. There is precocious puberty. The teeth are broad, large, and unspaced, or normal in size, though spaced, and there may be polyuria with occasional traces of sugar in the urine. The temperament of such a child, unless the process has gone too far, is one of aggressiveness, of pugnacious tendency. Later, should the hyperfunction continue, his mind becomes sluggish, he suffers with headaches, and the more marked structural changes take place. It might be well to add here that the more advanced symptoms are possibly due to the change from early hyperfunction to the later succeeding hypofunction—a frequent sequence. One must always remember that both processes may at different times affect the same individual. Whether intercurrent disease fans the flame which was dying out, or blows and falls cause an irritation of the gland which had become dormant, or yet that the other endocrine glands influence the pituitary, suffice it to say that there are individuals in whom we see mixtures of these clinical manifestations pointing to alternating hyperpituitary and hypopituitary disturbances—called dyspituitarism.

In this connection we may mention the series of cases with epileptic episodes. It has been stated by Horsley (16) that an undue excitability of the cortex supervenes after posterior lobe excision or in posterior lobe deficiency, which might account for the seizures. My experience has been that these cases are usually dyspituitary in nature, i. e., they give many evidences of a hyposecretion of the gland—dry skin, amenorrhea, adiposity, malformed teeth, narrowed eye distances—high sugar tolerance, low temperature, and pulse rate, combined with the hypersecretory conditions—much hair, high blood pressure, excitable temperament, and with excessive sexual irritability. In these epileptic attacks, the patients frequently have so called uncinat fits, due probably to the neighborhood symptoms of an enlarged pituitary pressing upon the uncinate gyrus of the temporosphenoidal lobe. These patients frequently have dreamy states associated with gusta-

tory and olfactory impressions without true convulsions; and their epileptic aura is usually one of taste or smell disturbance (17). In dyspituitarism also, we may find a generalized status thymicolymphaticus with excessive acromion formation, frequent nose bleeds, and intermittent mucous discharges into the pharynx. Now, clinically, we find all conditions and combinations of the foregoing signs and symptoms, and added to them, I have also frequently noticed the abnormal adaptation of the patient to his condition and environment; and in his emotional bearing and control. Usually patients with the clearly defined hyperactive pituitaries show in their early and transitional stages, precocious cerebral development. One case in point is that of a girl eleven years old, who speaks three languages, plays chess, can cook and prepare an entire meal, and in her general manner is self contained and calculating, exhibiting self restraint in an unusual degree; who usually, by quiet poise indicating great latent power, controls the situation in which she finds herself with playmates older than herself. The hypopituitary, on the other hand, is mentally and bodily sluggish, dull and apathetic, and backward at school; and he loses control at the slightest difficulty, and is dismayed at the problems he faces.

The importance is in the early recognition of pituitary disturbance. Does the patient that you believe simply to be under par or overstrung, complain of headaches, does he readily get drowsy, has he subnormal temperature, does his nose bleed readily, has he deficient perspiration even on the hottest day, are his eyes too close or too far apart to be normal, is his hairy growth peculiar in any particular, are his teeth abnormal in character or spacing? These, and similar queries indicated herein, that heretofore received but scant attention from us on account of their seeming irrelevance to the condition complained of, are the vanes pointing in the direction whence comes the storm. If you wait until his visual fields are destroyed, or his choked discs cry for relief, or his acromegaly has become a real deformity; then, when all the world and the textbooks tell you the disease is pituitary beyond doubt, your patient is beyond help. The early recognition of pituitary disturbance is equivalent to a reclassification of disease entities heretofore described as functional.

## BIBLIOGRAPHY.

1. C. J. WIGGERS: *Proc. Soc. Exp. Biol. and Med.*, 11, viii, 1910. 2. C. J. WIGGERS: *Ann. Jour. Med. Sci.*, cxli, 1911. 3. M. MAGNUS and J. SCHAFER: *Physiol.*, 1901. 4. H. H. DALE: *Proc. Roy. Soc. Med.*, vii, 34, 1914. 5. H. H. DALE: *ibid.*, xix, 1912. 6. E. A. SCHAFER: *Structure*, 1912, x, 143. 7. H. H. DALE: *ibid.*, x, 143. 8. H. H. DALE: *ibid.*, x, 143. 9. H. H. DALE: *ibid.*, x, 143. 10. H. H. DALE: *ibid.*, x, 143. 11. H. H. DALE: *ibid.*, x, 143. 12. H. H. DALE: *ibid.*, x, 143. 13. H. H. DALE: *ibid.*, x, 143. 14. E. A. SCHAFER: *ibid.*, x, 143. 15. A. FRÖHLICH: *Ein Fall von* *ibid.*, x, 143. 16. A. FRÖHLICH: *ibid.*, x, 143. 17. H. H. DALE: *ibid.*, x, 143.

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**Alexander-Adams Operation.**—In the *Dublin Journal of Medical Science* for September, Dr. D. G. Madill reports a method of doing this operation by a single incision.

## SOME USES FOR XYLOL IN DERMATOLOGY.

By JOHN E. LANE, M. D.,  
New Haven, Conn.

The use of xylol has been chiefly confined to microscopists, and the knowledge of its properties has hardly extended beyond their laboratories. It has been very little used in medicine. It possesses, however, some qualities which should render it a valuable aid in the treatment of a few diseases of the skin, and my experience has convinced me of its usefulness, and that it deserves to be better known.

Xylol (xylene, dimethylbenzene) is a coaltar product, colorless, with a slight aromatic odor, insoluble in water, but freely miscible with ether, alcohol, acetone, etc. It is quite inflammable. It is a rapid solvent of fats and a powerful parasiticide. When undiluted xylol is applied to any considerable surface of the skin it produces a sharp burning sensation, which in sensitive places is severe, but which lasts for a few minutes only. It does not cause dermatitis or other traumatic eruptions, and may be applied daily for a week or ten days without producing more than a slight desquamation. It evaporates rapidly, leaving no odor.

Xylol was first used in medicine by Zuelzer, who, in 1872, recommended it as a specific for smallpox, but it soon proved to be useless in that disease.

Sabouraud was, I think, the first to use it in dermatology, and the chief things for which he recommended it, and to which I wish particularly to call attention, were pediculosis, seborrhea, and allied diseases. My attention was called to it at his clinic at l'Ecole Laillier, and I have made use of his talks at the clinic and of his published articles for some details of its use.<sup>1</sup>

**Pediculosis capitis.** All varieties of pediculi are instantly killed by contact with xylol, and as it penetrates the ova with great facility they are killed almost as quickly as the parasites themselves. In uncomplicated cases of pediculosis capitis, in individuals whose skin is not especially sensitive, xylol may be used undiluted. So used its action is somewhat more rapid and efficient than when it is diluted. When for any reason it is advisable to dilute it, the following mixture will be found satisfactory: Ether 25, alcohol 25, xylol 50. A cotton or gauze sponge is moistened with xylol or this mixture, the scalp is vigorously and rapidly rubbed with it, and the hair, in small strands, drawn through it. If this is thoroughly done all the parasites and ova will usually be destroyed by one application.

When the pediculosis is complicated by excoriations or by crusts of impetigo, this method is too painful for general use. Here the best method of procedure is to apply a thick layer of petrolatum to the head for a day or two to allow the excoriations to heal and to soften the crusts. At the end of this time the excess of petrolatum is wiped off, the softened crusts are dislodged with a comb, and the head is thoroughly washed. As soon as the scalp is fairly clean the following ointment is applied to the scalp and hair: Xylol 4, petrolatum 30. The excess of this is removed the following day, the

<sup>1</sup> *Tractions dermatologiques*, 419, p. 312.

hair combed with a fine comb, and the head washed. If ova still cling to the hair they may be removed with an acetic acid mixture, but this is usually necessary for cosmetic reasons only, for they will have been killed. Unhealed spots of impetigo are treated in the usual way. If the parasites and ova are not all destroyed the process may be repeated in a few days, though this second application will rarely be found necessary.

*Pediculosis pubis.* The use of xylol in this condition is limited, because of the severe burning which it causes on the sensitive skin of the regions affected. This burning is but little less severe when diluted xylol is used and is very painful for a few minutes. On the other hand, it is soon over, and a few patients will endure it in preference to the use of mercurial ointment, with which they frequently have had experience. It is not wise to use it in any case without a preliminary application to a small area, so that the patient may decide whether he is willing to support the pain of a wider application. Even then it is wise to apply it to a comparatively small area, especially on the scrotum, wait for the burning to stop, and continue in this way till the whole surface is covered. In cases where the parasites are widely distributed on the abdomen, chest, and axillae, it is of service, for these regions can be sponged even if it is not used about the pubis. In this way the area remaining to be treated by some other method is greatly reduced.

*Seborrhea and acne.* In seborrhea of the face, and the allied conditions, comedones and acne, xylol has a distinct value, and I have found nothing comparable to it for cleansing qualities. Its most striking effect is seen in cases of seborrhea complicated by large numbers of black headed comedones. By its rapid solvent action, a large amount of the excessive secretion and dirt that has accumulated in the outlets of the glands can easily be removed. The effect, on the appearance of the patient, of one vigorous application is often remarkable. A large number of the smaller black points disappear, and the face presents a much cleaner appearance. The results of further use are also usually gratifying.

In addition to the usual treatment for this condition, the patient is instructed to wipe the whole affected area, rapidly but firmly, with a small gauze sponge moistened with xylol or the mixture given above. This is to be done just before the application of the ointment or other preparation that may be used. It may also be used to remove any of the ointment that remains after the attempt to wash it off the next morning. The length of time that the use of xylol is continued is varied according to the conditions and their improvement. If slight desquamation is desired, it is applied daily for a couple of weeks. As improvement begins, it is not discontinued, but is used less often for the necessary length of time. In the severer cases of acne it is of value, but as is naturally to be expected, its action is not so marked.

*Some other uses.* In seborrhea of the scalp the disagreeable oiliness of the hair can be prevented to a considerable degree by a daily friction with a small sponge moistened with xylol. The usual treatment of this condition is of course used at the same time. In stubborn cases of leptothis, in which

the patient is unwilling to shave, xylol will rapidly remove the masses of zoogloea from the hair. In cases of alopecia areata and other conditions in which the use of a mild counterirritant is indicated for long periods, xylol is of use, as it is colorless and is easily applied.

My use of xylol has been confined to the foregoing conditions, and though its use may be somewhat extended, it is probable that it will be found to be quite restricted. Yet if it should be limited to acne and allied diseases its value in these conditions alone would be sufficient reason for calling attention to it.

PROFESSIONAL BUILDING.

## OBESITY AND ITS TREATMENT.

BY FRANK ANTHONY CUMMINGS, M. D.,  
Providence, R. I.

Realizing, as I do, the large number of patients who come to the office of the general practitioner looking for relief from obesity, I am presenting this paper in an effort to give an idea as to what obesity is and how results may be obtained which will please both patient and physician.

There are practically no textbooks which give a clear, practical idea of obesity or any definite working basis to guide in the treatment, and I know of only one medical school where practical dietetics receives serious attention. The vast number of instructors limit their teaching to the caloric theory and give very little time to the percentage columns in the various lists of foods which are now so common.

The caloric theory of working out a diet is of undoubted value, but in obesity we may give a far better diet if we follow the percentage columns as well as the caloric values, because then we can give a wider variety of food.

The scope of this paper will be a discussion of obesity in itself and not of other conditions complicated by obesity. This is not as simple as it may appear, because the internal organs of the body are all affected and present symptoms which mislead and take attention from the real cause of the condition.

*Etiology.* Obesity, in the majority of cases, occurs after the thirtieth year, at a time when most men and women have attained a position in life where they can enjoy more of the luxuries of life and they eat more and richer food, at the same time reducing their exercise. This results in incomplete oxidation, and the digested food, not being used up, is stored as fat and distributed over the body.

Another factor is the disturbance of the internal secretions, especially those of the thyroid, pituitary, testes, and ovaries. These glands have a definite control over metabolism. Heredity, of course, plays its part, but far less often and in a much smaller way than has been supposed.

*Pathology.* The internal organs are adjusted to take care of an amount of work which is in proportion to the height and framework. The organs of a man five feet two inches in height cannot do the work of a man five feet ten inches in height without definite signs of the added strain. Again, as we ad-



vance in age the organs show signs of wear, and their work should be reduced just as physical labor is reduced as we grow older. The pathology of obesity is, therefore, simple. Each pound of extra weight means more arteries and veins through which the heart must pump blood. The heart must, therefore, increase in size, and the blood pressure must increase in order that the stream may have sufficient force. This calls on the reserve force of the heart, which may be needed at any time to aid in fighting disease.

The liver and kidneys become congested and, owing to the sluggish circulation, the stomach and intestines are unable to carry on their work and digestion is impaired. This condition often gives rise to the much abused diagnosis of dyspepsia and intestinal stasis.

*Symptoms.* The symptoms are those of overwork. The patient complains that he tires easily and that on slight exertion he becomes short of breath and cannot do things which formerly were easy. The preponderance of carbohydrates in the diet on which he lives, gives rise to more or less gastric distress; indigestion and constipation often follow. Later, signs of absorption appear and headache, migraine, neuralgia, and even neuritic pains are common, as also are joint pains usually termed rheumatism. Another common symptom is nocturia.

*Physical examination.* In the moderately obese under thirty or thirty-five years of age, physical examination is usually negative and the patient presents only a group of symptoms on which we can work. After thirty-five years, and in younger patients who are excessively fat, we may find the pulse regular and full and the blood pressure increased. The heart is usually increased in the transverse diameter and there may be a systolic murmur at the apex. This murmur can be brought out more clearly by having the patient go through a few setting up exercises. The liver is enlarged downward and may be easily felt outside of the right rectus below the costal margin. More frequently than not, there is a small amount of edema about the lower limbs. The urine may be decreased in amount, the specific gravity higher than normal, and at times a slight trace of albumin may be obtained.

*Treatment.* Before planning any treatment for these patients, it is absolutely necessary that we should obtain a complete history, including an average day's diet and especially the foods of which the patient is very fond. This must be followed by a searching examination to rule out organic disease.

After much study under the guidance of Dr. G. Carroll Smith, of Boston, who, himself a pioneer in dietetic work, has taught me much, I feel that the routine which I am about to suggest will reduce the weight and at the same time not be a punishment to a class of patients truly sick and too often neglected. Modern textbooks outline the treatment under the heads of diet, exercise, spas, drugs, etc. Let us consider them in the same way. I wish to speak first of exercise in the treatment of the obese patient, especially in the patient who is thirty or more pounds over weight. I do this, because the quicker exercise is eliminated in these cases, the better will be the results for the patient.

Why physicians persist in recommending long fast

walks, the use of the medicine ball, gymnasium apparatus, heavy massage, etc., in cases where the heart is already overtaxed, is hard to understand. In the moderately obese patient of, let us say, fifteen or twenty pounds over weight, light exercise, such as short slow walks on level ground is permissible provided that the heart is in good condition. But, in the really obese patient, whose heart is using up its reserve force pumping blood through extra fat, strenuous exercise, even an exciting game of golf, is a constant source of danger. It will, sooner or later, be followed by a dilatation of the heart and we then have a serious condition to treat, where previously we had a simple condition, easily treated. A strict rule in the treatment of any obese patient, twenty-five or more pounds over weight, should be, *allow no exercise, except short walks on level ground, until one half of the excess weight has been removed.* Then exercise may be gradually increased as the condition warrants.

*Spas.* Under this treatment comes the drinking of large quantities of mineral waters. In itself, this is of doubtful value, because all of this fluid must pass into the blood stream and add to the work of the heart. At the various spas the strict routine with the restriction in diet is the true factor in producing results. In fact, if patients were restricted at home as they are at these resorts, they would get equal or better results. That this treatment is not lasting in its effects is shown by the fact that patients return each year for treatment and then go back to their old method of living at home. They gain what they have lost and often add a little more.

*Diet.* Diet is the method of choice and we rely almost entirely on the diet in treating our reduction cases. Textbooks, as a rule, devote about ten lines to diet and give pages to exercises, baths, etc., yet recognize diet as the all important means of reduction. The diets suggested are narrow in the choice of foods and so limited in amount that a patient will follow them a very short time and then give them up because they would rather be fat than starve.

Obese patients should be divided into two great classes: First, those in whom a rapid reduction is necessary because of some cardiac or other disturbance; second, those in whom a slow reduction will produce the desired results. Whenever possible, we use the gradual reduction method, because we do not cause any great inconvenience to the patient, the skin contracts more evenly, and wrinkles are avoided. Again, the patient develops unconsciously a new mode of living and does not tend to return to foods which caused the fat.

In making up a diet we endeavor to give the patient many different kinds of food. We reduce the fats and carbohydrates as much as possible, and give an increased amount of protein. By increasing the protein, the strength is maintained because it is from the nitrogenous foods that we get our strength. Cane sugar, candy, ice cream, and sweet desserts are eliminated as are also liquors of all kinds. If, however, the patient has been a heavy user of liquor, it would be well to reduce the allowance gradually, but it is far better to omit all malt liquors at once. Bread is either omitted entirely from the diet or permitted, in small amounts, three mornings a week with eggs. Potatoes are made to take the place of

bread, and this because bread is forty-six to fifty-four per cent. starch, while potato is only eighteen per cent. Hence, one slice of bread is the equivalent of almost three potatoes in starch value. Any of the fruits except bananas are allowed, and may be taken raw or cooked, but must be served without sugar. White fish and any meat except beef and pork products are permitted. For dessert we allow the equivalent of one water cracker and a small amount of cheese, or any of the cooked fruits. Liquids are reduced so that not more than seven cups or glasses of fluid are taken in a day. This includes soup.

Perhaps a clearer idea of our method would be obtained from the report of a case.

CASE. F. H., woman, aged forty-three years; married; father died at sixty-two years of Bright's disease; mother died at fifty-two years after operation for cancer of the breast; one brother and one sister living and well, no other cancer known. Had never been sick except for present illness, which dated back a few years; periods regular, accompanied by severe headache; no children; one miscarriage at three months. Had been gaining weight for seven or eight years. During the past five years had tired easily and become short of breath on slight exertion; for past three years had been constipated and had several attacks of indigestion; for past two years had had almost constant headache and severe pains in shoulders and running down arms to the fingers. These pains came on in spells and forced her to go to bed and remain quiet; had been treated with various medicines, and following a diagnosis of neuritis was given many electrical treatments which served only to aggravate the trouble. Had no nocturia; bowels moved only with medicine.

Her average diet was: Breakfast, fruit with sugar or cream and sugar, shredded wheat biscuit with cream, one or two slices of toast with plenty of butter and one cup of coffee with cream and sugar. Luncheon, a salad with mayonnaise dressing or cold meat with one vegetable, two slices of bread with butter, dessert of ice cream or pudding, and a cup of tea. Dinner, soup, meat or fish, especially beefsteak or roast beef, two vegetables, two or three slices of bread and butter; dessert, cup of tea with milk and sugar. At each meal two glasses of water were taken beside the tea or coffee. Between meals chocolate, ice cream, and soda were taken to excess.

Physical examination: Height, 5 feet 2 inches; weight, 186 pounds; blood pressure, 148 systolic; pulse, 76. Heart 4.5 cm. to right of midsternum and twelve cm. to the left; action regular, first sound indistinct, no murmur heard after exercise. Liver palpable one inch below the costal margin on inspiration. Very slight edema about the ankles. Urine, high color, specific gravity 1.026, no albumin and no sugar; sediment showed epithelial cells, a few white cells, uric acid and amorphous crystals, no pus, blood or casts.

This was clearly a case of obesity, with symptoms arising from congestion and absorption from the intestinal tract.

The patient was put on a gradual reduction diet and given one teaspoonful of Epsom salts each morning. This produced three or four watery stools a day, and at the end of two weeks she had lost eleven pounds; as there were no signs of edema, the salts were omitted and the diet was continued. From this time on the average loss was one to one and one half pound a week. After the first week, the neuritic pains had ceased, and at the end of the third week the headaches disappeared entirely. She took up her home and social duties without fatigue and for the first time in years was able to embroider all afternoon without pain in the arms.

When last seen, seven months after beginning, the weight was 142 pounds, the blood pressure 128 systolic, and the liver had decreased in size so that it could not be felt below the margin. Beside the disappearance of symptoms, it is interesting to note

the drop in blood pressure. This is a constant result in cases of simple obesity, and in cases of obesity complicated by cardiac disease. When nephritis is a complication of obesity, we rarely see much reduction of blood pressure while the patient loses weight. Nevertheless, the obese nephritic should always be reduced in weight, when many of his symptoms disappear.

In these cases few drugs are necessary. It is often necessary to give a mild laxative after edema has disappeared, and for this I use sodium phosphate, Carlsbad salts, or a simple pill, as aloes, strychnine, and belladonna with a little phenolphthalein. The cautious use of thyroid in one half and one grain dose, in some cases, will be of assistance.

#### SUGGESTIONS

Take a careful history and make a complete physical examination.

Give a written diet list of what the patient may have. Be sure it is liberal and gives a variety.

Do not allow fish and meat at the same meal.

If the patient does not lose weight, cut down the amount of food at a meal and reduce the foods of higher starch content.

Have your patients weigh themselves regularly and report as often as necessary.

Study the percentages of fats and carbohydrates as well as the caloric values of foods.

A sample diet such as was used in the case reported follows:

**Breakfast.** Baked apple, peaches or pears, stewed prunes or apricots, melons, orange, one half grapefruit, berries in season, Malaga grapes (all fruit without sugar or cream); eggs every other morning, soft boiled, dropped, or poached; fish, broiled scrod, haddock, halibut, finnan haddie, smelts, perch, trout, flounder, scup, bass, or pickerel; chops, lamb or veal; honeycomb tripe, vegetable or meat hash; baked potato; one cup of coffee without sugar or cream (saccharin, if desired). On mornings that eggs are allowed two thin slices of dry toast may be taken.

**Luncheon.** Raw oysters or little neck clams; fish or chops, if not taken for breakfast; cold meats; baked or boiled potatoes; broiled fresh mushrooms; fruit or vegetable salad with French dressing; fruit, as before; one cup of tea, glass of water, or separated milk.

**Dinner.** Oysters or clams; thin soups, as beef consommé, clear green turtle, strained chicken; fish, as before, soft shell crabs, crab meat; roast lamb, veal, mutton, white meat of chicken, quail, partridge, or rabbit; corned beef or tongue boiled six hours; white potatoes, lettuce, celery, radishes, tomatoes, spinach, or any of the fresh greens, asparagus, cole slaw, cauliflower, string beans, cabbage (chopped fine and boiled ten minutes in salted water), beets, squash, onions, carrots, parsnips, sour or dill pickles; fruit or vegetable salad with French dressing; dessert, fruit or crackers and cheese (Brie, Camembert, cottage, or skimmed milk); one glass of water or cup of tea without sugar or milk.

#### SUGGESTIONS.

Give small meals. Vary the food as much as possible.

543 BROAD STREET.

## THE SCHICK TEST

*One Year's Institutional Experience with Its Relation to Passive and Active Immunization in Diphtheria.*

BY JEROME ZUCKERMAN, M. D.,

New York.

*From the Department of Pediatrics, St. Alfred's Hospital.*

Recent studies of the Schick test in relation to diphtheria immunity, more especially those of Park and Zingher and of Kolmer and Moshage, have shown its practical value for children in contagious hospitals and for older children and adults outside of hospitals. All of this work has been necessarily carried out over a short period. My own study differs from previous investigations in that it comprises a year's experience with the test. In addition, it has been possible to carry out tests on children who were protected passively by means of the well known diphtheria antitoxin, and, to a less extent, upon others who have been immunized actively with the toxin-antitoxin mixtures recently advocated by von Behring.

The technic of the Schick test as carried out consisted of injecting 0.1 c. c. of a one in 500 toxin; later 0.2 c. c. of a one in 1,000 toxin. In some instances where the reactions were doubtful the amount was increased, without the slightest injury, to 0.2 c. c. of a one in 500 toxin. This was injected intracutaneously in the upper anterior surface of the forearm. As is well known, the reaction is considered positive when it results in the appearance of an erythematous area within twenty-four to forty-eight hours; this fades gradually, leaving a desquamating surface. It is judged negative when no local reaction appears; in other words, when the toxin is neutralized by the antitoxin in the body fluids.

All the children in the institution, varying in age from four months to six years, were tested—494 in all, some of them many times. The following tables show the results obtained:

TABLE I.—SCHICK TEST.

| Age.   | Positive reactions. | Negative reactions. | Proportion positive. |
|--------|---------------------|---------------------|----------------------|
| 1 year | 100                 | 14                  | 38.5 per cent.       |
| 2 "    | 100                 | 30                  | 64.6 per cent.       |
| 3 "    | 59                  | 30                  | 47.7 per cent.       |
| 4 "    | 105                 | 143                 | 42.3 per cent.       |
| 5 "    | 107                 | 107                 | 48.6 per cent.       |

TABLE II. POSITIVE REACTIONS COMPARED WITH THOSE OF OTHER AUTHORS.

| Age.      | Under five years. | One to five years.        |
|-----------|-------------------|---------------------------|
| Schick    | 7 per cent.       | 3 per cent.               |
| Kolmer    | 12 per cent.      | 54 per cent.              |
| Park      | 40 per cent.      | 60 per cent.              |
| Zuckerman | 38.5 per cent.    | 49 per cent. <sup>1</sup> |

<sup>1</sup>From the American Journal of Hygiene, Vol. 17, No. 2.

The results shown in Table I are on the whole similar to those published by others. The total proportion of positive reactions—forty-eight per cent.—is slightly higher, which may be accounted for by the fact that the group under consideration included children under six years, whereas other studies embraced older children. As is well known, younger

children are more susceptible to diphtheria and must therefore be expected to yield a higher percentage of positive reactions. Turning our attention to Table II, it will be noted that as regards children below one year my results are similar to those of Park, but differ absolutely from those of Schick and Kolmer. In relation to Schick's report, there is no question as to the basis for this difference. It rests simply upon the fact that Schick tested many newborn infants, infants who still retained some of the immunity carried over from the mother. As to the variation from the results of Kolmer, an interpretation is less evident. Further tests will have to be carried out to determine the nature of the discrepancy. As to the second column of this table (Table II), which tabulates the tests on children between one and five years old, the differences are so slight as to require no comment or investigation. It may be roughly stated that about fifty per cent. of children between one and five years of age are susceptible to diphtheria.

To determine the duration of passive immunity small groups of children were immunized with antitoxin varying in strength from 500 to 5,000 units. All these children previously had been found to react positively to the Schick test. Subsequent to the injection of antitoxin, after an interval of perhaps two to four weeks, it has been generally noted that the test is no longer negative, but that a positive reaction reappears. This is coincident with the disappearance of the antitoxin in the blood, as Park and Zingher clearly showed. Following the return of the skin test, each group was reinjected with the same amount of antitoxin and again tested. The children were in all instances tested every other day until they reacted positively. In one group, comprising eight children, a third injection of antitoxin was given.

The following tables show the relation of the repeated injections of antitoxin to the reappearance of the Schick test.

TABLE III.

## a. Time of Return of Positive Reaction after Three Injections of 1,000 Units of Antitoxin.

| Case No. | No. of days following first injection. | No. of days following second injection. <sup>2</sup> | No. of days following third injection. <sup>3</sup> |
|----------|--|--|---|
| 1        | 7                                      | 0  | 18  |
| 2        | 7                                      | 0  | 18  |
| 3        | 7                                      | 0  | 24  |
| 4        | 7                                      | 0  | ..  |
| 5        | 7                                      | 32   | 30  |
| 6        | 7                                      | 23   | 18  |
| 7        | 23                                     | 30   | 18  |
| 8        | 27                                     | 32   | ..  |

<sup>2</sup>Second injection of 1,000 units given twenty-nine days after first.<sup>3</sup>Third injection of 1,000 units given forty days after first.

## b. Time of Return of Positive Reaction after Two Injections of 1,000 Units of Antitoxin.

| Case No. | No. of days following first injection. | No. of days following second injection. |
|----------|--|---|
| 1        | 17                                     | 20                                      |
| 2        | 17                                     | 28                                      |
| 3        | 17                                     | 28                                      |
| 4        | 17                                     | ..                                      |
| 5        | 25                                     | 20                                      |
| 6        | 37                                     | 20                                      |
| 7        | 19                                     | 20                                      |
| 8        | 39                                     | 28                                      |
| 9        | 41                                     | 28                                      |
| 10       | 41                                     | 28                                      |
| 11       | 41                                     | 40                                      |

Interval between two injections of antitoxin was fifty days.



## c. Time of Return of Positive Reaction after Two Injections of 500 Units of Antitoxin.

| Case No. | No. of days following first injection. | No. of days following second injection. |
|----------|--|---|
| 1        | 18                                     | 18                                      |
| 2        | 18                                     | 20                                      |
| 3        | 18                                     | 20                                      |
| 4        | 18                                     | 24                                      |
| 5        | 18                                     | 28                                      |
| 6        | 18                                     | 28                                      |

Interval between two injections of antitoxin was fifty days.

## d. Time of Return of Positive Reaction after Two Injections of 500 Units of Antitoxin.

| Case No. | No. of days following first injection. | No. of days following second injection. |
|----------|--|---|
| 1        | 24                                     | 40                                      |
| 2        | 42                                     | 30                                      |

Interval between two injections of antitoxin was fifty days.

The statistics shown in Table III would indicate that the period of passive immunity was variable. A few children again showed a positive reaction as

tions were given subcutaneously or intramuscularly. The interval between the injection of the mixtures and the development of immunity varied from eight days to three weeks. In the later work of Park and Zingher larger doses (0.5 to one c. c.) of mixtures were given. They found that where antitoxin was present in the blood, the injection induced a marked increase, whereas where it was deficient, as a rule slight or no increase of antitoxin resulted.

Table IV shows seven cases which were selected because they reacted strongly to the skin test. Four injections of toxin-antitoxin were given over a period of nine weeks, at intervals of two, four, and three weeks respectively. The mixtures used were slightly toxic to guineapigs. The children were tested at frequent intervals.

TABLE IV.—ACTIVE IMMUNIZATION WITH TOXIN-ANTITOXIN MIXTURES

| Case No. | Schick. | T. A. Mixture, 1 week later. | Schick, 2 weeks later. | T. A. Mixture, 2 weeks later. | Schick, 1 week later. | T. A. Mixture, 1 week later. | Schick, 1 week later. | T. A. Mixture, 1 week later. | Schick, 1 week later. | T. A. Mixture, 1 week later. | Schick, 1 week later. | T. A. Mixture, 1 week later. |
|----------|---------|------------------------------|------------------------|-------------------------------|-----------------------|------------------------------|-----------------------|------------------------------|-----------------------|------------------------------|-----------------------|------------------------------|
| 1        | +++     | 1 c. c.                      | +++                    | 1 c. c.                       | +++                   | 1 c. c.                      | +++                   | 1 c. c.                      | +++                   | 1 c. c.                      | +++                   | 1 c. c.                      |
| 2        | +++     | 1 c. c.                      | +++                    | 1 c. c.                       | +++                   | 1 c. c.                      | +++                   | 1 c. c.                      | +++                   | 1 c. c.                      | +++                   | 1 c. c.                      |
| 3        | +++     | 1 c. c.                      | +++                    | 1 c. c.                       | +++                   | 1 c. c.                      | +++                   | 1 c. c.                      | +++                   | 1 c. c.                      | +++                   | 1 c. c.                      |
| 4        | +++     | 1 c. c.                      | +++                    | 1 c. c.                       | +++                   | 1 c. c.                      | +++                   | 1 c. c.                      | +++                   | 1 c. c.                      | +++                   | 1 c. c.                      |
| 5        | +++     | 1 c. c.                      | +++                    | 1 c. c.                       | +++                   | 1 c. c.                      | +++                   | 1 c. c.                      | +++                   | 1 c. c.                      | +++                   | 1 c. c.                      |
| 6        | +++     | 1 c. c.                      | +++                    | 1 c. c.                       | +++                   | 1 c. c.                      | +++                   | 1 c. c.                      | +++                   | 1 c. c.                      | +++                   | 1 c. c.                      |
| 7        | +++     | 2 c. c.                      | +++                    | 2 c. c.                       | 2 weeks later         | 2 c. c.                      | +++                   | 1 c. c.                      | +++                   | 1 c. c.                      | +++                   | 1 c. c.                      |

early as the seventh day; however, most of them did not react positively until eighteen to twenty-eight days after the injection, one case reacting negatively for forty-six days. No difference was noted in this regard between children receiving 500 units and those receiving twice the amount. In Table III, *a*, it will be seen that several cases reacted positively after seven days. This is difficult to account for. It cannot be due to any difference in antitoxin, as in all tests the same opus was used; nor can it be attributed, in all probability, to a hastening of the reaction by some previous injection of antitoxin. In this connection it should be stated that a precocity in the appearance of reactions was described by Park and Zingher to follow two or more injections of antitoxin; in other words, after the second injection, antitoxin seemed to be retained for a shorter period than after the initial inoculation. This was not our experience, or rather we found marked exceptions to this rule. A glance at Table III, *d*, in this connection is convincing; it shows that in one instance this sequence was reversed, the reaction appearing twenty-three days after the first inoculation and not until forty-six days after the second. However, the most important fact from a clinical point of view is that repeated injections of antitoxin have no cumulative effect as regards immunization.

As to active immunization with toxin-antitoxin mixtures, in 1909, Theobald Smith showed that, by injecting such mixtures into guineapigs, an active immunity could be produced, lasting for several years. Where toxin-antitoxin mixtures were used, with excess of toxin, enough to produce local lesions, a much higher degree of immunity was produced than when using neutral mixtures. Conversely, when an excess of antitoxin was used, immunity was reduced. Von Behring, in 1913, applied this work to human beings, injecting combined mixtures, neutral or slightly toxic, in doses of 0.05 to 0.1 c. c., repeated in from seven to ten days. These injections

It will be noted in the first six cases shown in this table that *fourteen weeks after the first injection of toxin-antitoxin mixtures, four children still gave a negative skin test*,<sup>1</sup> one a faint reaction, and one gave a marked reaction nine weeks later. When we note how long it took for a positive reaction to become negative, we find that two cases reacted negatively after three injections, eight weeks after initial injection, and have remained negative for six weeks. The first five cases showed a faint reaction after six weeks. Case VII is particularly interesting. This child received three injections at intervals of two weeks. Although it reacted negatively six weeks after the first injection, it became faintly positive again nine weeks after this period.

From the results obtained in these seven cases it is evident that immunization conferred by toxin-antitoxin mixtures, continued over a considerable period, is of far longer duration than that conferred passively with antitoxin. The number of cases is too small, however, to draw exact conclusions as to how long immunization lasts, when obtained in this way. It should be stated that no harmful effects, either local or systemic, were evinced as the results of these inoculations. Their use must be regarded as safe, and a thorough test of the method seems not only warranted but desirable.

Numerous interesting observations arose during the course of the work. For example, of the many cases of true clinical diphtheria occurring during the year, all had shown positive skin reactions previously. A few cases with negative reactions showed positive cultures to diphtheria. These at no time developed any clinical manifestations and were therefore considered bacilli carriers. In some cases with doubtful clinical signs, diphtheria was in this

<sup>1</sup>Since the writing of this paper, the four negative cases have been retested twice, the first six weeks later and ten sixteen weeks later. Of the first four cases, the four negative cases remained negative; the fifth gave a faint reaction. Case VII was positive. The four negative cases have now remained negative for thirty-four weeks.

way ruled out by the presence of a negative reaction. One case in particular may be cited. A child became very croupy, but showed no other clinical signs of diphtheria. Reference to our series of skin tests of the institution showed that the child had reacted negatively. We therefore looked upon the case as spasmodic croup and no antitoxin was given. The next day the croup had disappeared, and the child was apparently normal. The culture report a day later was negative.

It is evident from the foregoing that the Schick test can to some extent replace cultures and aid materially in the diagnosis of diphtheria. In the course of the year it has many times served to allay the apprehension of the house physician in cases of laryngeal croup.

From an administrative standpoint the Schick test has rendered marked service. The fact that it is necessary for us to immunize only cases giving a positive reaction has many points of advantage; the saving of antitoxin, the doing away with the labor involved in inoculating an entire ward of children, the prevention of more or less marked anaphylactic reactions. But further than that, it has replaced to some extent the isolating rooms for diphtheria. In a large institution, diphtheria is constantly making its appearance in the course of the winter, and in most asylums the problem of providing isolation, with the expense involved, is a difficult and ever recurring one. This winter, using the Schick as a guide and criterion, we have placed diphtheria carriers among children who gave a negative skin test, and in no instance has infection resulted.

In conclusion, I beg leave to acknowledge my gratitude to Dr. Alfred F. Hess for many valuable suggestions during the course of the work.

#### REFERENCES.

1. PARK, ZINGHER, and SEROTA: The Schick Reaction and Its Importance. *Ann. N. Y. Acad. Sci.*, *1914*.
2. KOHLER and M. SELLIG: The Schick Reaction for Immunity in Diphtheria. *Amer. Jour. Dis. of Children*, March, 1915.
3. THEOBALD SMITH: Active Immunity Produced by Balanced or Neutral Mixtures of Diphtheria, Toxin and Antitoxin. *Jour. of Exper. Med.*, ii, 1909.
4. PARK, ZINGHER, and SEROTA: Active Immunization in Diphtheria. Treatment by Toxin and Antitoxin Mixtures. *Journal A. M. A.*, Sept. 5, 1914.

### Therapeutic Notes.

**Use of Colloidal Gold in Surgery.**—R. Belbèze, in *Bulletin de l'Académie de médecine* for January 19, 1915, reports his experiences with this agent in cases with extensive infected wounds and severe, prolonged suppurative conditions. No untoward results were met with in giving 316 intramuscular and thirty-two intravenous injections of the remedy. By the first way one half to one dram (2 to 4 c. c.) was injected daily; the intravenous dose used was four to sixteen minims (0.25 to one c. c.). The intravenous injection is followed in twenty to thirty minutes by a chill; this gives way after a like period to a sensation of warmth, sometimes with sweating, the temperature meanwhile dropping one and a half to two degrees C. This drop is not permanent, and a series of three or more injections is advised, according to the case under treatment. Intramuscular injections produce similar, though less prompt and marked effects. Concurrently with the fall in temperature the patient's general condition

improves. In febrile suppurative cases in a condition of shock early intravenous injection of colloidal gold gives especially striking results. Favorable local effects are also produced, suppuration being modified and subdued, and tissue repair greatly activated. The author recommends the use of this agent in all serious general or local infections, including extensive suppurating wounds.

**Prophylaxis of Pyorrhœa alveolaris.**—E. L. Fisk, in the *Lancet-Clinic* for September 11, 1915, states that there is considerable evidence tending to incriminate endamebas as the cause of pyorrhea. These organisms are believed by some to be almost universally present, and this has suggested that they may be normal residents of the human mouth and harmless parasites. There is reason to believe, however, that some degree of gum impairment or infection is also very widespread, and that it is therefore advisable to take measures to destroy the endamebas wherever found. Emetine, used with success in amebic dysentery to destroy endamebas, is contained in ipecac, and Fisk calls attention to the fact that a simple, harmless preventive of pyorrhea is available in a mouthwash made by adding two drops of fluidextract of ipecac to a half glassful of water, which is to be used before retiring. This, it is stated, will not be of service in well established cases of pyorrhea, but in the earliest stages it may check the condition.

**Tulle as a Dressing Material in Skin Wounds.**—A. Lumière (*Progrès médical*, May, 1915) referred to the discomfort generally experienced by patients when dressings impregnated with dried wound discharges and pus were removed. The bleeding occasioned through the tearing of granulation tissues is another unpleasant feature; also, the fever often noticed after the dressing of a wound, owing to absorption of toxic material through the tissues laid bare by forcible removal of the dressing. To obviate these difficulties, the author sought to obtain some material which would neither adhere to wound surfaces nor interfere with the discharge of excreted material. After a number of trials, the most advantageous dressing medium was found to be tulle with meshes about two mm. apart, impregnated either with petrolatum or with a mixture of petrolatum, wax, castor oil, and balsam of Peru, melting at 30° C. The tulle is best cut in squares of various sizes, which are then piled up in metallic receptacles filled with the fatty impregnation material and sterilized by heating in the autoclave to 120° C. for twenty minutes. When needed, the tulle squares may be withdrawn one by one with sterile forceps and applied directly to wound surfaces. The utility of the tulle as a dressing material was conclusively shown in a six months' trial in military practice. Not only did the wounded submit without the least apprehension to dressings with this material, but the time required for tissue repair, all other conditions being equal, was found to be shortened through its use.

**Removal of Muscular Contracture in the Treatment of Wounds.**—J. A. Sicard and L. Imbert, in *Bulletins et mémoires de la société médicale des hôpitaux de Paris*, April 22, 1915, refers to the neces-

sity of distinguishing between muscular contracture and fibrotic contraction of muscles or tendons in the treatment of false positions of the extremities due to wounds. By interrupting the circulation in the affected limb for about ten minutes by means of a rubber band or Esmarch bandage applied at its root, this distinction can readily be made, muscular contracture disappearing whereas fibrotic contraction persists at the close of the period of constriction. Advantageous under these circumstances, moreover, is the injection of an analgesic solution into the contracted parts, painful and defensive reactions being thus reduced and manipulations facilitated. Correction of a faulty position due to muscular contracture can thus be rapidly effected, and a plaster apparatus subsequently applied without general anesthesia.

In many instances, however, the treatment by rigid immobilization fails, the faulty position recurring as soon as the plaster dressing is removed. To overcome this difficulty, the authors have recently resorted to injections of sixty per cent. alcohol into the tributary nerve branches supplying the affected muscles. Thus contractures of the biceps, coracobrachialis, and brachialis anticus were effectually overcome by injection of alcohol into the musculocutaneous nerve after its exposure, or contractures of the supinator longus, by similar injections into the nerve branches supplying this muscle. The injections should not be made into large nerve trunks with too extensive a distribution. The external branch of the spinal accessory (in spasmodic torticollis), as well as the musculocutaneous, already referred to, is an example of a nerve for which direct alcoholic injection is appropriate. In the case of other, larger nerves, the injections should be made into the collateral muscular branches, the aim being to render the contracted muscles they supply paretic for a period of a few weeks or months. Relaxation of the muscles immediately follows the injections. Subsequent mechanotherapy and massage are recommended for maintaining the muscular relaxation already regained. The majority of cases of localized myotonia can thus be greatly improved or even cured.

**Treatment of Lupus.**—P. G. Unna, in *Berliner klinische Wochenschrift* for March 1, 1915, says that in the treatment of small patches of lupus, fresh or recurrent, physiotherapeutic agencies such as the Finsen, Röntgen, or quartz light rays, radium, and the high frequency current are not required. The following brown ointment is highly recommended:

|   |                                |                    |
|---|--------------------------------|--------------------|
| R | Acidi salicylici, . . . . .    | aa 5ss (2 grams) ; |
|   | Zinci chloridi, . . . . .      | aa 5ss (2 grams) ; |
|   | Opil, . . . . .                | aa 5i (4 grams) ;  |
|   | Creosoti, . . . . .            | aa 5i (4 grams) ;  |
|   | Alipis lane hydroxi, . . . . . | 5i (8 grams) ;     |
|   | fiat unguentum.                |                    |

Fairly large lupus patches, according to Unna, can be satisfactorily dealt with by means of the foregoing preparation. The areas to which the ointment has been applied should be covered over with the thinnest available gutta percha paper or zinc oxide plaster. Redressing is required only once or twice weekly.

Another method of dealing with the lesions is

that in which corrosion alone is in view. Where a mixture in equal parts of lactic acid and the solution of antimony chloride of the German pharmacopoeia is not obtainable, the following mixture of salicylic acid, mercury bichloride, and creosote constitutes a preparation only slightly inferior in its effects:

|   |  |                     |
|---|--|---------------------|
| R | Acidi salicylici, . . . . .              | aa 5ss (2 grams) ;  |
|   | Hydrargyri chloridi corrosivi, . . . . . | aa 5ss (2 grams) ;  |
|   | Creosoti, . . . . .                      | gr. xlv (3 grams) ; |
|   | Colloidi, . . . . .                      | 5i (8 grams) ;      |
|   | Misce.                                   |                     |

This collodion may be painted one or a few times on an affected area as large as a silver dollar. As soon as local moisture due to irritation appears, the following healing paste should be applied, the collodion preparation being meanwhile painted over another part of the involved surface:

|   |   |                       |
|---|---|-----------------------|
| R | Sulphuris precipitati, . . . . .        | aa 5iiss (10 grams) ; |
|   | Calci carbonatis precipitati, . . . . . | aa 5iiss (10 grams) ; |
|   | Unguenti zinci oxidi, . . . . .         | 5iiss (80 grams) ;    |
|   | fiat unguentum.                         |                       |

**Treatment of Choreæ.**—J. Comby, in *Bulletin et mémoires de la société médicale des hôpitaux de Paris*, April 22, 1915, ascribes choreæ, in most instances, to a mild acute encephalitis, not specific in origin, but which may be due to one of a number of different causes, among which rheumatism is the most important. The author's treatment brought about rapid recovery in thirty-three cases of choreæ, and is described as follows: Rest in bed for two weeks is ordered, in partial isolation and with special provision for mental rest. A milk diet is given, six ounces (200 grams) of milk—which may be diluted with plain Vichy, or Vals water—being administered every two hours. With each feeding, in children over seven years of age and of average robustness, one tablespoonful of the following solution is given:

|   |                                 |                         |
|---|---------------------------------|-------------------------|
| R | Arseni trioxidi, . . . . .      | gr. 1/12 (0.005 gram) ; |
|   | Acacie, . . . . .               | 5iiss (6 grams) ;       |
|   | Aque aurantii florum, . . . . . | 5i (4 grams) ;          |
|   | Syrupi, . . . . .               | 5iiss (18 grams) ;      |
|   | Aque, q. s. ad, . . . . .       | 5iv (125 grams) ;       |
|   | Misce.                          |                         |

The amount of arsenic in the preparation is increased each day by one twelfth of a grain (0.005 gram) until five twelfths of a grain (0.025 gram) is reached, and is then given in descending doses down to one twelfth of a grain, the entire course of medication thus occupying nine days. If vomiting occurs once or several times, the arsenic is stopped temporarily or permanently. In children less than seven years of age, the amount of arsenic in the initial dose, as well as the increases in the succeeding doses, should be either two fifths or three fifths of the amounts above mentioned, the treatment being otherwise carried out in the same way as for older children. Thus given, arsenic, though on the threshold of toxic action, is well borne, and the course of treatment being brief, the child suffers less than it would from more moderate doses given for weeks. Experience in hundreds of cases has convinced the author of the safety as well as the efficacy of the procedure. The effect of the drug is ascribed to fixation in the cells of the brain and medulla and consequent correction of their disordered function.



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CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.

CLAUDE L. WHEELER, A.B., M.D.

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THE COMPLICATIONS OF ACUTE BRON-  
CHIECTASIS IN CHILDREN.

During the progress of the acute stage of bronchiectasis, it is usual to find pulmonary and peri-bronchial congestion giving rise to serious general symptoms, but this is a symptom rather than a complication. Complications in acute bronchiectasis, in the true sense, are uncommon in children, but pulmonary gangrene and even abscess have been observed, as well as pyemia in various forms, giving rise to septic joints, hepatic abscess, cerebral abscess, suppurating meningitis, and ulcerating endocarditis.

Severe hemoptysis is exceptional in young subjects, but it has been observed. The same may be said of emphysema, but the contrary is true of pleurisy, which may be either serous or purulent. Enlargement of the intertracheobronchial glands is almost always present, according to Triboulet, and controls another complication, namely, tachycardia, which in itself has a certain diagnostic value. Hypertrophy of the lymph nodes in varying degrees has always been noted in autopsies after infantile bronchiectasis, and must be distinguished from tuberculous infection, which invades the patient secondarily. In simple hypertrophy, the glands are quite large, having undergone marked fibrous degeneration without any trace of a tuberculous process.

The real complication of acute bronchiectasis, however, is the evolution of the process toward chronicity, which is unfortunately frequent, and the bronchial tubes being particularly sensitive, the tubercle bacillus finds a favorable soil for development. It is to be remarked that when this complication occurs, it assumes a slowly progressive course without any tendency to an acute miliary outbreak and also that it takes place in the stage of cachexia.

It is at the terminal period of bronchial dilatation that gangrene of the mouth and hypertrophic osteitis supervene. The former complication is, according to Delacour, peculiar to childhood and is met with more frequently in females. The buccal lesion cannot be said to belong exclusively to bronchiectasis, since it is encountered in other wasting diseases. This also applies to the Hippocratic finger, which may exist in any chronic disease of the respiratory apparatus.

Acute bronchiectasis in children possesses no pathognomonic symptoms, so that diagnosis is often difficult, and, consequently, the age and antecedent history of the patient, the evolution and peculiarities of the disease, as well as the predominance of any symptom which characterizes a series of clinical types, must be taken into consideration.

## CEREBRAL ROENTGENOLOGY.

The findings obtainable by cerebral röntgenology are generally neglected by the average physician. Although the Röntgen rays have been used for some time in a satisfactory manner in the determination of the extent and character of skull fractures, with the introduction of stereoscopic Röntgen exposures, much has been added to our means of their correct interpretation, particularly of depression fractures of the inner table and fractures at the base. On viewing the lateral aspect of the skull with the fluoroscope, we find that the slightest rotation of the skull in a lateral or vertical direction, produces decided changes in the shadows of the sella turcica. Cushing and others, in looking for evidences of broadening or shallowing of the sellar cavity or resorption of the clinoid processes, seem to be satisfied with a single exposure, although recent findings by Johnston show the need for stereoscopy.

Except for changes in the accessory sinuses, the main value of cerebral röntgenology is in connection with changes in the pituitary fossa, röntgenotherapy, acromegaly, brain tumors, the cerebral ventricles, epilepsy, hydrocephalus, the pineal gland, and fractures of the skull. Cushing, in *The Pituitary and Its Disorders*, distinguishes the following three types of deformed pituitary fossa: The clinoid apophyses and the dorsum sellæ are thickened; the

clinoid apophyses and dorsum sellæ are thinned or diminished in shadow owing to pressure absorption; and general destruction of the outlines of the pituitary fossa exists. The depth of the frontal sinus is enormously increased in hyperpituitarism and there is a distortion and invasion of the outlines of the sphenoidal sinuses in strumous degeneration of the hypophysis. Furthermore, we must not forget that although a double line projection of the sellar limitations in the lateral plane is usually due to hyperplastic clinoid processes, we must be careful in our technic, since faulty technic may produce a similar picture.

Although the normal size of the sella turcica may measure up to fifteen mm. anteroposteriorly and ten mm. vertically, it must always be kept in mind that changes in its size and shape do not necessarily mean true pituitary tumor, since such changes may occur with tumors near to or distant from the sella turcica, in increased intracranial pressure resulting from internal hydrocephalus, and even secondary to the influence of the other ductless glands on the development of the pituitary gland, as after castration, during pregnancy, in older multiparous women probably with ovarian insufficiency, and in myxedema. Differential diagnosis depends upon the clinical symptoms and the other Röntgen ray findings in the skull. Disorders of the pituitary gland itself show enlargement of the sella turcica, a thinning of the wall, and a thinning and absorption of more or less of the dorsum and of the posterior clinoid processes.

As with hyperthyroidism, so with hyperpituitarism we find some workers and students reporting favorable results from röntgenotherapy. Radiograms of the acromegalic skull show abnormal fossa outline, irregularity of the cranial parietes, enlarged frontal and maxillary fossæ, exaggerated postlamdboidal prominence, and a prognathous jaw. Brain tumor may present direct shadows when there is calcification within the mass or when it encroaches upon an air-containing accessory sinus. The most characteristic changes comprise local or general destruction of the bony wall of the skull, marked dilatation of the diploic veins, increased distinctness of the sutures, and characteristic increase in the thickness of the skull. Hypophyseal involvement is particularly common. It is surprising to note that, based on the shape, location, and course of the shadows, their varying intensity and peculiar character, a diagnosis of fracture of the skull complicated by distention of the cerebral ventricles with air or gas was made by Röntgen ray and confirmed by autopsy.

In epilepsy, Johnston (*Amer. Jour. Röntgen.*, N. S., I, 2, p. 83) reports a class of cases in which the pituitary fossa is largely or even completely

roofed over, the anterior and posterior clinoid processes meeting or even overlapping. He concludes that in such cases the epileptiform attacks are merely symptoms of hypophyseal disorder. Cushing too, as is well known, speaks of the possible relation of hypophyseal insufficiency to epilepsy. In this connection, however, since, as Skinner reminds us, just such shadows as have been described by Johnston may be easily produced by simple lateral or vertical rotation of the skull, the technic, including stereoscopy, should be so perfect as to eliminate misinterpretation.

The Röntgen ray findings in hydrocephalus vary with the type—wide separation of the sutures in the acute type in children, with absence of convolution markings in the external form or, in the internal form where the child survives, the presence of convolution marking; a thin skull, a large head, with or without depressions and separation of sutures in congenital internal hydrocephalus; and convolution depression shadows in the acquired type which persists.

What seems to be macroscopic calcareous deposits or concretions in the region of the pineal gland have been mentioned by Manges (*op. cit.*, I, 10, p. 361), but their exact importance cannot yet be stated with certainty. The location of depression fractures of one or both tables of the skull is helped by Röntgen ray, and the localization of foreign bodies is of considerable importance.

Cerebral röntgenology is becoming an important part of the science, and the demands upon the röntgenologist by the clinician must become more frequent, especially with the newer findings.

#### LET US NOT INFECT MOSQUITOES.

Very interesting results were reported from the plantation of a large fruit company in Honduras, by Dr. Nathan Barlow in the March number of the *Journal of Tropical Diseases and Preventive Medicine*. The plantation lies between the coast and the foothills and is composed partly of a strip of land which is an almost impenetrable jungle, crossed by numerous small streams, and teeming with insects, including anopheles. Eradication of the mosquitoes was an impossibility with the resources at hand, and, as a large part of the work is done by contract laborers not under control of the company, who live in palm leaf huts of their own construction and move frequently, neither screening nor systematic quinine prophylaxis could be carried out. At the beginning of the experiment over half of the 2,400 to 2,600 employees had malaria.

Inasmuch as none of the recognized methods of preventing infection of human beings were practic-

ably, the suggestion was made that perhaps infection of the mosquitoes could be prevented, when these insects could no longer carry the disease. An outline of the method used, is as follows: Every person who presented symptoms was secured during the first week of the disease and put under treatment. A laxative, usually calomel, followed by a small dose of magnesium sulphate, was given to begin with; twenty to thirty grains of quinine a day for two days; fifteen grains daily for a month; fifteen grains twice a week for two months more; rest and light diet during continuance of the symptoms. Special indications were met as they arose.

From January 26th to May 2d, the number of cases was well over 1,000; from June 20th to October 1st, they were 157; during October, nine, only one of which originated on the plantation. These astonishing results were obtained among an ignorant, illiterate, nomadic population in a tropical jungle, with settlements near by that were heavily infected with malaria. We agree with the writer that it does seem as though, in an enlightened community, a cooperative effort by physicians to diagnose promptly every case of malaria and to insist on a sufficiently long course of treatment ought to result in eradication of the disease. If we stop poisoning the mosquitoes, they will stop poisoning us.

#### PHYSICIAN AND HEALTH OFFICER.

Health departments suffer continued opposition in their work. This to be expected from the laity, who do not fully appreciate what is being done, and do not wish to have their liberty to do as they please interfered with. But the departments are also much opposed by members of the medical profession. There is one class of physicians of the old school, good practitioners in many ways, who resent or question modern aims and methods of prophylaxis, and actually boast of not reporting cases of certain infectious diseases. There are others who, to keep on the good side of the patient, to prevent investigation or quarantine of the household, fail to report contagious cases. Still others—where the physician is still allowed the privilege—send swabs from convalescent diphtheria patients, taken from regions of the mouth where no diphtheria germs are likely to collect. In fact, the physician, for his own end, can be more clever in conspiring against health regulations than the patient can ever be.

It is natural that the layman should wish to do as he pleases, and it is natural that the physician should wish to save his practice by catering to his client. Both are victims of circumstance. The layman can be coerced, but, as the health department must keep

on good terms with the doctors, it follows that it is not always found advisable to enforce its rules too vigorously, and it is left largely to the good inclination and unselfishness of the profession as to how literally they will be obeyed.

Fortunately the discovery of disease carriers has rendered quarantine much less of a trial and hardship. It only remains for the physician to do his part in missionary work in explaining why cases are reported, why cultures are taken from healthy people, and how the segregating of carriers checks disease. Under these new conditions it is hardly worth while not to comply with all requests, as well as with all the laws of the health department with regard to the reporting of infectious diseases. It is the duty of the physician, even if he does not consider it a privilege, to further the work of the department of health as far as possible.

#### THE COST OF PRESCRIPTIONS.

The opinion of the doctor is frequently asked regarding the price of prescriptions. Since comparatively few physicians have had any practical experience in pharmacy, but few are in a position to give an opinion based upon expert knowledge. The man who has not made a study of the retail drug business can hardly realize the variety of items which enter into the cost of a prescription.

Physicians, therefore, should be interested in a summary given in the October number of the *American Druggist* of the results of an investigation made in regard to the average cost of prescriptions. This investigation was carried out by nine pharmacists in Colorado, each of whom analyzed the cost of 1,000 consecutive prescriptions on his files. These results were summarized by F. W. Nitardy, who found that on the average the cost of material for 1,000 prescriptions was \$183.07, of time \$81.48, containers \$26.75, overhead expenses, rent, manager's salary, insurance, and similar general expenses \$75.54, making a total of \$366.84. For this the sum of \$504.60 was received, giving a gross profit of \$137.76, or 27.3 per cent. on the selling price. To the average noncommercial mind this would seem to be quite a satisfactory showing, but as pointed out by Mr. Nitardy, it does not really include all the cost of supervision, which he assumes to be twenty-five per cent. of the price received. If he is correct, and he is in a position to be unusually well informed on such topics, this would leave a net profit of only 2.5 per cent., which is manifestly inadequate when all the risks of loss and damage are taken into consideration. If, therefore, the pharmacist finds it necessary to increase his price to the patient, the physician can readily understand that the advance



has been rendered necessary by realization of the fact that prescriptions have not yielded the net profit which they were believed to yield. In fact, it has been whispered about that one of the large chain store firms is contemplating the elimination of the prescription department from several of its stores on the ground that the business done is not remunerative.

#### A GREEN BACKGROUND IN THE OPERATING THEATRE.

Sir Berkeley Moynihan communicates to the *Lancet* for September 18, 1915, a note on the value of green as a background for the surgeon's work. It has long been the custom of surgeons, he observes, to use white sterile towels or sheets around the area upon which an operation is to be done. There are many disadvantages in the use of white. A large expanse of white, especially when the sun is shining, is wearisome to the eye and causes fatigue, and it detracts from the value of the light upon and within the wound. It is not sufficiently realized that good illumination is not needed, except upon the part which is concerned in the operation. Light should be concentrated upon the wound and not widely diffused. For the last two and a half years Sir Berkeley has used towels and sheets of green color instead of white. Green is a restful color, offers no sharp contrast to the colors of the wound surfaces, and allows ligatures and sutures to be clearly seen against it. He has tried black towels, but the change from black to colors in an operation theatre is sudden and trying, and ligatures do not stand out clearly against such a background. He has painted the walls of his operation theatre green, and has a green colored material on the floor. The great relief to the eyes which results from the use of a green material around the wound is remarkable. The ordinary green "casement cloth" from which his towels and sheets are made is of good color, retains its color on washing and sterilizing, is easily obtained, and is cheap.

#### UNMODIFIED HYPOCHLORITES IN WOUNDS.

Tissot, according to *Presse medicale* for September 16, 1915, at a meeting of the Académie des sciences, on September 13th, maintained that for a long time he had used unmodified hypochlorites in the treatment of wounds and he saw no reason to adopt the modifications recently suggested by Carrel. Pure hydrochlorites, as a matter of fact, were an excellent stimulating agent in cicatrization.

#### News Items.

**American Aid for the Belgian Profession.**—The report of the treasurer of the Committee of American Physicians for the Aid of the Belgian Profession shows that no contributions were received during the two weeks ending October 9th. Previously reported receipts amount to \$7,866.84, and there is a balance on hand of \$556.80.

**A Jewish Hospital to Be Established in Boston.**—The Beth Israel Hospital Association has purchased the Denison estate, in Roxbury, and will establish there the first Jewish hospital in Boston. It is planned to start with about twenty-five beds and to increase the number as is found necessary.

**Cholera in Germany.**—During the week ending August 14, 1915, 172 cases of cholera, with twenty-eight deaths, were noted in Germany, according to official reports of the United States Public Health Service. Of these, four cases with four deaths occurred among the civilian population, 144 cases with twenty-three deaths among prisoners of war, and twenty-four cases with one death among German soldiers.

**An American Physician Dies in France.**—Dr. Charles B. Cross, of Brookline, Mass., whose back was broken in an automobile accident near Dinard, on October 1st, died two days later, in the military hospital in Dinard. Doctor Cross recently served with Dr. Richard P. Strong in Serbia, and later went to Paris to assist in relief work. He was taking supplies to the hospital in Dinard when the accident occurred.

**The National Committee for the Prevention of Blindness** will hold its first annual meeting in the Assembly Room of the Russel Sage Foundation Building, Twenty-second Street and Lexington Avenue, New York, at 4:30 p. m., Thursday, November 4th. Ex-President William H. Taft, honorary president of the organization, will speak at this meeting, and Dr. G. E. de Schweinitz, of Philadelphia, will also deliver an address.

**Annual Meeting of the Eighth District Branch of the State Society.**—At the tenth annual meeting of the Eighth District Branch of the Medical Society of the State of New York, which was held in Buffalo recently, Dr. Albert F. Lytle, of Buffalo, was elected president, Dr. E. Torrey, of Olean, first vice-president, Dr. W. Ross Thomas, of Warren, Pa., second vice-president, Dr. L. C. Lewis, of Belmont, secretary, and Dr. F. H. Van Orsdel, of Belmont, treasurer.

**Association of Erie Railway Surgeons.**—The twenty-fourth annual meeting of this association was held in Buffalo on Thursday and Friday, September 30th and October 1st, under the presidency of Dr. J. D. Zwetsch, of Gowanda. Dr. Salem Heilman, of Sharon, formerly vice-president of the association, was elected president to succeed Doctor Zwetsch, and Dr. R. S. Harnden, of Waverly, was elected vice-president. Dr. B. R. Wakeman, of Hornell, was reelected secretary and treasurer.

**Minneapolis State Medical Association.**—The following officers were elected at the annual meeting of the association, held in Rochester, Thursday and Friday, September 30th and October 1st, under the presidency of Dr. John T. Rogers, of St. Paul. Dr. J. Warren Little, of Minneapolis, president; Dr. J. J. Donovan, of Litchfield, first vice-president; Dr. A. C. Rogers, of Faribault, second vice-president; Dr. C. E. Wright, of Luverne, third vice-president; Dr. Thomas McDavitt, of St. Paul, secretary; re-elected; Dr. Earl Hare, of Minneapolis, treasurer; counselors, Dr. R. J. Hill, of Minneapolis, Fourth District; Dr. F. A. Dodge, of La Seur, Seventh District.

**Red Cross Unit Reaches Russia.**—Nine physicians and thirty-eight nurses, comprising the major part of four American Red Cross units which have been serving in Germany and Austria for the last ten months, arrived in Petrograd, October 4th, in charge of Dr. Carey A. Snoddy, of Knoxville, Tenn. They will care for Austrian and German civil and military prisoners in Russia. The Americans are acting under the auspices of the American Red Cross, although the German Government is defraying their expenses. Headquarters will be established at Moscow, and the physicians and nurses will be distributed among the various camps throughout the empire.

**Red Cross Christmas Seals.**—Two hundred million Red Cross Christmas Seals are now being printed and distributed by the American Red Cross Society and the National Association for the Study and Prevention of Tuberculosis. The proceeds from the sale of these seals will be used in the fight against tuberculosis in the communities where the seals are sold. Twenty-five million seals have been ordered by the New York State Charities Aid Association to supply the local Red Cross Seal agents. The organization of the Red Cross Seal sale this year will take in every State and Territory of the United States, including Hawaii, Porto Rico, and the Canal Zone.

**New York City's Death Rate.**—Figures prepared by the department of health show that during the week past there were 1,286 deaths compared with 1,234 during the corresponding week last year. The rate for last week was 11.32 per 1,000 of population. Of the diseases showing an increase, the diarrheal diseases under five years are the only ones worthy of note. Several causes of death show a decrease, particularly diphtheria and croup, whooping cough, bronchitis, and diseases of the nervous system. The rate for the first forty-one weeks of 1915 is 13.31 compared with 15.79 for the first forty-one weeks of 1914.

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Monday, October 18th, Philadelphia Clinical Association, Medical Society of the Woman's Hospital; Thursday, October 19th, West Branch of the County Medical Society; Wednesday, October 20th, County Medical Society (business meeting), Section in Otolaryngology and Laryngology, College of Physicians; Thursday, October 21st, Section in Ophthalmology, College of Physicians, Northeast Branch of the College of Physicians; Friday, October 22d, Northern Medical Association, Neurological Society, South and Southeast Branches of the County Medical Society, Jefferson Hospital.

**Utah State Medical Association.**—Dr. E. W. Whitney, of Salt Lake City, was elected president of this association at the twenty-first annual meeting held in Salt Lake City, September 28th and 29th. Other officers elected were: Dr. L. B. Laker, of Eureka, first vice-president; Dr. C. S. Osgood, of Salt Lake City, second vice-president; Dr. Fred Dunn, of Springville, third vice-president; Dr. H. P. Kirtley, of Salt Lake City, treasurer (reelected), and Dr. W. Brown Ewing, of Salt Lake City, secretary (reelected). An interesting feature of the program was a demonstration of the bone graft in the treatment of fractures and other skeletal defects by Dr. Fred H. Albee, of New York. Next year's meeting will be held in Salt Lake City.

**Bronx County Medical Society.**—A regular meeting of this society will be held on Wednesday evening, October 20th, at Ebling's Casino, 156th Street and St. Ann's Avenue, under the presidency of Dr. William G. Eynon. Dr. C. H. Smith will present the report of a case of acute purulent otitis media in a young child, and Dr. Oscar Diem will present reports of two cases of secondary cataract. Dr. J. H. Goldberger will read a paper on Rational Feeding in Artificially Fed Infants During the First Year, which will be discussed by Dr. Rowland G. Freeman, Dr. Charles Gilmore Kerley, Dr. A. F. Brugman, Dr. Charles Herrman, and Dr. Walter A. Dunckel. Dr. Maurice T. Hansell will read a paper on the Pathologist, the Family, and the Family Physician, which will be followed by a general discussion.

**Medical Association of the Greater City of New York.**—A stated meeting of the association will be held in Du Bois Hall, New York Academy of Medicine, Monday, October 18th, at 8:30 o'clock. Dr. Charles Herrman will present a paper on Achondroplasia, Its Differentiation from Rickets and Other Conditions, which will be discussed by Dr. Charles B. Davenport, of the Experimental Station at Cold Spring Harbor; Dr. L. E. La Fetra, Dr. R. D. Moffett, and Dr. George Gow Scott. Dr. E. Bosworth McCready, of Pittsburgh, will read, by invitation, a paper on Paedology and Its Possibilities; the Study, Treatment, and Education of Children Requiring Special Attention, and the subject will be discussed by Dr. William N. Berkeley, Dr. J. Victor Haberman, Dr. Herman B. Sheffield, and Dr. Charles Gilmore Kerley. Both papers will be illustrated with lantern slides.

**Ohio Valley Medical Association.**—The seventeenth annual meeting of this association will be held in Evansville, Ind., Wednesday and Thursday, November 3d and 4th, under the presidency of Dr. E. O. Smith, of Cincinnati. An interesting program has been issued by the secretary, Dr. Benjamin L. W. Floyd, of Evansville, and the committee of arrangements, under the chairmanship of Dr. J. N. Baughman, has made elaborate plans for the entertainment of the visiting physicians and their friends. Among those who will present papers are Doctor Von Ruck, of Asheville, N. C.; Dr. I. Rawson Pennington, of Chicago; and Dr. Charles P. Emerson, dean of the Indiana University School of Medicine. Dr. G. M. Young, of Evansville, is first vice-president of the association, Dr. William Shimer, of Indianapolis, second vice-president, and Dr. W. Harsha, of Chicago, third vice-president.

**Southwest Texas Medical Society.**—Dr. E. H. Sauvignat, of Laredo, was elected president of this society at the semiannual meeting held in Corpus Christi on September 14th and 15th; Dr. C. P. Yeager, of Corpus Christi, was elected vice-president, and Dr. L. J. Manhoff, of Aransas Pass, was reelected secretary and treasurer. The next meeting of the society will be held in San Antonio on the second Tuesday and Wednesday of March, 1916. At the banquet which brought the meeting to a close, Dr. George H. Moody, of San Antonio, president of the Texas State Medical Society, was the principal speaker.

**The Clinical Society of the New York Throat, Nose, and Lung Hospital** will hold a stated meeting on Thursday, October 21st, at 8:30 p. m., in the hospital building, 220-231 East Fifty-seventh Street. The scientific program will consist of a symposium on the glands of the neck. The subject will be presented by Dr. Edward W. Peterson from the surgical standpoint and will be discussed as follows: From the standpoint of the rhinologist, Dr. Samuel Goldstein; otologist, Dr. R. Travis Atkins; ophthalmologist, Dr. S. T. Hubbard; heart and lungs, Dr. Nathan N. Stark; oral surgeon, Dr. M. I. Schamberg; dentist, W. D. Tracy, D. D. S.

**Medical Men in the British Army.**—According to figures of the War Emergency Committee of the British Medical Association, published in the *Army and Navy Medical Journal* for October 9, 1915, the number of British medical men already on whole time war service totals 5,265; in addition the number of men of ages from under forty to over fifty who have offered whole time war service is 1,516; there are approximately 6,555 medical men of military age in England, Wales, and Ireland who have not yet offered full war service. The last figures do not include Scotland, where a separate committee collects data, and of course include many not eligible for active service. Many medical students abandoned their studies and joined the combatant ranks. The need for army surgeons is so great that those near the completion of their course were asked to return to their schools and complete their studies so as to be able to join the army in their professional capacity.

**A Pellagra Conference.**—The third triennial meeting of the National Association for the Study of Pellagra will be held in Columbia, S. C., on Thursday and Friday, October 21st and 22d, with headquarters at the Jefferson Hotel. Four scientific sessions will be held in the State Hospital for the Insane; the business sessions and a general meeting will be held in the assembly room of the hotel. On Saturday, October 23d, at 10:30 a. m., a special meeting will be held in the Jefferson Hotel, under the auspices of the South Carolina Board of Health, to take action upon a request to the State Legislature for appropriations to further the study of pellagra and the care of pellagrins in the State. The officers of the association are: Dr. C. H. Lavinier, of the United States Public Health Service, president; Dr. Joseph F. Siler, Captain, Medical Corps, United States Army, first vice-president; Dr. C. C. Bass, of Tulane University, second vice-president; Dr. J. W. Babcock, of Columbia, S. C., secretary; Dr. J. A. Hayne, State health officer, Columbia, S. C., treasurer. Doctor Babcock is also chairman of the committee of arrangements.

**Personal.**—Dr. Walter G. Stern, of Cleveland, has been appointed consulting orthopedic surgeon to the Gates Hospital for Crippled and Deformed Children recently opened at Elyria, Ohio.

Dr. Richard P. Strong, of Harvard University, who has been directing the work of the American Red Cross Society in controlling the typhus fever epidemic in Serbia, returned to America on October 4th.

Dr. J. Torrence Rugh has been elected clinical professor of orthopedic surgery at the Woman's Medical College, Philadelphia.

Dr. William C. Holloper has resigned as professor of pediatrics in the Medico-Chirurgical College, Philadelphia.

Dr. Michael G. Wohl has resigned as pathologist to the Howard and Samaritan Hospital, Philadelphia, to go to Omaha, Neb., where he has charge of the pathological laboratory of the Nicholas Senn Hospital.

Dr. J. Rudis-Jicinsky, of Chicago, who has been working with the Frothingham unit of the American Red Cross Society in Serbia for about a year, returned home last week. While in Serbia, Doctor Jicinsky acted as special correspondent for the NEW YORK MEDICAL JOURNAL.

## HEMADENOLOGY:\* A NEW SPECIALTY

THE INTERNAL SECRETIONS—THEIR FUNCTIONS AND BEARING ON DISEASE AND THERAPEUTICS

BY CHARLES E. DE M. SAJOUS, M. D., LL. D., Sc. D.  
Philadelphia.*(Eighteenth Communication.)*THE DUCTLESS GLANDS IN INSANITY (*Continued*).

The thymus, as pointed out in our last communication (*NEW YORK MEDICAL JOURNAL*, October 2, 1915), being the source of nucleins for the use of the organism, the spermatozoa, the heads of which, as is well known, are mainly composed of nucleins, draw their supply from that gland.

The physiological causes of the stigmata of hypothyrmia were summarized analytically in our preceding communication (*NEW YORK MEDICAL JOURNAL*, October 2, 1915), those of the osseous and nervous systems, the morbid phenomena of metabolism, and those affecting the sexual glands being considered. Attention was called, as regards the latter organs, to the fact that, while castration is followed by hypertrophy of the thymus, thymectomy during development of the genital organs arrested the latter process. An explanation of these phenomena was stated to be available when the function I attribute to the thymus—to supply, through its lymphocytes, the excess of nucleins that the body requires during its development, particularly that of the osseous, nervous, and genital systems—is taken into account. It is briefly as follows: As regards the thymic enlargement following castration, the cellular nuclei of the reproductive organs and also the spermatozoa, the heads of which, as is well known, are mainly composed of nucleins, draw during development, their main supply of this phosphorus laden body from the thymus. Castration, by closing off a considerable field of consumption, permits a corresponding accumulation of nuclein building materials in the thymus than before, causing engorgement of its lobes and aplasia. The distribution of nucleins being ultimately readjusted by increasing somewhat those supplied throughout the organism at large, all cellular nuclei are stimulated and the increased anabolism engendered promotes body growth. Hence the increase of weight in cattle after spaying and the fact, observed also by Soli, that the weight of the thymus in capons, which are also abnormally plump, is much greater than in cocks. As to thymectomy or inhibition of the functions of the thymus preventing the development of the sexual organs, it is due to the fact that the latter are deprived of nucleins upon which they depend for the building up of their own cellular nuclei—their dynamic functional centres—and their spermatozoa. When this occurs while the sexual organs are in course of development, the latter ceases, in keeping with the effects of functional arrest in other structures.

Important in this connection is that physiological

experiments, unless interpreted from the standpoint of pluriglandular functional activity, may prove misleading. Thus, while, as we have seen, thymectomy soon after birth of the animal prevents development of the organs of reproduction, the experiments of Klose and Vogt, Paton, Soli, and others, have shown conclusively that thymectomy before puberty in animals caused a marked increase in the size of the testicles and ovaries. This obvious contradiction assumes a normal aspect, however, when the thymus is considered as a participant with other ductless glands in the defensive functions of the body. As Dercum and Ellis once wrote concerning the pathogenesis of dementia præcox: "We are at least justified in the conclusion that in our cases there was in all probability a disturbance of what Sajous has called the 'adrenal system,' i. e., of the chain made up of the pituitary, the thyroid, and the adrenals. Especially was change noted—e. g., striking departures in weight—in the thyroid and adrenals." In other words, we must not interpret this disease from the standpoint of only a single ductless gland, but from that of the various ductless glands. And this proves true as well when the influence of thymectomy upon the genital organs is taken into account. By removing the thymus from animals in which all ductless glands have already been developed sufficiently to carry on their functions efficiently, we remove one of the organic bodies necessary to their collective function and thus disturb the equilibrium of those functions. One of the latter being, as I pointed out in 1903, and as has been independently held by other investigators since, to protect the body against intoxication, thymectomy in sufficiently developed animals disturbs this autoprotective process and the animal suffers from poisoning by toxic wastes which, under normal conditions, would have been converted into end products likely to be eliminated. We are not dealing, therefore, with a "compensative" hypertrophy of the testes and ovaries or with a "physiological antagonism" between the latter and the thymus, but with a pathological condition of these organs due to a toxemia. Proof of this is available in the fact that the genital organs are not the only seats of enlargement, such having been found in the pancreas and spleen (Matti), the adrenals (Klose), the thyroid (McClure, Howland, Matti), the brain and spinal cord (Klose and Vogt), and other structures. Basch, Klose, and Vogt found, moreover, that thymectomy gave rise to symptoms resembling closely those of the tetany following removal of the parathyroids—a condition now known to be due to toxic wastes which the parathyroid product in conjunction with that of other ductless glands, should have destroyed.

A cardinal feature of the pathogenesis of various forms of insanity is involved in this connection since

\* Hemadenology, from the Greek, *αἷμα*, blood, *ἀδρην*, gland, *λογος*, discourse, meaning thereby (as do ophthalmology, laryngology, and other terms applied to specialties) the aggregate of our knowledge on the ductless or blood glands.



the foregoing data have served to indicate that hypothyroidism may, by retarding the efficiency of the defensive positions of the ductless glands in general enter a pernicious toxemia capable of evoking

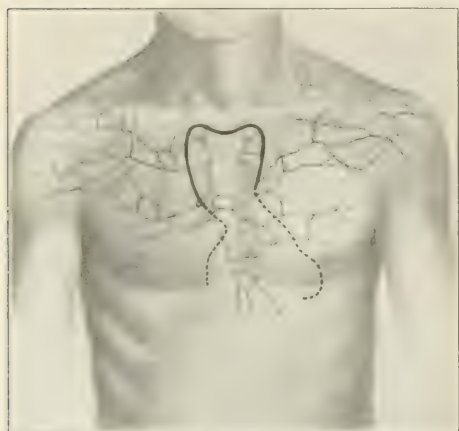


FIG. 1.—Area of percussion dullness over enlarged thymus shown exaggerated by artist. The venous engorgement (somewhat exaggerated) caused by pressure of enlarged thymus upon the underlying venous trunks (William Browning).

mental disorders. As shown below, other facts point in the same direction.

**Immunity.** Thymectomy has been found by Paton and Goodall to diminish the resistance of animals to streptococci and staphylococci, while Abelous and others have noted the development of furuncles, acneic eruptions, and other cutaneous disorders. Idiots who, as we have seen, are found post mortem even before the fifth year, to be deprived of a thymus in sixty-five per cent. of instances, are well known to succumb readily to intercurrent diseases, especially those of an infectious nature. This phenomenon also finds its explanation in the functions I ascribe to the thymus. In 1903, in *Internal Secretions* (p. 607), I had occasion to write: "During the earlier years of our existence while the adrenal and nervous systems (including their chief centres) are undergoing development, their functions are relatively circumscribed, the thymus supplying deficiencies. . . . We have evidence of this in the liability of children to certain infectious diseases which do not affect the adult." Indeed, when we realize that the maximum functional activity of the thymus corresponds with the period of life when the diseases peculiar to children, measles, diphtheria, scarlet fever, etc., prevail, we cannot but conclude that some relation must exist between them, in the sense that inasmuch as the thymus is the only fully developed organ taking active part in what defensive resources the child possesses, the maternal milk being intended by nature to afford in the meantime the thyroiodase, adrenoxidase, trypsin, and other defensive ferments, *hypothyroidism means increased vulnerability to infection in children in proportion as the degree of thymic insufficiency is marked.*

Infantile marasmus exemplifies the acquired type

of this process. We have seen that atrophy—or rather, from my viewpoint, mere contraction—of the thymus attends this disease, owing to the fact that the artificial food given to the infant fails to supply in chemically suitable form the nucleoproteids out of which the thymus builds the nucleins which its lymphocytes distribute to all tissues, including the nervous system and the other ductless glands. As is well known, gastroenteric infection is very common in these cases; indeed, practically any serious case of infantile diarrhea shows the symptom complex of marasmus plus that of gastroenteric infection. Now, as clinicians have often emphasized, marasmus yields promptly where the inroads of the disease have not been too great, when appropriate diet, e. g., breast milk, is made to replace artificial feeding. The thymus—as percussion over the manubrium indicates—promptly resumes its normal size and work, and the breast milk furnishing the infant the other internal secretions, thyroïd, adrenal, and the digestive ferments—those termed by Abderhalden, the "defensive ferments"—the morbid process is arrested and the infant begins to thrive. I have seen the tide completely turned within twenty-four hours after starting breast nursing.

Hence the fact that along with other thymic stigmata, we often witness a predisposition to the diseases, exanthemata, diphtheria, etc., peculiar to childhood, the histories of such subjects showing

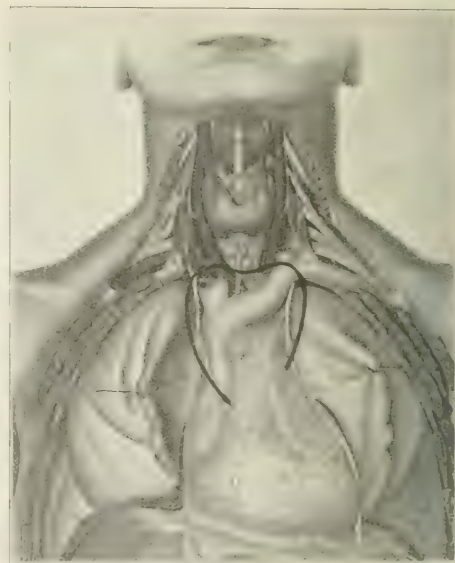


FIG. 2.—Large venous and arterial trunks, nerves, trachea, pulmonary apices, and cardiac auricles within area of percussion dullness in enlarged thymus.

several of these diseases in more or less rapid succession, all of which we have seen tend, by provoking local hemorrhages and degenerative foci, further to weaken, not only the thymus, but all other ductless glands.

## STIGMATA OF HYPOTHYMIA.

Summarizing the foregoing, the main stigmata of hypothyemia, some of which may be discerned in the insane, are as follows:

*Osseous system.* Stunted growth, especially of long bones with enlarged epiphyses and rhachitislike

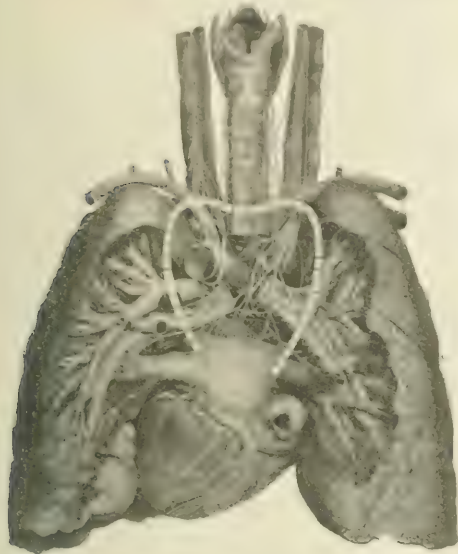


FIG. 3.—The structures described in Fig. 1, seen from behind, subject to compression by an enlarged thymus, the sternum anteriorly and the spinal column posteriorly forming unyielding walls, between which the enlarged thymus and the compressed structures are wedged.

abnormalities; cranial deformities of so called "degenerative type," but only such as denote defective nutrition. In most cases chicken breast, milk scoliosis, genu varum, or delayed teething and bad teeth alone denote the latter process. Exaggerated calcium excretion.

*Nervous system.* More or less amentia, ranging from the slight backwardness of the moron to profound idiocy, including the amaurotic, moral, and microcephalic forms, but not the hydrocephalic, paralytic, epileptic, or traumatic. Hebephrenic phenomena of melancholic type incident upon puberty. Inadequate activity of the thymus as a participant in the defensive functions of the body, by permitting the accumulation of toxic wastes, may exaggerate reflexes, promote spasticity, tremors, and exalted though abnormal mental activity through fluctuating rises of blood pressure.

*Metabolism.* Relative asthenia with exacerbation of muscular excitability in autotoxic cases of the type just mentioned; average hypothermia with lowered oxygen intake and carbon dioxide output; exaggerated calcium excretion. Trophic disturbances of skin (mainly acneic), including hair and nails, pallor, puffiness, and rarely edema where vascular tension is very low. Sluggish processes of elimination. Met in depressive psychoses of the young, with slowness of ideation and articulation

and variable temper ranging from melancholia to paranoid outbreaks.

*Genital system.* Two sets of stigmata must be distinguished: In congenital hypothyemia or where from any cause thymic involution or degeneration has occurred *before* the other ductless glands, including the ovaries and testicles, have had time to develop, the genital organs remain more or less infantile, the pubic hair also failing to grow. Where premature involution or atrophy from local disease inhibits the functions of the thymus *after* the other ductless glands have developed, the antitoxic functions, in which the latter take part, become inefficient and toxic wastes accumulate in the blood, cerebrospinal system, etc. These ductless glands, including the thyroid, adrenals, etc., and also the genital organs, become hyperemic or hyperplastic as a result of the toxemia and thereby the source of stimuli to the cerebral sphere, sufficient where the morbid process is severe, to excite abnormal psychic phenomena.

*Immunity.* Increased vulnerability to infections, particularly to the diseases of childhood, and deficient resistance to their morbid effects.

These stigmata—of which the foregoing description is the first published—are only, it may be well to recall, those of the thymus in the sense that elimination, total or partial, of its function disturbs the



FIG. 4.—Lymphatic glands and channels subject to compression by an enlarged thymus and obstructed thereby, causing engorgement of the cervical, facial, lingual, and faucial glands.

equilibrium of the other ductless glands with which this function is interwoven, and deprives the tissues, partially or completely, of the nucleins upon which their normal development depends.

We now consider the opposite condition, that of an exaggerated functional function, and its effects upon the organ of mind.

#### THYMIC ENLARGEMENT

To awaken any idea whatsoever of the phenomena awakened in the body at large through exaggerated functional activity of the thymus, it should be borne in mind that the disorders of this organ attributed to enlargement such as "thymic asthma," "thymic stridor," "thymic death," "status thymico-lymphaticus," "hypertrophy," etc., described in our textbooks, furnish no clue to the identity of these phenomena. The symptoms attributed to these disorders are not in fact those of excessive activity, but, in most instances, morbid phenomena awakened through the pressure exerted by the enlarged gland upon the many vital structures underlying it. These are shown in the annexed illustrations. In Figure 1, the heart shaped outline over the sternum is that of the area which in the average case of thymic enlargement, from any cause, dullness is obtained under percussion. The gland itself is larger than the percussion area; it is only its thicker and more central portion which, as a rule, elicits dullness and causes compression. What tissues are compressed directly by the gland, which in turn is held down firmly in its place by the overlying rigid sternum, are shown in Figure 2. The large vena cava, the aorta, the vagus and phrenic nerves, the auricles, the pulmonary apices, and beneath all, the trachea, explain clearly the dyspnea, cyanosis, pulmonary, venous engorgement—which causes the dilated veins visible on the surface, as shown in Figure 1—witnessed in these cases. The structures compressed are not alone those lying anterior to the trachea, but also—as shown in Figure 3, in which the organs are seen from behind—those lying posterior to the upper respiratory channels, including the sympathetic plexus, the recurrent laryngeal, and the auricles, all of which structures are tightly wedged, by a large gland, itself compressed by the sternum, against the spinal column. That "thymic death" should be possible under such conditions is self evident. That enlargement of the lymphatic nodes which occurs in the status lymphaticus accompanying an enlarged thymus may also be due to compression is shown in Figure 4. The lymphatic vessels and glands, yielding readily under pressure, blocking of their circulation is readily accomplished, with engorgement and swelling of those of their number which lie behind those obstructed as normal result. The cervical, facial, lingual and faucial glands belonging to this engorged area, we have, as I will show in forthcoming articles, an explanation for the presence in approximately normal and many abnormal children, of adenoid vegetations, enlarged tonsils and other morbid growths the genesis of which has remained obscure.

(To be continued.)

**Cancerous Nodes.**—In the *American Journal of Surgery* for October, it is stated that cancerous supraclavicular lymph nodes after breast amputation do not necessarily condemn the case as hopeless. Removal of these glands and active x ray treatment may effect a cure, or, at all events, postpone for a long time the development of further trouble.

## Pith of Current Literature.

### CORRESPONDENZ-BLATT FÜR SCHWEIZER AERZTE.

August 11, 1915.

**Diagnosis and Treatment of Inflammations of the Accessory Sinuses,** by F. Diebold.—The principal point made in this paper is the diagnostic and therapeutic value of hexæthyl violet, a crystalline powder which for medicinal use must be free from such impurities as arsenic, sulphate of copper and chloride of zinc, by which it is often contaminated. A small amount is fused on the point of a probe and introduced into the sinus to be investigated. Just how this can be done in all sinuses is not stated. It stains the secretions most strongly between the third and sixth day thereafter, but may still be apparent after six weeks, and thus the source of a secretion in the nose can be traced. It also softens the secretion and reduces its fetor. It is not soluble in salt solution or in blood, and therefore is not poisonous. The writer says that he has used this method chiefly for the differential diagnosis between inflammations of the frontal sinus and of the anterior ethmoidal cells, the sphenoidal sinus and the posterior ethmoidal cells, but has found it useful also to detect the origin of an empyema of the antrum of Highmore.

August 2 and 25, 1915.

**Juvenile and Commencing Arteriosclerosis,** by S. Saltykow.—The author believes that the so called fatty degeneration of the intima of arteries in children and youths, especially of the aorta, is nothing else than the initial stage of sclerosis.

### MEDIZINISCHE KLINIK.

August 29, 1915.

**The Reciprocal Relations between the Processes of Consciousness and the Innervation of the Vascular System,** by Heinrich Bickel.—When a person performs a mental task, a reduction in the volume of his arm enclosed in a plethysmograph is observed. This is due to a vasoconstriction which is the result of a cortical stimulation of the vasoconstrictor nerves. Sensations lead to a more intense innervation of the heart with acceleration of its rate and a rise in blood pressure. Fatigue leads to a reduction or paralysis of the vasoconstrictor mechanism and a passive vascular dilatation. A disturbance of the cortical innervation of the heart may also result from more prolonged and more intense disorder. As a result there may be pallor of the skin instead of redness. These cortical controlling mechanisms serve the purpose of furnishing the brain with the materials for the expenditure of energy. A disturbance of them brought about by outside factors may lead to the storing up of an excess of brain energy. Such a condition is seen in alcoholic mania, and the tremor of alcoholism and neurasthenia. The increased energy content of the brain may involve the sensory areas as well as the motor ones and lead to delusions and delirium. This is the probable mechanism of the delirium of fever, infections, intoxications, etc. Along with these disturbances there may well be also an injury of the cerebral cortex itself through the prolonged disturbance



of normal regulatory functions and there may develop simultaneous evidences of cerebral exhaustion and paralysis. Such combinations are often encountered in neurasthenia.

**Typhoid Inoculation and Diagnosis in the Inoculated**, by C. E. Cahn Brumer.—The symptoms produced by antityphoid inoculation may resemble those in mild cases of typhoid fever and might lead to confusion if they did not pass off rapidly. The study of the agglutination titre of 100 inoculated persons showed that after the eighty-fifth day following inoculation in a considerable number agglutination no longer occurred. The agglutination reaction should be used as a diagnostic aid in the inoculated with the greatest caution. Only a titre above one in 200 can be regarded as confirming the diagnosis of typhoid, and only in eighty-nine per cent. of all cases. Further, this test is reduced in value by the fact that the agglutinins are greatly diminished at the beginning of the infection. A rising titre of agglutination when taken on successive occasions is strong evidence of typhoid in an inoculated person. The diagnosis of typhoid after inoculation must, however, rest largely on the clinical features, the cardinal symptoms of which remain unchanged, except perhaps in their intensity.

#### BULLETIN DE L'ACADÉMIE DE MEDECINE.

August 3, 1915.

**Unusual Typhoid Infection of the Cerebrospinal Fluid**, by G. Daumézon.—Lumbar puncture in a soldier presenting signs of cerebrospinal meningitis yielded a clear specimen of cerebrospinal fluid in which were found, after centrifugation, a number of filamentous organisms seventy to 100 microns in length and about 0.8 micron in thickness. The extremities of these filaments were not rounded and of even thickness but flexible and distinctly tapering. The filaments showed a slow motility, suggestive of snakes gradually making their way among loose stones (the leucocytes). No short forms of the organism were to be seen. The filaments were found to possess all the cultural and staining characteristics of the typhoid bacillus. They developed with special rapidity on bile, and on this and other media soon become transformed into the ordinary short form of this organism, with a few long forms interspersed. Daumézon considers the presence of Gram positive filaments (growing rapidly on bile) in the cerebrospinal fluid an indication of typhoid infection.

**Diagnostic and Prognostic Value of Oscillometric Sphygmomanometry in Traumatic Obliteration of Arterial Trunks**, by L. Rénon.—A soldier received a bullet wound below the left clavicle; at once hemoptysis occurred, and later, signs of fluid in the pleura together with tingling in the left arm, which became purplish, with a temperature lower than normal. The pulse remained persistently absent, but in course of time the color of the limb returned. Seven months after the injury, careful x ray examination showed that the left subclavian artery had become obliterated through pressure by a fragment of the fractured first rib. Readings were made six times with Pachon's oscillometric sphygmomanometer, applied to the wrist. At the first two examinations, some weeks after the in-

jury, no oscillations could be obtained, but at the subsequent tests, made a month or two apart, small but progressively increasing oscillations were observed when the pressure in the apparatus was kept low—ten to twenty-five mm. Hg. In the absence of a palpable pulse, an exact measure was thus afforded of the gradual restoration of circulation in the limb. The value of oscillometric examination, because of its high degree of sensitiveness, in the diagnosis of complete obliteration of the main arterial trunk of a limb is also pointed out.

**X Ray Control in the Extraction of Foreign Bodies**, by Bouehacourt.—In the author's clinic, an x ray bulb is placed under the operating table, which is pervious to the rays, and an extra assistant, holding before his eyes a small camera obscura terminating in a fluorescent screen, constantly directs the surgeon in his endeavor to extract the projectile. Failure due to displacement or extremely small size of the foreign body, or to the presence of a multiplicity of foreign bodies, is thus avoided.

#### PRESSE MÉDICALE.

July 22, 1915.

**A Simple Method of Immobilizing Fractures of the Lower Extremities**, by Fieux and Lerembour.—In compound fractures of the leg plaster dressings are placed round the knee and the foot, extending downward and upward, respectively, as near as practicable to the wound. Two strips of metal sheeting, fifty-five to sixty cm. long, three cm. wide, and two cm. thick, are then bent, so as to lie, after application, at some distance from the wounded segment of the limb, and are fixed below to the lower plaster dressing with several turns of plaster bandage, one strip being on the internal and the other on the external aspect of the leg. As soon as fixation has been secured, an assistant reduces the fracture and the upper extremities of the metal strips are fastened firmly to the proximal plaster dressing. The immobilization thus secured is so perfect that the limb can be lifted up and moved in all directions without the least risk of causing displacement or pain. Simultaneously, careful dressings of the wounded area can be easily effected. In compound fracture of the thigh, the lower plaster dressing is made to extend from the foot up to the wound opening, while the upper dressing consists of one section around the hips and waist up to the ensiform, fastened to another section enclosing in spica fashion the upper part of the thigh or, in case the fracture is near the hip, the corresponding part of the thigh on the sound side. Three metallic strips are fixed under anesthesia, first to the plaster dressing surrounding the trunk, then, after reduction of the fracture, to the lower dressing.

#### RIFORMA MEDICA.

Settembre 15, 1915.

**Immunization and Anaphylaxis in Experimental Glycosuria**, by A. Ferrannini.—It is known that certain substances, such as pancreatic extract and methylene blue, have antglycosuric action. To these must now be added santonin in morphine glycosuria and extract of salivary glands in morphine and adrenaline glycosuria. Experimentally, blood serum may be endowed with anti-

the same powers, relatively specific, while the biological mechanism is that of intraorganic changes pertaining to glucose metabolism and to glucose excretion by the kidneys. However, anaphylaxis can be provoked by small injections of glycosuria producing substances at long intervals followed by one large dose.

#### BRITISH MEDICAL JOURNAL.

**Treatment of Cholera by Hypertonic Saline Solutions.** *WILLIAM WATKIN.* This may now be regarded as the most scientific and the most successful method of treatment for cholera yet elaborated and is the only real advance that has been made since the time of Latta in 1832. The details of the course of treatment must be determined for each individual case by the concentration of the blood and the degree of heart failure. The concentration of the blood should be determined by measurement of its specific gravity. This can be readily carried out at the bedside by means of appropriate mixtures of oil of wintergreen and castor, or olive oil. Two figures for specific gravity stand out with particular significance, namely, 1.062 and 1.066. If the blood be below the lower figure no saline injection is required. If above the latter, it is well at once to inject intravenously 120 ounces of warm hypertonic saline solution. When the specific gravity lies between the two figures eighty ounces of saline should be administered. The degree of cardiac failure must be measured by means of blood pressure determinations, and if the systolic pressure lies below 100 mm. Hg., an infusion of saline is required. In some cases, however, with as low a figure as this the blood may be greatly concentrated and then the saline should be given subcutaneously or by rectum. Determinations of the systolic pressure alone may mislead at times and the diastolic pressure should also be measured. The average normal difference between systolic and diastolic pressures is about thirty mm. Hg., and when the difference in a case of cholera is normal or less than normal a good recovery will usually follow without infusion even if the systolic pressure is low. The saline solution to be used has the following formula: Sodium chloride one ounce, potassium chloride twenty-four grains, calcium chloride sixteen grains, and distilled water to make eighty ounces. In some cases the blood pressure was raised by the administration of pituitary, epinephrine, or apocynum with a resulting increase in the output of urine. The administration of hourly doses of one sixth grain of calomel did much to allay prolonged vomiting or nausea. In very severe cases the addition of dextrose to the saline infusions helped to sustain the patient's strength, although its use had some tendency to increase the likelihood of hyperpyrexia. During the course of any case the blood pressure and the specific gravity of the blood should be repeatedly determined at short intervals—four to six hours—and repeated infusions given if indicated by such measurements. Where hyperpyrexia threatens, the temperature of the saline infusions should be reduced to 70° or 80° F.

**The Treatment of Septic Wounds by the Electrolytic Bath,** by Frank Fowler.—Russ showed that practically all bacteria were attracted to the

positive pole when a small electrical current was passed through a solution of sodium chloride. The small current required was also fatal to the germs without the aid of ionized drugs and produced no injury to the tissues of the host. In fact, the current has a beneficial effect on the tissues, stimulating the formation of granulation tissue and the growth of epithelium. The only apparatus required is a battery of twenty to thirty dry cells, a current collector and a milliammeter. The wound should be immersed in a warm solution of salt and the positive electrode placed in the bath. The negative one should be applied to some indifferent portion of the body and the current slowly introduced and raised to twenty or thirty milliamperes. The treatment should last half an hour and should be given daily. It yields the most excellent results.

#### LANCET.

September 18, 1915.

**Bacteriology of Septic Wounds,** by Alexander Fleming.—The flora of septic military wounds was found to be very different from that of similar wounds in civil practice. Bullet or shell wounds were practically never sterile and contamination from the clothing seemed to be the most probable source of infection. A bacteriological examination of fragments of clothing obtained from wounded men from the front was undertaken. Of twelve samples examined, ten grew *Bacillus aerogenes capsulatus*, a streptococcus was found in five, *Bacillus tetani* in four, and staphylococci in two. Several varieties of nonpathogenic organisms were found in most samples. In the wounds themselves, streptococci were practically always present. During the first week the great majority of the wounds contained *Bacillus aerogenes*; many also yielded *Bacillus tetani*. From the eighth to the twentieth day, these two spore bearers tended to be greatly reduced in numbers and to disappear from many of the wounds; less than half of the wounds examined during this period contained spore bearers. After the twentieth day, the tetanus bacillus was never found and only a few wounds still contained *Bacillus aerogenes*. The normal habitat of both the aerogenes and the tetanus organisms is the intestinal tract of man and animals, and soil contamination of the clothing would seem to be nearly constant among soldiers. Blood cultures were taken from many of the wounded men and yielded streptococci in about a quarter of the cases. A very striking feature of these military wounds was the marked phagocytosis which was evident in the pus cells, this being much greater than encountered in civil wounds. This was explained on the ground that the infection had occurred in vigorous, healthy men instead of in weakened individuals. Prognosis seemed to be better among soldiers, although the infections were apparently greater in point of numbers of organisms.

**Galyol: A Substitute for Salvarsan and Neosalvarsan,** by Arthur Foerster.—This drug is essentially two molecules of arsenobenzol doubly linked by two phosphoric groups. It contains slightly over thirty-five per cent. of arsenic and about seven per cent. of phosphorus. It is a yellow powder which is insoluble in distilled water, but which readily dissolves in the presence of a small amount of

sodium carbonate. The drug of commerce is already mixed with the required proportion of sodium carbonate; preparation of solutions is easy. Intramuscular injections are painful and may lead to necrosis like that produced by salvarsan. It is hence best given intravenously and fairly concentrated solutions seem preferable to more dilute ones. Foerster has used galyol in a series of syphilitic cases with very marked lesions in order to test its value. In all of the cases, except one of marked psoriasis many years after syphilitic infection, excellent results were secured. In many cases the improvement was noticeable as early as the next day after injection. With equal doses the results from salvarsan would be less than those from galyol. No serious ill effects were produced by the drug. Vomiting followed in one patient who had eaten shortly before the injection. The only considerable drawback to the use of this drug is the fact that after doses of 0.5 gram the pulse became small and nearly imperceptible, its rate rose to 100 or 120, the extremities became cold, and there was pain in the stomach in one patient. All of these symptoms, fortunately, passed off promptly and should give no cause for alarm. The dose of the drug should be from 0.3 to 0.5 gram and treatment should be continuous or intermittent with mercury injections in the intervals, just as in the case with salvarsan.

**Salvarsan in the Treatment of Yaws,** by W. M. McDonald.—Before salvarsan the duration of yaws ranged between several months and several years. The author has used salvarsan in 400 cases; with the exception of two all were completely cured by a single intramuscular injection. The two exceptional cases were cured by a second injection. All of the cases have been traced and examined at periods varying from a month to a year after the treatment and all were found to have remained cured.

#### GLASGOW MEDICAL JOURNAL.

September, 1911.

**Experience with Pituitary Extract in Obstetrics,** by W. D. Macfarlane.—The most marked benefit from the drug was obtained in the second stage of labor. Observation showed, however, that where the uterus is exhausted, it must be rested before pituitary extract is given. Since the degree of action varies in different individuals, it is best to begin with a small dose, and repeat it frequently, if desired. The marked and prolonged uterine contractions excited by the drug scarcely admit of a post partum hemorrhage—unless a lacerated cervix is at fault. There occurs, however, more bleeding than normal after placental expulsion if pituitary extract has been used. This can be controlled by administering a small dose of the drug immediately after the placenta has appeared. Contraindications to the drug especially referred to by Macfarlane are anemia and obesity, in the presence of which sudden blanching and faintness may occur, chronic renal disease and arteriosclerosis, marked pelvic contraction, and a rigid cervix. Uterine contractions, stimulated by pituitary extract, become less severe but not less frequent when chloroform is administered in the latter part of the second stage.

#### BOSTON MEDICAL AND SURGICAL JOURNAL

**Transvesical Prostatectomy: Technic of the Operation,** by Paul M. Pilcher.—The occasional surgeon may be content to know that there is an obstruction at the neck of the bladder, that is probably caused by an enlarged prostate, and that it can be removed surgically. If he is lucky, his patient will survive the operation, with the chances of more or less permanent disability. For success a thorough examination is essential. We should determine beforehand whether the obstruction is cancer or simple adenoma, whether there is a stone or a new growth in the bladder, and to what the symptoms are due. The cystoscope and the x ray need to supplement the ordinary vesical examination. Rectal examination is useful in differentiating between cancer and adenoma. We suspect cancer in all patients under sixty years of age, and always when the symptoms are rapid in their onset. Primary tuberculosis does not seem to be common. Use of the catheter is a simple and efficient temporary expedient, but when continued is sure to result in serious septic consequences. In advanced cases use of the catheter is wrong. Pilcher performs a suprapubic cystostomy as a preliminary operation in every case of prostatic hypertrophy due to simple adenoma. This is done as soon as the bladder can be emptied safely, and in all cases of emergency in which there is an active hemorrhage. In general it is best to wait a week or ten days before removing the prostate, and the patient must be under observation for the forty-eight hours following the operation. The drainage tube is removed after twenty-four hours and replaced by a button catheter, which is used for drainage for three days. The button catheter is then corked and the patient caused to empty his bladder voluntarily every hour for three or four days, after which it is removed.

**Effect of Rowing on the Heart,** by Roger T. Lee, Walter J. Dodd, and Edward L. Young.—Observations were made on sixteen candidates for the Harvard University crew, sixteen freshmen of essentially the same build as the candidates, and ten graduate oarsmen. The only conclusion that could be drawn from the results was that prolonged participation in rowing under the system now in vogue at Harvard and the Union Boat Club of Boston does not materially increase the size of the heart when the heart is sound at the beginning.

**Experimental and Clinical Observations on the Blood Pressure in Spinal Anesthesia,** by George G. Smith.—The results of the experiments described seem to show that the blood pressure can be lowered as much by spinal anesthesia as by section of the cord in the cervical region. The greatest fall was caused by injection of the drug in the thoracic region, where the vasomotor fibres which supply the splanchnic area leave the cord. This part of the vasomotor mechanism is the first affected by the drug when the injection is made in the lumbar region. The extent of diffusion of the drug within the dural sac appears to be influenced more by the bulk of the solution injected than by any other one factor. A given amount of drug in a con-



centrated solution diffuses less and consequently lowers the blood pressure less than does the same amount in a more dilute solution. The greatest effects upon blood pressure were noted when adrenaline was combined with novocaine. Entire fixation of the drug does not take place within twenty minutes after the time of injection. When a solution of greater specific gravity than spinal fluid is used, the extent of diffusion may be increased by gravity. Attempts to raise the blood pressure by the intravenous injection of pituitrin or adrenaline gave only a very transient rise.

#### JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

**Prognosis of Sterility**, by Edward Reynolds.—In cases of sterility a painstaking examination of both partners should be made. The most exact and detailed observations are required for success in prognosis or treatment. Max Huhner's ingenious method of studying the progress of the spermatozoa through the female genital tract after coitus should be employed before prognosis or diagnosis is formed. This method gives at once evidence regarding the vitality of the male element, regarding the secretions of the female genital tract, and the resistance of the male element to abnormal conditions. If the spermatozoa are abundant and entirely normal, the prognosis will depend wholly on the condition discovered in the woman. When the only abnormality is in the character of the vaginal secretion, with perhaps a pinhole os, the prognosis is that of nearly certain success under appropriate treatment. The prognosis under treatment is good when the abnormality seems to involve the uterine secretions alone, the tubes and ovaries being apparently normal. In tubal disease, even if slight, prognosis is not good. When the condition is merely ovarian, with ovaries of normal size and development, the prognosis under surgical measures is also good.

**Relative Frequency of Ectopic Gestation**, by Alfred Baker Spalding.—A statistical study of a series of 36,668 cases was made. These figures indicate that one ectopic gestation occurs in every 2,820 cases in general practice, one in every 227 in gynecological practice and one in every 131 cases of pregnancy. Further, one case in seven in early pregnancy with hemorrhage necessitating curettage is a case of ectopic gestation.

**Streptococcus Bacteriemia in Endocarditis**, by John A. Oille, Duncan Graham and H. K. Detweiler.—By a modification of Rosenow's culture methods, *Streptococcus viridans* was found in the blood in each of a series of twenty-six cases of endocarditis. Most of the patients from whom the cultures were obtained looked well, felt well and had no anemia, although nearly every one had some slight rise of temperature of an irregular type at some time during one to two weeks. In seventeen of the cases, the diagnosis was obscure and was only made clear by blood culture. Some cases suggested tuberculosis, some gastric ulcer, others typhoid or chlorosis, and the largest number presented symptoms of neurasthenia. Endocarditis due to this streptococcus is much commoner than that due to rheumatism; it commonly follows tonsillitis in children and young women. Endocarditis may be active for consider-

able periods of time without producing symptoms. A family incidence of tonsillitis and endocarditis, and other diseases of streptococcal origin such as appendicitis and gastric ulcer, is common. It was found that the pulmonary systolic murmur which is so often heard in the anemic person was usually a precursor of the mitral systolic murmur of endocarditis and was probably a mitral murmur which was merely heard best over the pulmonic area owing to regurgitation into the left auricular appendix.

**Value of the Combination Method in the Treatment of Cervical Carcinoma**, by S. M. D. Clark.—The heat method of Percy is of doubtful value in cervical cancer, although in very obese women it probably offers the best and only chance for a lasting cure. The application of heat should be a routine in all types of cervical carcinoma except those which are hopelessly advanced. The best means of transforming the borderline cases into operable cases is a combination of the heat treatment and starvation by the ligation of the internal iliacs and one uterine artery. This should be a two stage procedure. The combination of heat and starvation by ligation greatly reduces the primary mortality from radical operation.

#### MEDICAL RECORD.

October 2, 1915.

**School Spread of Contagious Diseases**, by M. Solis-Cohen.—Extensive studies of several epidemics seem to prove that the schoolroom is the unit of contagion among children. Teachers who are in continual contact with the pupils should be instructed to look carefully for even the slightest sign of illness and especially to be on guard for rashes. All children who have been out of school more than two days should not be readmitted until examined by the medical inspector; moreover, if a child is absent from school one week without report, the inspector should go to its home to investigate. When one case of contagious disease has occurred in the school, the inspector should make careful daily examinations of the pupils to detect any possible cases of beginning illness.

**Intraspinal Treatment of Syphilis**, by L. A. Levison.—Eighty per cent. of patients with primary and secondary syphilis show involvement of the spinal fluid; it is therefore hard to explain why such a small percentage afterward develop syphilitic or parasymphilitic conditions of the nervous system. Medication by mouth seems to have no effect on the prevention of tabs or other diseases of the nervous system and even intravenous use of salvarsan has very little effect. The rational method in such cases is the intraspinal. Salvarsanized serum or neosalvarsan may be given intraspinally without danger by a careful operator. The cell count of the spinal fluid is a variable factor and cannot be used as a criterion of improvement.

**Diagnosis and Treatment of Gastric Neuroses**, by S. Wendkos.—Neuroses may be accompanied by nervous eructation, regurgitation, pyloric spasm, and cardiospasm, which may arouse suspicion of organic disease. In treatment, psychical methods are of value, while electricity tends to tone up the stomach and act as a sedative in spasms. Hydrotherapy, massage, and Swedish movements are of

help; the most important drugs are the bromides, iron, arsenic, and strychnine. These patients should take a fairly heavy diet with meat and vegetables with avoidance of too much liquids.

**Acute Epididymitis**, by H. W. E. Walthers.—Aspiratory puncture with a hypodermic syringe was first practised by Baermann and is a valuable method of relieving pain. The scrotum should be prepared as for operation and anesthetized with ethyl chloride and a fairly large needle is introduced into the epididymis for one half to two thirds of an inch; aspiration is gently done while withdrawing the needle. The procedure, though painful, relieves pain immediately and shortens the duration of the infection markedly.

**Spotted Fever Treated with Adrenal Secretion**, by M. H. Smith.—Three cases of Rocky Mountain spotted fever were treated with adrenal solution in doses of from eight to sixteen minims by mouth every four hours. The febrile duration of the disease was shortened and the eruption did not become as dark as usual.

#### LANCET-CLINIC.

September 25, 1913.

**Cure in a Case of Morphine Habit**, by A. E. Osmond.—The patient, who had been using morphine for five years, took about four grams a week, taking from time to time a pinch of the powdered alkaloid, of which she said she liked the taste. This suggested the substitution of a bitter tasting powder for the morphine. The first prescription was, morphine sulphate, four parts; quinine, one part, and sodium bicarbonate, 0.5 part, 5.5 grams of this mixture being given her with the understanding that it must last a week. In subsequent prescriptions, the morphine was diminished each week by 0.5 gram, the remaining ingredients being increased to maintain the necessary bulk. By the tenth week constipation had been followed by diarrhea, which led to considerable weakness. Citrated caffeine and a mixture in equal parts of bismuth subnitrate and starch were added to the prescription, and the condition gradually improved until, by the twenty-sixth week, complete removal of the morphine had been effected. The patient's general condition improved greatly, and eighteen months after the termination of the treatment, she was still mistress of her desire for the drug.

#### ARCHIVES OF RADIOLOGY AND ELECTROTHERAPY.

September, 1913.

**Causation of Williams's Sign in Early Pulmonary Tuberculosis**, by Hugh Walsham and Walker Overend.—A diminution in the extent of the inspiratory depression of the diaphragm on the affected side is an early sign of pulmonary tuberculosis and is known as Williams's sign. Its origin has been attributed to a variety of causes: Diminished power of retraction or loss of contractility in the tissues of the lung; the diaphragm may be intimately connected with pleuritic adhesions, hindering its excursions; the terminal branches of the vagus may be involved, being unduly exposed to the effects of pressure or strain, eliciting a reflex which inhibits inspiratory movement; the phrenic nerve may be affected with pleuritic adhesions at the apex

of the lung. The average position of the diaphragm in the erect posture shows the highest point of the arch to lie near the upper border of the fifth right and lower border of the fifth left rib in front. In recumbency the position is slightly higher. Behind, on standing, the level is near the upper border of the ninth right and lower border of the tenth left rib. In the horizontal position, the lower border of the eighth right and lower border of the ninth left rib. In quiet, normal, breathing, the amount of movement is practically one half an inch; in deep inspiration, about two inches. Diaphragmatic pleurisy manifests itself either as a marked prominence in the curve during inspiration, or as a series of small irregularities in its contour. In peribronchial and hilum phthisis in children, there may often be observed toward the end of inspiration an apparent retraction—really an incomplete expansion—of the lung on the diseased side. It is most distinct in the two upper interspaces near the sternum and has been termed the dimpling of the hilum. When the focus of disease is situated posteriorly, the diminished excursion is more evident in the dorsal half of the arch. The spinal part of the diaphragm is here more affected than the sternocostal.

**Intensifying Screens in Radiographic Work**, by L. G. Heilbron.—To obtain contrast on the plate, very low vacuum tubes are sometimes used. By this means, it is possible to render separately visible skin, subcutaneous tissue, groups of muscles, etc. The greatest advantage in the use of the intensifying screen lies in the possibility of using much lower tubes than without the use of the screen. In kidney work the screens have been of decided advantage. In children, because of the lack of fat, it is difficult to obtain a kidney picture; when the screen is used, the shadows of the kidneys are quite plain. The technic described is as follows: The tube is regulated so as to give rays of the required degree of penetration, generally about five Benoist. The hardness is not measured in every case with a direct method but the deflection of the milliamperemeter is taken as an indicator of the hardness of the rays. For kidney work, thirteen-fourteen milliamperes during twelve seconds at a focus plate distance of sixty cm. are applied. In children, the time of exposure is somewhat shorter. The screen is used in radiographic work on the alimentary tract, the spine, hip, shoulder joint, extremities and head. The hands, feet and teeth are usually radiographed without a screen.

#### ARCHIVES OF OPHTHALMOLOGY.

September, 1913.

**Vision: Its Economic Value and Conservation**, by Lloyd B. Whitman.—Economically the conservation of vision can be rated almost as high as the conservation of life, from some standpoints higher, for, when dead, a man imposes no burden upon the public. Not so with the blind, who must be housed, clothed, fed. As they are not producers, we must add what they would have contributed toward the national wealth had they been able to work. Another source of loss is in the public schools. In Philadelphia, under normal conditions, a pupil of fourteen years reaches the eighth grade at a cost to the State of \$280. If a child with defective

vision reaches only the fourth grade in that time, it has cost the State \$280 to get \$140 worth of result, *Journal of Hygiene*. In 7,314 cases, examined by Westels in four years, seventy-two per cent. were backward, representing a loss in money for those children alone of \$414,085. New York city has 650,000 public school children, thirty per cent. of whom are two years behind their natural grades. To children with faulty eyes school work is a pain and a burden. They are always behind their classes, an exasperation to their teachers, a discouragement to themselves. Unless relieved and rendered fit for study, they are regarded as mentally deficient and become disheartened. Then, at the age of fourteen they are apt to be taken from school and put to work, for which they are unequipped, and the State again loses, loses money, loses a valuable worker or thinker, loses a useful citizen, and perhaps gains a rogue to support, because of the neglect of an examination of the eyes and proper treatment.

JOURNAL OF NERVOUS AND MENTAL DISEASE

**The Feebly Inhibited: Violent Temper and Its Inheritance.** by Charles B. Davenport. A study was made of one hundred and sixty-five family histories of wayward girls in State institutions. From the data thus obtained Davenport concludes that the tendency to outbursts of temper in adults—whether more or less periodical or irregular, and whether associated with epilepsy, hysteria, or mania, or not, is inherited as a dominant trait, does not skip a generation, and tends to reappear on the average in half of the children of an affected parent. Epilepsy, hysteria, and mania do not seem to be the causes of the violent tempers that frequently accompany them; the violent outbursts are in no clear sense the equivalent of these psychoses. Rather they are due to a factor that causes periodical disturbance, possibly paralysis of the inhibitory mechanism. This factor has the greatest effect when it acts on a nervous system that is especially liable to other psychoses. In other words, tantrums are apt to be associated with these various neurotic conditions while they have no necessary connection with them.

SOUTHERN MEDICAL JOURNAL.

**Personal Association as a Factor in the Etiology of Pellagra,** by Philip Garrison and Paul A. Schule.—In the endemic centres studied, forty-two per cent. of the pellagrous households presented multiple cases. Sixty per cent. occurred two or more to the household. The age and sex distribution of both first and subsequent cases in the household corresponds roughly with the distribution in general population. Adult females present a considerably larger proportion of first cases than of subsequent ones. When the first case in the household is of a housewife or child there is a much greater tendency for the development of subsequent cases in children, but when the first case is of a wage earner subsequent cases in children are extremely rare. The time interval between the first and subsequent cases in the household is variable; the most common interval is twelve months.

**Dietetic Treatment of Pellagra,** by Y. A. Little.—In seven of the reported cases, raw eggs, milk, and toasted crackers were given in the initial stages, followed by general diet when the diarrhea ceased. The other cases were given a more liberal diet from the first, the eggs and milk being increased, the vegetables, beef, etc., administered sooner in the course of the disease. The writer feels that a free liberal diet should be administered in the very beginning of these cases and that every means should be taken to see that the patients get plenty of meat, eggs, and milk. He ascribes the only death to the fact that he could not get the patient to take the proper amount of nourishment.

**Unusual Condition of the Nails in Pellagra,** by W. C. Brownson.—In two cases of pellagra, dermatitis was extreme and extended to the finger tips, while a white band crossed each of the nails transversely. Such a leuconychia appears to be a rare condition in this disease.

**Pellagra: Cause and Cure,** by Rufus T. Dorsey.—Dorsey believes pellagra is caused by an intensely poisonous ptomaine formed as the result of putrefaction within the substance of the tonsils, or other buccal lymphoid structures, and advocates complete tonsillectomy as the most important step in treatment.

**Pellagra in Panama,** by Benjamin Hobson Frayser, and David O. Smith.—Rest in bed should be insisted upon. Fruit juices, meat broths and milk should be given until gastric symptoms have cleared up, then fresh meat and vegetables, a carbohydrate free diet. Good results have been alleged from medium sodium cacodylate and salvarsan. Patients are advised to continue the use of the former off and on for several years after all symptoms have disappeared.

Proceedings of Societies.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.

*Sixty-fifth Annual Meeting, Held at Philadelphia, Pa., September 20, 21, 22, 23, 24, 25, 1915.*

The Retiring President, Dr. EDWARD B. HECKEL, of Pittsburgh, in the Chair.

**President's Address; Civic Responsibility of the Physician and the Medical Society.**—Dr. JOHN B. MCALISTER, of Harrisburg, mentioned as vital problems for thought, the standardization of the profession throughout the country, and hoped that he might see the day when a licensed doctor in Oklahoma would be a licensed doctor in Pennsylvania. He believed that the attitude of the profession should be modified toward new schools of practice; all that was good in the various methods of relief was to be desired; ignorance and fraud only should be opposed. The legislative committee of the society needed the wisest judgment and conscientious cooperation of the profession, and the establishment of a board of regents similar to that of New York would set standards, protect the public against fraud and incompetency, remove from the profession the reproach of bigotry and selfishness, and prevent the multiplicity of examining



boards. In the field of preventive medicine, there was great need of a National health department in the Federal Government.\* Half a million deaths in America annually from preventable disease emphasized this need. He regarded the newspaper as more powerful than all the guns of all the armies in the world and believed, did they unite, they could end the war in Europe. He felt that the press and the doctor should join forces for the education of the public in health, hygiene, and preventive medicine and for influence with legislatures.

#### **Report of the Subcommittee on Cancer for 1915.**

—Dr. JONATHAN M. WAINWRIGHT, of Scranton, stated his belief that the Pennsylvania State Medical Society was the first organization to make a systematic attack upon the problem of cancer. The first effort had been to induce every medical college professor interested in a subject approaching cancer to impress upon his students the fundamental principles of the campaign, and the hope was expressed that examining boards might be induced to insist upon a proper knowledge of the disease. Effort had been made to oblige every nurses' training school in the State have their pupils instructed in the subject. Perhaps the most efficient plan by which the society had worked had been through the county societies. In June, thirty-eight counties had held meetings devoted to the consideration of cancer and sixty-five journals in their July issues had joined in a cancer campaign.

**The Evil Effects of Delayed Operation in Malignant Conditions.**—Dr. CHRISTIAN B. LONGENECKER, of Philadelphia, believed that in the entire field of medicine nothing was of so great importance as early diagnosis in malignancy, and the responsibility of the family physician was very great since he was the first to be consulted. He would emphasize the necessity of physicians becoming more conversant with the early signs of cancer. He referred to cases in which the patient had been advised to "wait to see if the lump might not disappear," or "until the character of the lump could be determined." While hope lay in early diagnosis and early treatment, it might be with propriety questioned whether this treatment should always be surgical. There were other agencies claiming attention and promising much, but time was required to demonstrate their value.

Dr. JOHN G. CLARK, of Philadelphia, believed that as pioneers in the dissemination of knowledge concerning cancer the subcommittee of the State society had laid an enduring foundation by first attempting to put the medical profession in the right position regarding the question. Two serious errors were delay on the part of the patient to seek advice and negligence of the physician to observe the most patent symptoms.

**Pennsylvania's Relation to Industrial Safety and Health.**—JOHN PRICE JACKSON, Commissioner of Labor and Industry of Pennsylvania, of Harrisburg, said, by invitation, that the industrial board had prepared a set of standards beginning with the problems of safety and had covered a large proportion of the industrial activities of the State. It was the intention later to formulate rules relating to industrial health and sanitation. The duty of the division of hygiene and engineering was that of pre-

paring for the industrial board information of value in reducing accidents, improving health conditions, and increasing the welfare of the workers. The matter of injury to children between the ages of fourteen and sixteen years unfitted for their work, the study of poisonous industries, the preparation of first aid kits, investigation of the effect of tobacco fumes on tobacco workers, were some of the questions included in the work of the division. The Accident Corporation System, another line of endeavor in the work of the industrial board, had for its primary object the giving of prompt adequate aid to the injured for maintenance of himself and his dependents.

**Diagnosis of Tubal Gestation: A Critical Study.**—Dr. ALFRED HEINEBERG, of Philadelphia, considered the diagnosis of tubal gestation before interruption in the course occurred and after its course had been disturbed in one of several ways, with a brief review of changes taking place in the pelvic structures and embryo before such disturbance and cause of failure in diagnosis in this stage. He classified cases in which interruption in gestation has occurred into tragic and nontragic, and mentioned pathological changes during and after interruption in each type. Symptomatology and diagnostic signs were enumerated with a consideration of the differential diagnosis from ordinary abortion, twisted pedicle of an ovarian cyst, pyosalpinx, appendicitis, and other conditions causing peritonitis.

Dr. WILLIAM R. NICHOLSON, of Philadelphia, cited a case occurring at the Methodist Hospital which approached the tragic type mentioned by Doctor Heineberg. A large amount of blood had been found in the peritoneal cavity, but he had been unable to find rupture or enlargement of either tube until after their delivery, when a small perforation was discovered close to the cornu. The frequency of confusion between extrauterine gestation and abortion he felt should be emphasized. Slight uterine hemorrhage he considered of great importance.

Dr. JOHN A. MCGLENN, of Philadelphia, in reviewing the histories of eighty cases of this kind in which he had operated, had found none presenting symptoms sufficiently different from those of normal pregnancies to cause the patient to consult her physician. He believed that few cases would be diagnosed before rupture because patients would not present themselves for study until after rupture had occurred. The number of cases diagnosed by the general practitioner was in direct relationship to the publicity given the subject. While he agreed practically with Doctor Heineberg regarding diagnosis at the termination of pregnancy, he believed the most important aid in diagnosis was a painstaking history. Differing somewhat from Doctor Heineberg, he did not believe the amount of shock to be dependent upon the size of hemorrhage; he had seen profound shock follow rupture with but little blood in the peritoneal cavity, and cases with the pelvic and abdominal cavities full of blood with practically no shock.

Doctor HUGGINS, of Pittsburgh, in a series of more than 100 cases had diagnosed ectopic gestation and operated before rupture in twenty-two instances. He believed that if the general practitioner in see-

ing a patient with the history of pain in the pelvis and a missed menstrual period only thought of ectopic gestation, he would diagnose such a case in the majority of instances. He believed that ectopic gestation should be diagnosed in more than eighty-five per cent. of cases.

**Scopolamine-Morphine Anesthesia in Obstetrics.**—Dr. JAMES R. FREELAND, of Pittsburgh, classed as largely "advertising matter" the literature appearing in association with this subject in the last fifteen months. A statistical review was given of cases regarding the effect of scopolamine in relieving pain; its effect upon uterine contractions and the duration of labor; the effect upon the child; and its temporary and permanent effect upon the mother. He believed the proper field for scopolamine was that of a useful sedative in selected cases. Complete amnesia should not be regarded as the main object of its use. The physician should reserve the right to give "twilight sleep" just as the surgeon chose the anesthetic without reference to the wishes of the patient.

Dr. BARTON COOKE HIRST, of Philadelphia, had found the disadvantages of the method to be prolongation of labor, tendency to atony of the uterus with hemorrhage, and an increased proportion of apneic babies that could not be revived. If one followed the latest method of giving minimum doses of the two drugs, the disadvantages disappeared, but the relief afforded was scarcely noticeable. He had found the method of advantage, however, in primiparae of a neurotic type in whom a long painful labor was probable, and in such cases, he used it rather for its psychological effect than for the relief of pain. He thought it unfair to criticize negatively any method without offering some alternative. He referred to his experimental use of cannabis indica for the relief of the pains of childbirth without disadvantage to mother or child.

Dr. DANIEL LONGAKER, of Philadelphia, believed that every woman should be transferred to the specially appointed hospital for her confinement, regardless of the method by which delivered. He believed that Doctor Freeland would eventually admit that the full benefit of scopolamine was obtained only with complete amnesia. He agreed that the apnea was due to the morphine and said that in certain cases neither of the drugs should be used.

Dr. D. M. BARR, of Philadelphia, referred to his employment of an anesthetic in labor consisting of one part chloroform, two of alcohol, and three of ether, and showed an inhaler made for him by the elder Colby forty years ago. With a means so efficient as the method had been in his hands, he questioned the necessity of resort to the *Dämmerschlaf*. He called attention to the publication of his paper, *A Plea for Anesthesia in Labor*, in the *Medical and Surgical Reporter*, in 1880.

Doctor FREELAND, in closing, regretted his inability to join the enthusiasts for the use of scopolamine anesthesia. His first objection was to the name "twilight sleep," by which it was usually known, regarding this as a trade name, and as such, without place in the practice of medicine. The factor of suggestion also he considered harmful to the patient's mental balance, and he believed that a certain

proportion of patients would later come into the hands of the neurologist.

**Pulmonary Tuberculosis and Pregnancy.**—Dr. C. C. NORRIS, of Philadelphia, considering the frequency of pregnancy in the tuberculous, said it was an undetermined point whether or not the normal, pregnant woman was more susceptible to infection by the tubercle bacilli than her nonpregnant sister. That pregnancy exerted an unfavorable influence upon the course of tuberculosis, was generally admitted, but no hard and fast rule could be laid down. He believed it correct to advise the tuberculous woman against marriage, but here, too, a hard and fast rule was too general. Certainly, however, marriage should be advised against in the presence of an active lesion, no matter how limited. Regarding the treatment of pregnancy in the tuberculous, he believed that the attitude toward any given case should depend upon the individual conditions. There must be the consideration of the advancement of pregnancy, the character of the pulmonary lesion, social status and intelligence of the patient, her ability to undergo hygienic and dietary treatment, and whether she already has children.

Dr. R. H. M. LANDIS, of Philadelphia, remarked that among tuberculous women a very considerable number gave the first noticeable manifestation of the disease during the course of pregnancy. He doubted, however, if any of these cases were instances of primary infection at this period, but believed rather that they were cases of quiescent tuberculosis in which the added stress of pregnancy had lighted up the process. He had known, however, of instances in which women following six or seven years of sterility had become pregnant after recovery from an attack of incipient tuberculosis and without recurrence of the disease. This he attributed to improved health. He was opposed to legislation advised by eugenicists against the marriage of all tuberculous persons, and questioned whether it could be enforced. He agreed with Doctor Norris's views concerning treatment, but disagreed with him in the use of ether as an anesthetic, believing it to have a bad effect upon tuberculous lesions in the lungs.

Dr. ALEXANDER ARMSTRONG, of White Haven, said it was his custom to advise against the tuberculous woman bearing children until she had had at least five years of health. This opinion applied also to the question of marriage. He knew of no case of relapse as a result of pregnancy in a patient who had remained well for five years after the initial attack.

Dr. JOHN A. LICHTY, of Pittsburgh, referred to a very practical side of the question arising when, in spite of advice against pregnancy, the woman five or six months after confinement was found to be in a dangerous condition with marked evidence of infection. The impaired health was too apt to be attributed to the effect of nursing the baby. In this connection he felt the burden lay upon the internist to take serious consideration of the patient.

Dr. ELMER H. FUNK, of Philadelphia, referred to a series of 100 cases of tuberculous women studied at the Jefferson Hospital in forty-three of whom the definite lesions dated from the beginning of pregnancy and during the puerperium. Termina-

tion of the pregnancy in the early months gave better results than in instances in which they had been inclined to allow the pregnancy to proceed. In the later stages the tuberculous lesion had rapidly increased.

**Hospital and Home Isolation.**—Dr. DENNETT L. RICHARDSON, of Providence, observed, by invitation, that while the exact cause of many infectious diseases was unknown, considerable definite knowledge concerning the escape of virus from the body had been gained through laboratory investigation and epidemiological experience. Upon the subject of extracorporal longevity of viruses, there was much difference of opinion; in media such as water and milk they might survive and even multiply. Available data practically ruled out atmospheric contagion. The underlying principles of control of infectious diseases by home isolation should be the same as in the hospital. Simple methods of protection of other members of the family should be used in place of elaborate hospital equipment. The human being himself was said to be the chief distributor of the disease. Three sources of disease in the community were persons recognizedly sick with infectious disease; missed cases; and the carriers. He believed it erroneous to suppose that a room occupied by a patient with an infectious disease was permeated by the virus. That fumigation was unnecessary had been shown by Doctor Chapin, at Providence, and by the recent experiments in New York city. In Providence terminal disinfection after diphtheria was abandoned in 1905, except in a few instances.

**An Unappreciated Form of Pneumothorax.**—Dr. CHARLES REA, of York, said that by this "unappreciated form of pneumothorax" was meant that form which came on suddenly without obvious evidence of illness. The condition was considered to be due to rupture of air vesicles from a tearing of the pleura, probably always due to a previous pleurisy resulting in an adherence of the two surfaces. Frequency was rather greater than generally supposed, and the condition was more familiar to radiologists than to other workers. The differential diagnosis would be of interest so far as extreme emphysema was concerned. General care would seem to be all the treatment required. There should be avoidance of unnecessary muscular effort until absorption of the air and obliteration of the rent had taken place. While prognosis was excellent in the majority of cases, some instances had been reported in which absorption of the air had not occurred for many years. Literature showed the occurrence of outspoken pulmonary tuberculosis in several cases of the condition.

**Therapeutic Pneumothorax in Pulmonary Tuberculosis.**—Dr. ALEXANDER ARMSTRONG, of White Haven, said this method of treatment had been used at the White Haven Sanatorium for three years and the results in sixty cases were given. The procedure consisted of the introduction of gas, preferably nitrogen, into the pleural sac, compressing and eventually causing collapse in the affected lobe or lung. Strict asepsis was to be enjoined throughout the operation. The lung was usually kept under compression for six months, although in some cases a longer time was essential. The rationale of the

measure was to lessen expansion of the alveolar tissue and to encourage drainage of septic matter. Three indications for the treatment were, 1, progressive softening in one or more lobes of one lung, the other lung being normal; 2, relief of hemorrhage; 3, pleurisy, either dry or with effusion. While a careful selection of cases was advisable, it was not necessary to restrict the treatment to those in which the disease was unilateral.

Dr. CHARLES M. MONTGOMERY, of Philadelphia, believed that "unappreciated pneumothorax" described by Doctor Rea should have been more readily recognized by the profession than had been the case. He knew of no more encouraging paper in literature upon the subject than that of Doctor Armstrong giving the excellent results. It was a matter of concern lest the impression might be conveyed that the operation was a simple one and its employment not limited to experts in the work.

Dr. ISADORE KAUFMAN, of Philadelphia, pointed out that Doctor Rea's case of pneumothorax had occurred in a tuberculous person, and stated his belief that a very large percentage of the cases developed in phthisical patients. His experience was limited to two cases, and in both the condition disappeared in a few weeks. All of Doctor Armstrong's conclusions regarding therapeutic pneumothorax agreed with his own.

**Medical Education in China.**—Dr. JAMES B. NEAL, of Tsinan, China, by invitation, brought greeting to the Medical Society of the State of Pennsylvania from the China Medical Missionary Association, the membership of which was made up of 400 or 500 doctors in China, principally American and British. The development of medical education in China had been left almost entirely to medical missionaries. In addition to the work already done by the Medical Missionary Association, it was planned to have at least one thoroughly equipped medical school in China in which the teaching should be done in Chinese. Doctor Neal pointed out that there was in China an immense field for not only medical work, but for the training of Christian doctors. Under the Rockefeller Foundation there would be a great demand for Christian medical men to help in the training of a medical profession for China.

## Letters to the Editors.

### DIAGNOSIS VERSUS TREATMENT.

NEW YORK, October 11, 1915.

To the Editors:

This letter is supplemental to the editorial article, *The Decline of Clinical Teaching*, which appeared in the *NEW YORK MEDICAL JOURNAL* for October 2, 1915, page 717. Much, too much, is made today of diagnosis and too little of treatment. It has become an unqualified statement with many, and especially the younger and talented physicians of our hospitals, to affirm that diagnosis is everything and treatment of small moment. They apply every possible method of research, physical and laboratory, to find out what the matter is; in what organ disease is centred, what part of the organ is affected, and what the organic changes are.

In ordinary cases this finding is not impossible, or even very difficult to a fairly good observer with training and considerable experience. On the other hand, in some instances which are obscure or rare, it requires exceptional



correct for a short time, but it may be during weeks, or months. An opinion seemingly good today, is no longer admissible tomorrow. When a consultation of physicians is held, they often differ. Not infrequently the diagnosis is never thoroughly and satisfactorily settled. Why? Because the patient did not die and consequently there was no autopsy. Again, though the patient died, no autopsy was asked for, or if asked for, permitted.

When a post mortem examination has been made, how often do we find that our diagnosis during life was far removed from accuracy? The busy general practitioner is unable, as a rule, to make many advanced researches. He must depend upon others for them. Hence, not infrequently, error occurs through carelessness, lack of knowledge, misinterpretation of facts. I could illustrate what precedes by numerous examples. Let a few suffice.

In a case of typhoid fever I took care of in private practice, some years since, I was extremely anxious about my patient for several days. The symptoms were alarming and the daily reports from the laboratory equally so. Later, the symptoms greatly improved and my fears were much lessened. Still the reports from the laboratory remained about the same and from that standpoint alone were threatening.

Some years ago, I had a servant who was taken to the hospital and placed under the care of one of the best diagnosticians. In view of the signs and symptoms of advanced cardiac disease, the case was pronounced hopeless and an ante mortem will power was given. Since that time the patient has married, has had more than one child, and has remained in good health.

Not long since, I saw a lady with high blood pressure, interstitial changes in the kidneys, and evidences of albuminuric retinitis. The prognosis was very grave. The patient is now better in health than she has been in many years.

Treatment clears up many cases, provided that we make use of brains, tact, good judgment—and have had much previous experience. It also cures as far as may be, the disease. That is to say, it relieves symptoms and promotes comfort—or brings about what should be considered health. The structural changes in the organ or organs remain, but no longer do they occasion distress or disability. The kind of knowledge which promotes these happy results is not wholly obtained in hospitals, nor in being hidebound by an accurate diagnosis. We may have our presumption as to what the trouble is structurally, and we may reason at first, that it will or should be remediable in a certain way and by reason of certain medicines. As a matter of fact, it is often the drug or combination of drugs which we have finally hit upon, which does the charmed work, and it may be one far removed from our primary conceptions.

When we have found such a drug or combination, we are apt to believe that with our next case, apparently similar, after a searching, careful diagnosis we shall have an equally good result. Alas, it will not respond at all favorably to similar treatment, and we are left, as it were, bereft for a time—not knowing which way to look for real help. Later, we shall find in some almost accidental way, the sovereign remedy for this case, but not necessarily for any other we may meet with in many a day.

In addition to wise empiricism in treatment, I would place the power some have through intelligent, heartfelt sympathy, finally to assimilate the personality of each patient in such a way as to be to him or to her a saving help in time of greatest need. This it was which, in addition to his great common sense, characterized the old family physician and made him, as I believe, a better adviser of patients than the modern, advanced worker in a limited field. Shall we not, sooner or later, for our own welfare be obliged to return to him? That is to say, have some one physician who will be final counselor in everything relating to our health—and not be, as very many now are, drifting about between this or that specialist, until finally they do not know whom to trust thoroughly.

"Therapeutics is an art; and for its highest expression there is something required which no study can give. This may be greatly developed by careful study; but it is after all an individual possession, and the therapeutic instinct stands in the same category as the medical faculty."

ILLUSTRATION BY J. C. HARRIS, 1877, P. 188.

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## THE DISCOVERY OF PITUITARY THERAPEUTICS.

NEW YORK, October 6, 1915.

To the Editors:

In the paper by Dr. L. J. Friedman on Pituitary Extract in Obstetrics, published in your issue for October 2d, page 712, the initial statement, I believe, contains an important error. Friedman writes: "The extract of the hypophysis cerebri was originally recommended, more than half a century ago, by Bell and Hick as a uterine stimulant, but it is only in the last few years that the profession became cognizant of the efficiency of this remedy."

As a matter of fact you will find in my recent book, *Practical Hormone Therapy*, xix, pp. 292-6, reference to the fact that Sir E. H. Schäfer, of Edinburgh, discovered that the pituitary gland manifested evidences of internal secretory activity in 1895 (1), and that three years later Howell (2), of Baltimore, observed that the property of increasing blood pressure first mentioned by Schäfer and Oliver, was confined to extracts of the posterior lobe alone.

The paper by Bell and Hick (3) referred to by Friedman, was published less than seven years ago, and if I am not mistaken the first hint of the therapeutic possibilities of this remarkable substance in obstetrical practice is hidden away in a paper On Some Physiological Extracts of Ergot, by H. H. Dale (4), of the Wellcome Research Laboratories near London. Dale recognized the physiological effects of a substance in the extract of the pituitary upon uterine muscle, but did not then appreciate the potential value of this extract, nor suggest its clinical use. There is no doubt that this was first done by W. Blair Bell (5), of Liverpool, who was the first to use pituitary extract in therapeutic practice. His first report appears at the close of 1909.

If these historical notes are not based on fact, I should be glad to see them disproved in the columns of your interesting paper.

### REFERENCES.

1. E. H. SCHAEFER and G. OLIVER: On the Physiological Action of Extracts of Pituitary Body and Certain Other Glandular Organs, *J. Physiol.*, xviii, 1895, p. 277.
2. W. H. HOWELL: The Physiological Effects of Extracts of the Hypophysis cerebri and the Infundibular Body, *J. Exp. Med.*, iii, 1898, p. 239.
3. W. BLAIR BELL and P. HICK: Observations on the Physiology of the Female Central Ovary, *Proc. Med. Soc.*, 1, 1909, pp. 51; and 692.
4. H. H. DALE: On Some Physiological Extracts of Ergot, *J. Physiol.*, xxiv, 1906, p. 163.
5. W. BLAIR BELL: The Pituitary Body and the Therapeutic Value of the Infundibular Extract in Shock, Uterine Atony, and Intestinal Paresis, *Brit. Med. J.*, ii, 1909, p. 1002.

HENRY R. HARROWER, M.D.

### Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*Tratamiento de la sífilis por el Neosalvarsán en combinación con el Mercurio.* Dr. JUAN ITURBE, Dr. EUDORO GONZALEZ. Caracas, 1915. Pp. 22.

This little brochure gives the experiences of the authors in the treatment of 512 cases of syphilis. Of these 150 were primary, 225 secondary, seventeen gummatous, and 120 latent. Having treated 305 cases in 1911 and 1912 with salvarsan, and having experienced numerous difficulties and inconveniences the writers were glad to try neosalvarsan or 914 as soon as it was obtainable. They were careful to take certain precautions, including a thorough examination of the patient's nervous system, also of the circulatory and renal apparatus; the phenolsulphonphthalein test of renal sufficiency was employed in every case. Great stress is laid upon the technic and especially on the use of doubly distilled water and absolutely fresh solutions. The writers maintain that the untoward symptoms observed by other writers are due to the use of water which was not both chemically and bacteriologically pure, or to solutions not used immediately after preparation. The toxicity of neosalvarsan in solutions exposed to the air, augments rapidly, and after ten minutes they become unsafe. The authors also suggest that the entrance into the vein be made lower in the arm than the skin incision, thus holding the needle in position without fear of dislodging it. In all

primary cases they observed the change to destruction of the retinal vessels. The first dose was from 0.2 to 0.3 gram and the second from 0.15 to 0.20 gram. The primary cases were treated from six to seven weeks, each getting an injection of 0.25 to 0.30 gram of neosalvarsan, followed by two days' rest with inunction of mercury. Then weekly injections of the neosalvarsan were continued up to the seventh week, or until the spirochetes were destroyed. Thirty days after the last injection a Wassermann was done, with both the blood and the cerebrospinal fluid. This test was repeated every three months and if at the end of eighteen months it was still negative the patient was declared cured.

If the Wassermann remained positive or returned after a period, then insoluble mercury salts were given with the neosalvarsan in doses of 0.1 gram. In secondary syphilis the treatment was similar, also in the latent or gummatous forms. In 150 primary cases there was little change in the chance until after the third injection, although the treponema disappeared after the first injection. In the 225 secondary cases the lesions rapidly cleared up, and seventy per cent. showed a negative Wassermann after the first injection.

Seventy-five per cent. of the latent cases cleared up after the administration of 2.5 to three grams of 914, while the tertiary cases yielded easily to treatment. In all these 512 cases there was no serious accident, and the temperature varied only slightly, in only one case going above 38° C. (100.4° F.). Vomiting and diarrhea were occasionally seen, but were mild and of short duration.

**T. B. Playing the Lone Game Consumption.** By THOMAS CRAWFORD GALBREATH, Author of Chasing the Cure in Colorado. New York: Journal of the Outdoor Life Publishing Company, 1915. Pp. 74. (Price, 25 cents.)

Mr. Galbreath is a layman who has spent a good part of his time under treatment for tuberculosis and has embodied what may be called his tuberculous autobiography in this not uninteresting little volume. The author had a fairly typical experience with his physicians, boarding house keepers, tuberculous and other advisers, as well as with various climates, hotels, shacks, tents, and beds in the open air, and as he spent a good deal of his time in an attempt to achieve literary fame, he has turned out a readable as well as a valuable book. He met some queer fish among the doctors, men who calmly advised him what to take and what to do, without even making a correct diagnosis, but Mr. Galbreath treats them all in a most forgiving spirit. We could easily pardon the writer if his pen had run away with him in describing some of his setbacks, but there is an admirable restraint throughout the book, which shows the excellent results of his self imposed literary gymnastics. Not only the lay sufferer, but the physician who is unfortunate enough to be attacked by tuberculosis, may read this book with profit, as it is not only a directory of excellent resorts for the consumptive, but gives a multitude of valuable hints to the sufferer, gathered from personal experience. The publishers, in issuing their first book, have done very well and are to be especially commended for making the price so reasonable.

**Ophthalmoscopic Diagnosis for General Practitioners and Students.** By GEORGE W. JEAN, A. B., M. D., Instructor in Ophthalmology and External Diseases of the Eye in the School of Ophthalmology of the New York Eye and Ear Infirmary, Assistant Surgeon to the New York Eye and Ear Infirmary, etc. Sixty-eight Illustrations. London, New York, Paris: E. B. Meyrowitz, Inc., 1915. Pp. viii-123.

This excellent little volume is intensely practical. The first chapter deals with the various methods of ophthalmoscopic examination and in it the technic of each method and its particular advantages are carefully considered. The second chapter is devoted to a description of the normal disc, its situation, color, size, form, vessels, etc., the types of the normal fundus, and the normal light reflexes of the latter. In the third chapter congenital anomalies and changes occurring in the disc, the vessels, the retina, and the choroid are treated. The three forms of optic nerve cupping, the varieties of atrophy with the prognosis of each and the changes in choked disc, neuritis, and pseudoneuritis are also detailed. The differentiation between retinal and choroidal lesions, as well as between neuritis and

pseudoneuritis is found in the fourth chapter. An enumeration of the many kinds of retinitis, the varieties of retinal hemorrhage, and in what conditions they occur, the changes observed in detachment of the retina, embolism and thrombosis, arteriosclerosis, glioma, etc., helps to complete this chapter. The greater part of the fifth, the final chapter, is devoted to the ophthalmoscopic findings in the inflammations and tumors of the choroid. A few notes on cataract and on blindness from nonuse are inserted at the end of the volume. The arrangement of the subject matter is excellent and in concise form. The illustrations are numerous and help to give a clear understanding of the text.

## Interclinical Notes.

The *Outlook* for October 6th discusses editorially the report of the Rockefeller Foundation on conditions in China, where there is constant danger from hookworm, tuberculosis, and syphilis, all by the way great specialties with the quacks, although the report, we believe, does not touch on that aspect of the question.

What should be done? asks the *Outlook* for October 6th. The Rockefeller Foundation sent out a commission to investigate. It recommends, among other things that the foundation should immediately undertake medical work in China; that so far as possible it should cooperate with existing missionary institutions; that it should establish free medical instruction on the highest practicable standard; that model tuberculosis hospitals be established; that fellowships and scholarships be endowed; that additional foreign doctors and nurses be sent out; and that the equipment of certain hospitals be increased. The intention of the Rockefeller Foundation has been to establish a central medical school for the training of native physicians, with numerous branch hospitals and medical supply stations. It has adopted its commission's report as a working program.

Allan L. Benson, in the September *Pearson's*, thinks that the United States can show good faith in preparing for defense only by confining itself to the placing of mines along our seacoast. Nobody can defend himself, however, without attacking; and, furthermore, it is not at all unlikely that there will soon be invented some means of nullifying the danger from mines. So we shall be obliged to have a big gun or two for a while yet.

Doc Bleeker is a character in Clem's *Widow* by Peter B. Kyne in the October *Red Book*, although we do not find that he practised medicine to any appreciable extent. The overworked Young Doctor in Sir Gilbert Parker's *Wild Youth* remarks in this installment that a medical practice is "hard to get and not easy to keep." He seems to prescribe an unusual amount of alcohol—perhaps that is a professional custom in the wild west.

In his new serial, *The Thirteenth Commandment*, Rupert Hughes speaks of the close of a honeymoon. In the October *Red Book* he calls it the exit by the couple through the Eastern Gate of Paradise to take up life amid thorns and thistles, and says such scenes should not be witnessed by those not initiated into wedlock; they should be kept secret to encourage the others.

A writer in the *Medical Press and Circular* for September 15th, on Science and Luck, observes: "Those who deny the influence of luck, and ascribe to their superior abilities and assumed commanding greatness the success they may have achieved, display an arrogance opposed to the consciousness of accuracy. Luck cannot be wooed, and it cannot be won; it comes and it goes independently of human influence; in varying degrees its presence declared, and is uncontrolled by any law of which we have cognizance. . . . A precise definition, in the case of so changeable a thing as luck, is scarcely possible. Its only feature, which is not elusive, is fixity of purpose. That purpose is to benefit, and those who place reliance on its help, based merely upon anticipation, gain some compensation from the enjoyment of conjecture of a result which may prove to be favorable. Homer, in one of the books of the *Iliad*,

describes how, for guidance in great concerns, lots were cast, and how that it was the rule to appeal to Jupiter to decide the matter. Thus it may be assumed that in ascribing to Jupiter the decision in a fateful moment, the impression in the mind of the ancients was that luck was not an accident, was something more than a matter of chance, and something beyond their power of control."

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It is difficult to restrain a smile when, after spending hours in putting into correct if not eloquent English, the cranky style, full of foreign idiom, of some contributor whose blood is mainly European, we are informed with a flourish that he has been warmly congratulated on his command of our language. The editor of *Medical Pickwick* pays his respects, in the October issue, to native born sinners with their chronic appendix, acute abdomen, no pulse, no temperature, etc., their interchange of patient and case, their negative urine. But what, by the way, does *Pickwick* expect us to understand by the curious phrase, "quondam reputation?"

\* \* \*

Our first popular translation of the *Arabian Nights* was derived from a French version, in which the Arabic *djinni* was rendered *genie*, which the English writer imported bodily into English. The word has since led to endless misunderstanding among careless writers, who have readily confounded *genie* with *genius*, a word from another source altogether, viz., the Latin *gigno*. Another stumbling block among people who never seem to think of consulting a dictionary, is that the plural of *djinni* is shorter than the singular—*djinn*, in fact; this plural has been misused so often that it is gradually becoming accepted as the proper singular. Since the object of our school training is to make the pupil acquainted with English—the language if not the literature—why do not the teachers insist on constant consultation of the dictionary? Mistakes in spelling in a written composition ought to be considered most serious lapses, for correct forms are easily ascertained, whereas grammatical errors are more pardonable because appeal to the teacher is often necessary. Some of the manuscripts we receive seem to show that the authors are unable to correct the most obvious mistakes of their typists.

## Meetings of Local Medical Societies.

**MONDAY, October 18th.**—New York Academy of Medicine (Section in Ophthalmology); Medical Association of the Greater City of New York; Medical Society of the County of Erie; Elmira Clinical Society.

**TUESDAY, October 19th.**—New York Academy of Medicine (Section in Medicine); Tompkins County Medical Society; Medical Society of the County of Monroe; Buffalo Academy of Medicine (Section in Obstetrics and Gynecology); Tri-Professional Medical Society of New York; Medical Society of the County of Kings; Binghamton Academy of Medicine; Syracuse Academy of Medicine; Ogdensburg Medical Association; Oswego Academy of Medicine.

**WEDNESDAY, October 20th.**—New York Academy of Medicine (Section in Genitourinary Diseases); Alumni Association of City Hospital, New York; Schenectady Academy of Medicine; Women's Medical Association of New York City (New York Academy of Medicine); Medico-Legal Society, New York; Buffalo Medical Club; Northwestern Medical and Surgical Society of New York.

**THURSDAY, October 21st.**—New York Academy of Medicine (stated meeting); Auburn City Medical Society; Geneva Medical Society; German Medical Society, Brooklyn (annual); Esculapian Club of Buffalo; New York Celtic Medical Society.

**FRIDAY, October 22d.**—New York Society of German Physicians; New York Clinical Society; Manhattan Medical Society; Society of Alumni of Sloane Hospital for Women; Brooklyn Society of Internal Medicine; Italian Medical Society of New York.

**SATURDAY, October 23d.**—New York Medical and Surgical Society; West End Medical Society; Lenox Medical and Surgical Society.

## Official News.

### United States Army Intelligence:

*Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the week ending October 9, 1915:*

**Ellis, Paul H.**, First Lieutenant, Medical Reserve Corps. Relieved from active duty at Fort Omaha, Nebraska, and ordered to proceed to his home, and after the expiration of such leave as may be due him will report to the Adjutant General for relief from duty. **Geddings, E. F.**, Major, Medical Corps. Reports arrival at Fort Adams, Rhode Island, for duty. **Hartsock, Frederick H.**, Major, Medical Corps. Granted one month's leave of absence on or about October 9, 1915. **Koppenbrink, W. E.**, First Lieutenant, Medical Reserve Corps. Resignation of his commission has been accepted, to take effect on October 1, 1915. **Orcar, William B.**, First Lieutenant, Medical Reserve Corps. Ordered to active duty and will proceed to Fort Screven, Georgia, for duty until the return of Captain E. R. Gentry, Medical Corps, to that post, and then to return to his home. **Proxmire, Theodore S.**, First Lieutenant, Medical Reserve Corps. Ordered to active duty and will report for duty at Fort Sheridan, Illinois, until October 16, 1915, and will then return to his home. **Waring, J. R. H.**, Captain, Medical Corps. Relieved from further treatment at the Walter Reed General Hospital, Takoma Park, D. C., and will then proceed to San Francisco, Cal., and take the first available transport for the Hawaiian Islands.

## Births, Marriages, and Deaths.

### Born.

**Adams.**—In New York, on Tuesday, October 5th, to Dr. and Mrs. Phineas H. Adams, a daughter.

### Married.

**Abrams—Schwabacher.**—In San Francisco, Cal., on Tuesday, September 28th, Dr. Albert Abrams and Mrs. Blanch B. Schwabacher. **Binney—Cunningham.**—In Brookline, Mass., on Saturday, September 25th, Dr. Horace Binney and Miss Harriet Cunningham. **Bunnell—Compton.**—In Berkeley, Cal., on Wednesday, September 22d, Dr. Sterling Bunnell and Miss Maude Compton. **Cook—Pinkham.**—In Boothbay Harbor, Me., on Wednesday, September 29th, Dr. James H. Cook, of Quincy, Mass., and Miss Marion Louise Pinkham.

### Died.

**Blakeley.**—In Avalon, Mo., on Wednesday, September 29th, Dr. Thomas Blakeley, aged eighty years. **Brooks.**—In Paducah, Ky., on Saturday, September 25th, Dr. John G. Brooks, aged seventy-five years. **Clemmons.**—In Lebanon, Tenn., on Wednesday, September 22d, Dr. Marcus F. Clemmons. **Evans.**—In Washington, D. C., on Thursday, September 30th, Dr. Warwick Evans, aged eighty-seven years. **Gibbons.**—In Brooklyn, N. Y., on Friday, October 1st, Dr. John T. Gibbons, aged fifty years. **Keller.**—In Hagerstown, Md., on Thursday, September 30th, Dr. Luther H. Keller, aged sixty-three years. **Kingsley.**—In Denver, Colo., on Friday, October 1st, Dr. Orson P. Kingsley, aged thirty-six years. **Lightner.**—In Marysville, Pa., on Sunday, October 3d, Dr. Henry O. Lightner, aged forty-three years. **Mitchell.**—In Atlanta, Ga., on Friday, October 1st, Dr. James W. Mitchell, aged fifty-four years. **Sorrells.**—In Athens, Ga., on Friday, September 24th, Dr. R. P. Sorrells. **Spalding.**—In Washington, D. C., on Wednesday, September 29th, Dr. Samuel K. Spalding, of Omaha, Neb., aged sixty-eight years. **Taggart.**—In Skowhegan, Me., on Thursday, September 30th, Dr. Howard C. Taggart, aged sixty-one years. **Tracy.**—In Norwich, Conn., on Sunday, October 3d, Dr. Dwight Tracy, aged eighty-four years. **Vreeland.**—In Paterson, N. J., on Monday, October 4th, Dr. Frank D. Vreeland, aged sixty-four years. **Webb.**—In Cameron, Ohio, on Monday, September 27th, Dr. William G. Webb, aged seventy-eight years.



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### Original Communications.

#### TUBERCULOSIS OF THE PATELLA

By ARTHUR L. DAVIDSON, M.D.,

Philadelphia,

Associate in Orthopedic Surgery, Jefferson Medical College; Assistant Orthopedic Surgeon, Jefferson Hospital; Orthopedic Surgeon, Jewish Hospital.

In searching the literature on tuberculosis of the knee joint we are impressed by the comparatively small number of cases that are credited to primary disease of the patella and by the limited number of references to this specific subject. When we consider the frequency of primary tuberculosis of the various parts of the knee joint, it is surprising that the patella, in its close association with the knee joint, should be such an uncommon site for the primary tuberculous invasion.

Sir W. Watson Cheyne (1), in his *Tuberculous Disease of the Bones and Joints*, has compiled statistics from various sources to give a fair estimate of the distribution of tuberculous disease of the bones and joints, including all ages. The table clearly shows the existence of some local predisposition which we cannot as yet define, but which renders one part more liable to be attacked than another.

There can no longer be any doubt that the tubercle bacillus is the specific primary cause of these affections, and although without it they could not occur, the converse does not necessarily hold good, viz., that given the tubercle bacillus in the body, tuberculous disease must result.

The most common point of entrance of these bacilli is the mucous lining surfaces of the body, more especially of the digestive and respiratory tracts and thus primarily involving the lymphatic glands that drain these regions. There are, however, many cases on record in which the bacilli have entered directly through wounds in the skin. It is also possible that in some cases infection occurs through the genital mucous membranes, especially where tuberculosis of the prostate or of the uterus results. The possibility of inheritance is still an open question. We know positively that children born of tuberculous parents inherit a special susceptibility to the attack of the tubercle bacillus, and it is even quite possible that the bacilli are also inherited, but may remain dormant for a long time until circumstances arise which increase the susceptibility of the body.

The profession is still divided on the relative importance of trauma as an etiological factor in the production of bone tuberculosis. That the begin-

ning of tuberculous diseases of the bones and joints is often attributed to an injury is a fact well known and accepted by all. The point which has been so much disputed is whether the injury was in reality the starting point of the disease, or whether the disease was not in existence before and the injury either only attracted attention to the part or, at the most, caused the disease to become more active.

Wilson and Rosenberger (2), after a most complete review of the literature on this subject, a consideration of the animal experimentation, and in view of their clinical observations and pathological investigations, conclude that "the relation of trauma to bone tuberculosis must, sooner or later, be established as having no existence in the etiology—or in the beginning of the process," and further state that "the apparent causes of the confusion lie in the varying interpretations of the experiments upon animals that have been performed; a failure to critically analyze the kind of trauma used; the impossibility of actually reproducing the human clinical process and phenomena by the methods resorted to in animal experimental research; the extreme difficulty of determining whether trauma is a cause or an effect; and, finally, reluctance to accept the established fact that infection is the only essential etiological factor, and that contributory sequelæ are to be found in any condition that lowers vitality and diminishes the powers of resistance." Among those who share this opinion are Senn (3), Cornet (4), Van Meter (5), Gross (6), Stern (7), Mircole (8), Honsall (9), Ely (10), LaPeyre (11), and others.

On the other hand, L. A. Sayre (12), in 1888, expressed the view that the origin was always the result of trauma. Nichols (13) considers injuries of moderate severity to favor the production of the disease. Goldthwait, Painter, and Osgood (14) speak of trauma as an exciting cause. H. L. Taylor (15) says it may or may not be a cause. Bradford and Lovett (16) consider that trauma may cause tuberculous joint disease in children with a tuberculous tendency; and Cheyne states, "I have myself no doubt from various clinical facts that injuries such as sprains may directly lead to the deposit of tubercle bacilli in the injured part and the development of tuberculous disease, and I believe that this is due to some interference with the local protective mechanism as a result of the injury."

Should trauma be such an important and frequent etiological factor, we should naturally expect to find the patella to be frequently involved in a tuberculous process, on account of its vulnerable and exposed position and in consequence of the frequency with which it is traumatized in children.

It is questionable whether tuberculosis of any bone or joint, in the true sense of the term, is ever primary. It is more likely that in all cases the disease in bone is metastatic in origin, the infection being primary in lymphatic glands in some distant part of the body and carried, to the bone or joint involved, by the blood or lymphatic circulation. The tubercle bacillus, after being carried from the primary focus, is usually deposited in the newly formed bone about the epiphyseal cartilage where, favored by a natural stasis of the circulation, toxins are liberated, the bacilli multiply, and the disease is established.

Primary tuberculosis of the patella (so called) is exceedingly uncommon. It has been investigated and described by a very small number of surgeons and pathologists, and medical literature has but few references to the subject. It is not even mentioned in the majority of textbooks on surgery and of the modern works on orthopedic surgery. H. L. Taylor's alone makes reference to disease of this structure.

Ménard (17), in 1806, reported, at the Tenth Congress of Surgery held in Paris, six cases of primary tuberculosis of the patella. E. Kummer (18), of Geneva, reported one case of his own, three from Kocher's clinic, and three additional communicated to him by Kaufman, of Zurich. Gross (19), of Geneva, in 1900, published an article in which he collected thirty-six cases of primary tuberculosis of the patella, including four of his own. J. B. Murphy (20), in 1908, published an excellent paper on this subject, reporting two cases. E. G. Alexander (21) reported one case, in 1914. Among other investigators who have written upon this subject are Volkman (22), François (23), Forget (24), Ribas (25), Schluter (26), Kocher (27), Röpke (28), Golding Bird (29).

The following illustrative case is reported from the service of the Orthopedic Department of Jefferson Medical College Hospital:

CASE. H. A., male, aged twenty-two years, referred by Dr. B. P. Weiss. Family and personal history negative. Present illness: Onset thirty days before admission to the hospital on September 23, 1914. Right leg became numb and cold. No history of injury to precipitate the trouble. It was noticed that the right knee began to swell and become painful. Pain never radiated down the leg, always being appreciated in the knee joint. From the onset the pain was more severe at night and especially when the leg became cold. The swelling remained stationary after onset. The patient was brought to the hospital in an ambulance, being unable to place any weight upon the affected leg. The right knee was swollen and painful. The knee was held in very slight flexion, was tender to pressure, and painful on motion. The pain was constant and shooting in character. There was a point of extreme tenderness over inner side of knee. The swelling was most marked above and at each side of the patella. Patella was movable and floating. Joint was markedly distended with fluid, fluctuation being present. Voluntary motion of the joint was decidedly limited. Temperature of part slightly increased; body temperature slightly subnormal.

Comparative measurements: Right thigh, 13½ inches; left thigh, 13½ inches; right knee, 14½ inches; left knee, 13 inches; below right knee, 11¾ inches; below left knee,

Heart, lungs, etc., nothing abnormal. The urine showed a trace of albumin, no sugar, a few pus cells, and many granular casts. A Wassermann test was negative. A tuberculin test was positive. A radiograph showed marked effusion in the knee joint; no bone destruction of the component parts of the joint but evidence of destruction and cavity formation in the patella.

The joint was aspirated for diagnostic purpose, with fluid report as follows: Fluid amber, turbid, alkaline, albumin twenty-five per cent., many pus cells, and no bacteria.

Operation was decided upon and performed October 3, 1914. After the usual preparation, a vertical incision was made to the outer side of the patella, about three inches in length. When the joint was opened a considerable amount of thin purulent fluid escaped. The joint was then explored and, on examining the under surface of the patella, a cavity was found about five cm. in diameter, through which was protruding a plug of granulation tissue. The granulation tissue was removed and the cavity examined. Almost the entire medulla of the patella was found necrotic. A sequestrum corresponding in size to the opening of the cortex of the patella was removed from the cavity, and the cavity thoroughly scraped with a small spoon curette. There was found a great amount of red edematous synovial tissue throughout the joint which was removed. The joint was then thoroughly washed with hot salt solution, all bleeding vessels were ligated, a small gutta percha drain was inserted down into the joint, and the wound closed.

The drain was removed three days after the operation with wound draining very little. The swelling gradually subsided, giving complete relief from pain. The patient's temperature became normal. The wound closed completely in ten days, and in three weeks the patient was discharged, walking on the affected leg without support. Joint motion was not accompanied by pain, and there was absolutely no tendency to ankylosis.

At this writing, nine months after operation, the knee is of normal appearance, and function is normal and painless. The patient has returned to his former occupation without any disadvantage. An x ray at this time shows the joint to be normal, and the bone regeneration in the patella is rapidly approaching the normal density for that part.

Murphy believes that the patella owes its immunity to tuberculous disease to the fact that it is a sesamoid bone, or, in other words, that it has no epiphyseal or capillary loop circulation.

The age of incidence varies greatly. The disease usually develops in early adult life, but may occur at any age. Of the thirty-six cases reported by Gross the age was known in thirty-three. Of these thirteen were under twenty years and twenty were over twenty years of age. All of Röpke's cases occurred between the ages of two and eight years. Murphy's patients were twenty-seven and thirty-seven years old respectively, Alexander's patient was eleven years old, and the author's patient was, as stated, twenty-two years old.

The pathological process does not differ essentially from that of tuberculous bone disease elsewhere. A small focus appears, which gradually enlarges, the medullary substance of the bone becomes necrotic, a sequestrum forms, and an abscess opens in the line of least resistance which is, usually, into the knee joint. However, the focus may rupture externally, first into the prepatellar bursæ and later through the skin. Should there be rupture into the knee joint, a tuberculous infection of the joint results.

The symptomatology depends upon whether the

disease is limited to the patella, or whether it has extended to the joint and caused joint involvement. When the disease is limited to the patella, there is spontaneous pain in the patella in the daytime, often



FIG. 1.—Author's case of tuberculosis of the patella, showing cavity formation and sequestrum. Radiogram in Dr. W. F. Manges.

accentuated at night, with extreme tenderness on pressure over the patella. The patient may complain of coldness of the knee and leg. The patella may be enlarged in all directions and the subcutaneous surface may be rough and uneven to the touch. During this stage the functions of the knee joint are but little interfered with. The knee is usually held in extension or nearly so and the patella is freely movable. Later, if the disease extends externally, a prepatellar abscess appears, which may rupture and be followed by sinuses leading into cavities in the cancellous tissue of the bone. Should there be rupture internally into the knee joint, it will be followed by sudden and usually great effusion into the joint, marked pain and limitation of joint motion, apparent enlargement of the knee, and, later, abscess formation, sinuses, and atrophy.

The diagnosis is very difficult in early cases. The x ray will show little or nothing early in the disease, but is invaluable later, showing bone destruction, atrophy, and sequestration. The diagnostic points to be remembered are localized pain and tenderness in the patella, enlargement and irregularity of the subcutaneous surface of the bone, free mobility of the patella, and unimpaired joint function. Early diagnosis is most important. Most likely many cases of tuberculosis of the knee have been due to primary tuberculosis of the patella. Gross says, "if one bears in mind the possibility of tuberculosis of the patella, many knees will be saved." Von Pirquet's or other tuberculin tests may be of value to determine that the patient is tuberculous. Aspiration may be of value in diagnosis.

#### TREATMENT

The treatment depends upon the stage and extent of the disease and upon the presence or absence of joint involvement. If the cavity is small the sequestrum can be removed and the cavity carefully curetted through a skin incision and drained. It can be filled with Moorhof's plug or some other filling material. Murphy suggests a glycerogelatin formaldehyde mixture. This, however, is not essential. The author prefers not to use any of these substances. Where the patella is extensively destroyed and the joint not affected, the patella may be removed *in toto*, as done by Murphy and later by Alexander.

Murphy's method comprises preliminary preparation of the joint by producing a chemical inflammation by injecting two to six drams of a two to five per cent. solution of formaldehyde in glycerin (which is prepared twenty-four hours beforehand) a week or ten days before the operation, thus producing a local immunity. A long lateral incision is made to the outer side of the patella through which a subaponeurotic excision of the patella is made. A flap is then brought down, consisting of a portion of the quadriceps tendon and the vastus externus muscle, which is sutured into the patella ligament. Murphy and others have shown that the absence of the patella interferes but little with the function of the knee joint.

When the joint has become involved secondarily from extension of the disease or rupture of the tuberculous process into the joint, an arthrotomy is imperative. The patella can then be exposed from within the joint, the sequestrum removed, and the



FIG. 2.—Same case as in Fig. 1, showing cavity formation and sequestrum. Radiogram in Dr. W. F. Manges.

cavity in the bone curetted from this position. The joint should be carefully washed and inspected. A synovectomy or even arthrectomy may be done if necessary.



As a fitting conclusion to the presentation of this subject, the importance of early diagnosis in joint infections is emphasized and the prompt and efficient institution of remedial measures is urged. The opening of a joint is often regarded with fear and apprehension by surgeons who never hesitate to open the abdomen for similar purposes. There often seems to be a tendency to stand by and await the opportunity when a joint is infected, thus allowing valuable time to elapse and the pathological process to advance. In many instances of infectious arthritis, the sooner the joint is opened and efficiently washed, the more favorable the prognosis. The earlier the treatment is instituted, the less likelihood is there to ankylosis. The diagnosis is often difficult, at times impossible. Under such conditions an exploratory arthrotomy is thoroughly justified.

Great care and discernment are required in determining the advisability of recourse to operative procedure, for it must not be inferred that every patient with infection of a joint must necessarily be operated upon. The so called expectant plan of procedure is essentially wrong and may be, generally, accepted as a confession of ignorance disastrous to the best interests of the patient.

## REFERENCES.

- W. WATSON, *Joint Infections*, 1909, W. B. Saunders Co.  
WILLIAMS, and ROSENBERGER, *N. Y. M. J.*, 1909, 10, 1, 10.  
TOWNELL, *Ann. Surg.*, 1909, 48, 1, 10.  
TAYLOR, *Ann. Surg.*, 1909, 48, 1, 10.  
S. J. THOMAS, *Ann. Surg.*, 1909, 48, 1, 10.  
RICHARD STERN, *Ann. Surg.*, 1909, 48, 1, 10.  
HANS ALL, *Ann. Surg.*, 1909, 48, 1, 10.  
L. W. HAY, *Ann. Surg.*, 1909, 48, 1, 10.  
H. L. NICHOLS, *Ann. Surg.*, 1909, 48, 1, 10.  
GOLDTHWAIT, *Ann. Surg.*, 1909, 48, 1, 10.  
BRADFORD, *Ann. Surg.*, 1909, 48, 1, 10.  
MENARD, *Ann. Surg.*, 1909, 48, 1, 10.  
KUMMER, *Ann. Surg.*, 1909, 48, 1, 10.  
B. MURPHY, *Ann. Surg.*, 1909, 48, 1, 10.  
E. O. ALEXANDER, *Ann. Surg.*, 1909, 48, 1, 10.  
VOLKMAN, *Ann. Surg.*, 1909, 48, 1, 10.  
FRANK, *Ann. Surg.*, 1909, 48, 1, 10.  
RIBAS, *Ann. Surg.*, 1909, 48, 1, 10.  
SCHULTER, *Ann. Surg.*, 1909, 48, 1, 10.  
ROCHER, *Ann. Surg.*, 1909, 48, 1, 10.  
RODNEY, *Ann. Surg.*, 1909, 48, 1, 10.  
GOLDING, *Ann. Surg.*, 1909, 48, 1, 10.

200 SOUTH EIGHTH STREET

## SOME UNUSUAL GASTROINTESTINAL CASES.\*

By ANTONIA BASSLER, M.D.,

New York,

Attending Physician, German Poliklinik; Consulting Physician, Beth David Hospital; Etc.

Since the x rays are of much practical value in diagnosing gastrointestinal conditions, most of the figures are from individual x ray plates, generally one of a series in each case. I desire, however, not to give an exhibition of x ray figures, which exhibitions usually bore me very much and I suppose do likewise bore most men who are not actually engaged in radiographic work, but rather to present my cases in a clinical way.<sup>1</sup>

CASE I. A Hungarian was referred to me, giving a history of having awakened one morning with a terrific pain

in his throat. He could not swallow, and slight bleeding was present. The condition was so alarming that it was not noticed until about the third day afterward that a tooth plate, upon which were two teeth, was missing. About a week afterward it occurred to the patient that perhaps he had swallowed it. He had considerable distress in the sternal region on swallowing fluids and semisolids, which he then was able to do with much difficulty. At the time I saw him, twenty-two days afterward, he was swallowing fluids and semisolids with comfort, but meats distressed him. The x rays showed plate lodged in the upper sternal region, and transverse radiographs discerned the plate to be semicircular in shape with a hook at each end. The first idea was to remove this plate by means of a gastroscope, but I decided that a plate which had been in the gullet as long as this was probably would have ulcerated the mucous membrane under it and there was danger of perforation which, as we know, is invariably fatal. Then, again, because of the shape of the plate, with the hooks

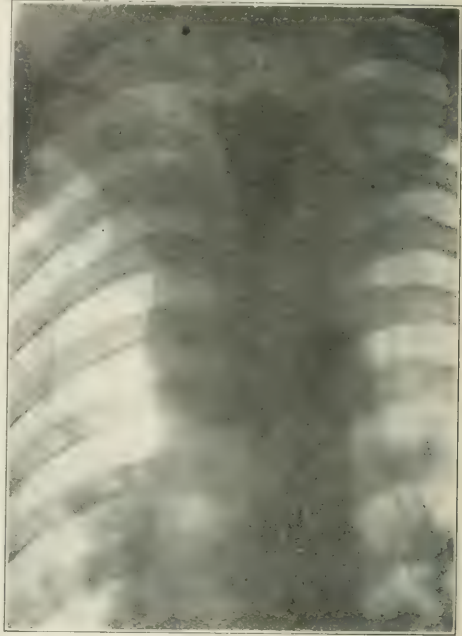


FIG. 1. Showing tooth plate in upper esophagus.

at each end, it was felt that drawing it through the laryngo-esophageal introitus there was danger of trauma with the possibility of the development of an edema of the glottis. Therefore an esophagotomy was done instead, the plate readily removed, and the man made a quick recovery. (Fig. 1.)

CASE V. A girl, aged twenty-three years, with the most attenuated stomach I have ever seen. Her history was negative, except that for years she had had stomach trouble, consisting of pains in the abdomen, mainly in the lower right side, being worse a half hour after meals. Her appetite was poor, and the year before I had seen her she had an attack of what was diagnosed as acute appendicitis followed by inflammation of the right kidney. She was sent to me by a surgeon to confirm the diagnosis of chronic appendicitis.

The pylorus (Fig. 2) was in the appendix region and was not held there by adhesions. She was treated by diet, posture, support of the abdomen, etc., and in about four months' time was subjectively well and

\*Read before the New York Medical Association, at its convention, New York, N. Y., December 12, 1910.

<sup>1</sup>For a more complete description of these cases, see the author's paper, "Some Unusual Gastrointestinal Cases," *New York Medical Journal*, 1911, 10, 1, 10.

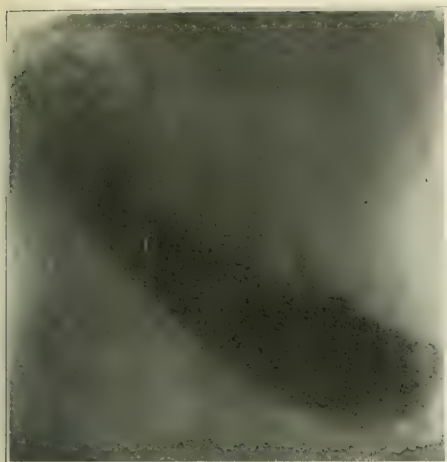


FIG. 2.—Showing pylorus in close proximity to right ilium. Shadow of duodenum about one-third way to right above lesser curvature.

had gained thirty pounds in weight. One year after this I was called to Pennsylvania to see her in what was supposed to be an exacerbation of a chronic appendicitis. The pain she had was cramplike in character, radiating down from the right flank, and she had frequent urination. There was no local spasm in the abdominal muscles nor rise in temperature, nausea, nor vomiting—the four cardinal symptoms of acute appendicitis. On the basis of the absence of these we decided to wait, and during the night the pain suddenly ceased and the patient was well. Some week or so after this she voided a small renal stone, which explained the attack. The case is



FIG. 3.—Arrow pointing to ulcer pit. Hyperperistaltic waves plainly shown.

of particular interest because of where the pylorus was situated and of the diagnoses of appendicitis that were made to explain both attacks.

CASE VI. A young woman, aged eighteen years, with negative family history, very fond of sweets, for three months had a distinct pain in the stomach after eating food. This pain would last about an hour and was situated at the edge of the left rectus some distance down from the ensiform. She had lost ten pounds in weight, and the peculiar feature of the pain was that if after she had eaten she lay down, the pain suddenly ceased. This experience led her to get up an hour earlier each morning, have her breakfast and lie down, after which she went to work as a stenographer, continuing at her services perfectly comfortable during the entire day. In the evening when she got home she ate a heavier meal, would lie down for two or three hours, and then be perfectly well as far as the pain was concerned, until she went to bed. She was anemic, the upper part of her abdomen was boardlike and



FIG. 4.—Showing rounded pylorus of typical position.

she had an exquisitely tender area at the outer edge of the left rectus.

The x ray plates (Fig. 3) show a large stomach in hypermotility, the arrow pointing to the ulcer pit filled with bismuth. With rest in bed, Lenhartz diet, bismuth, and iron, she got perfectly well and has been so for four years. Subsequent x ray plates fail to show the ulcer. This, then, is an ulcer of the anterior wall which, if it had perforated (and such ulcers commonly do), would have caused a quick general peritonitis because the outflow would have been discharged into the large peritoneal cavity. I believe that her relief of pain in the prone position was due to the small sized meals which she contained in a lax stomach, and gravitating posteriorly in the prone position, tended to save the ulcer from irritation from foods and the gastric secretions, which were markedly acid.

CASE VII. A man, aged thirty-eight years, with a perfectly typical ulcer history. He had some months

which was relieved on pressure and also relieved by the use of hot water bag, or of sodium bicarbonate, or milk, this pain awakening him in the early morning hours. He vomited blood and had had tarry stools on several occasions. The ulcer history was six years' standing and he had lost twelve pounds in weight. An interesting feature was that although he gave such a distinct ulcer history, he passed through the hands of nine physicians none of whom diagnosed the case. He had blood in his stomach contents, also in his stool, and a very tender area in the ensiform.

Upon seeing a large globular (Fig. 4) stomach with a peristaltic pointing due to pylorospasm, but without evidence of irregularity on the greater or lesser curvature, yet at operation this man had an ulcer in the posterior wall of his stomach as large as the palm of the hand, the most extensive ulcer I have



Fig. 4.—Stomach, defect on lesser curvature proximal to defect due to spinal pressure. Stomach, pylorus, and cap normal.

ever seen. A gastroenterostomy with pyloric occlusion relieved him of his symptoms.

CASE IX. A woman, aged fifty-four years, mother of seven children, was sent to me for diagnosis of stomach trouble which she had had for fifteen years. She had pains in the left side of the upper abdomen which radiated into the back. After eating, these pains were very much increased. She became fearful of eating because of the distress that it caused and three weeks before I saw her she developed complete anorexia. There were regurgitations and eructations, and during these three weeks her bowels had been constipated. During this short time she had lost seven pounds in weight, becoming very nervous and much depressed, brooding over her illness, which she thought was a cancer because her sister had died of gastric cancer some four years before. There were distinct peristaltic movements of the stomach, with a low position of that organ, the liver, and the right kidney. Fluoroscopically the stomach was in a marked state of peristalsis with a defect on the lesser curvature extending half way across the lumen, and which was not due to spinal pressure. It could be seen that the peristaltic waves were stopped at this point. The test meal analysis did not disclose anything special, excepting that by the double Ewald meal method the second meal showed very much less acidity (Gluzinski's test). There was no blood in her stool.

At operation a cancer was disclosed situated

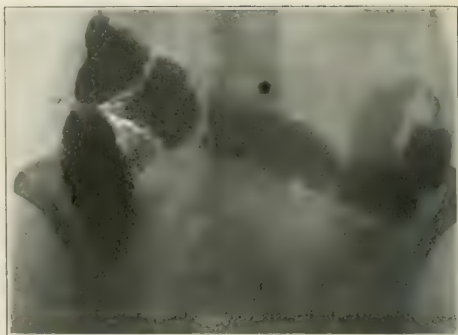


Fig. 6.—Arrow pointing to adhesion area, also to partial obstruction of cecum at junction of upper and middle third.

slightly to the left of the spinal column, which may have been started by an ulcer at that point. However, there was a marked neoplasm with involvement of the lymphatics along the lesser curvature. A partial gastrectomy was done, and it is now two years that the woman has been perfectly well. (Fig. 5).

CASE XIII. A woman, aged forty-nine years, two children, had backache since she was a girl. She had had four attacks of nervous prostration. Five months before I saw her, she was supposed to have had an attack of intestinal grip. Was always debilitated and constipated. Manifestations of the neurosis were a nervous stuttering and a coccygodynia. She was eating poorly and had much gas in the stomach and bowels together with the passing of large amount of mucus in the stools.

Leaving out of consideration atony of the stomach, uterine fibroid, and the neurotic condition she had, I desire to draw attention to Fig. 6, showing a marked state of adhesions in the colon, binding down the transverse to the midcecum (arrow). Anyone observing such a strictured state of affairs would immediately conclude that this woman could not get better without an operation, yet on rest, diet, atropine, and tonics she got substantially well, and while the adhesions are still there, her bowels are moving

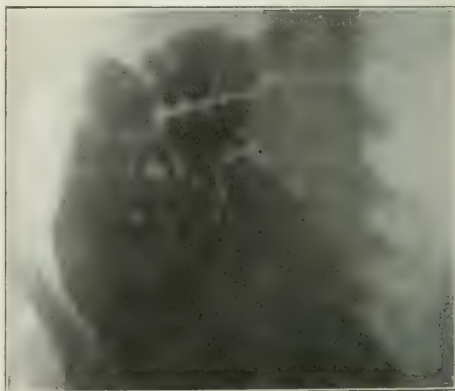


Fig. 7.—Three ply colon, entire organ in lower right abdomen.



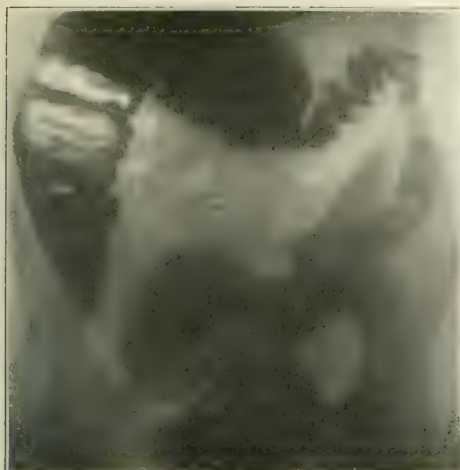


FIG. 8.—Showing large size of cecum and about one half of the transverse colon, megacecum.

normally and her nervous symptoms, together with those of the colitis, have disappeared.

CASE XIV. A woman, aged forty-six years, was referred to me, giving the following history: Several years ago she had been operated upon—her uterus stitched to the walls of the abdomen. After that she was curetted twice and then had another operation at which the uterus and ovaries were removed. The trouble she complained of was twenty years' standing, consisting of headaches, debility, digestive symptoms too numerous to mention, comprising all of the subjective symptoms ever met with from the gastrointestinal tract. Her case had been diagnosed as intestinal toxemia; she had been to Florida and had been seen by Dr. Will Mayo, who decided against operation. She was poorly developed, had dilatation and atony of the stomach with marked stasis in the entire intestinal canal. The interesting feature of her was that the entire colon was freely movable in the abdomen, having no mesen-

teries in the ascending or descending portion, and no anchoring at the flexures. It was probably one of those interesting congenital phenomena. In the upright position her colon took a place in the lower right quadrant of the abdomen, arranging itself four ply. The illustration (Fig. 7) was made in the prone position, showing the colon three ply. The laboratory tests showed that she was markedly toxic, and it there ever was a case for a colectomy this was one.

At operation her entire colon was delivered as if it were a foreign body in the abdomen. A colectomy was done, and seven months have passed, during which time the woman has gained twenty pounds and is very much better; but, against all of Lane's conclusions in favor of this operation for toxemia, she is still as toxic as ever.

CASE XVII. A woman, aged forty-three years, with a long headache history, and many attacks of typical migraine. Her bowels had always been constipated, and she always passed mucus in her stools and sometimes mucus without stool. She had much gas in her stomach and bowels, and had run down from 130, her top weight, to 93 pounds. Leaving out of consideration the many other tests that were made, this x ray (Fig. 8) showed a large cecum and a proximal transverse colon, pointing up as if there was a stricture in the middle of the transverse colon—that is what the x ray men said, "stricture with proximal dilatation."

She was operated upon on the foregoing diagnosis, and absolutely nothing was found at the supposed strictured point, but her colon, up to where it was shown on the x ray plate, was immensely thickened. I believed this to be a case of megacecum, and it was one of those I described in the *Journal A. M. A.* for March 27, 1915. Nothing further was done at the operation, and she was treated by diet, massage, rest in bed and other medical means, and today she is relieved of all of her symptoms and weighs 152 pounds, this having been accomplished in a year's time.

CASE XVIII. This was another case of the same kind in a woman somewhat older and who had had more of a neurotic history. She also was operated upon, and exactly the same findings were met with, and exactly the same result followed medical treatment. (Fig. 9.)

## EXTRAGENITAL CHANCRES.

BY HENRY KENNEDY GASKILL, M. D.,

Philadelphia,

Assistant Professor of Dermatology, Jefferson Medical College,  
Attending Dermatologist, Philadelphia General Hospital.

It is manifestly impossible to determine with any degree of accuracy the comparative frequency of extragenital chancres. The only place in which this could be even approximately estimated would be in the army and navy, where careful statistics are made of all venereal diseases and the utmost care taken to prevent their contraction; even in the army and navy the records are by no means complete, in spite of every care taken to make them so. For entirely different reasons, the statistics of hospitals are far from accurate, especially where the different specialties are conducted in various departments, each one of which has its own method of taking histories and examining patients. It is very rare for careful records to be made of the comparative occurrence of genital and extragenital chancres.

Unless there is a well maintained correlation between the several departments that treat syphilis—namely, the genitourinary, the dermatological, and

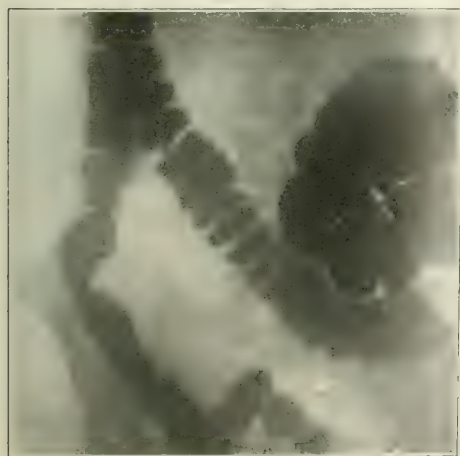


FIG. 9.—Showing large cecum folded over to transverse colon, megacecum. The plate of the former case was taken without a screen, and this with one. This is the reason the cecum is different sides in the two plates.

the logical value of these statistics is entirely lost. As a rule, a specified number of cases of *syphilis* are recorded as having been treated during the year; in a very few instances the records refer to the primary, secondary, or tertiary stage, but rarely designate the situation of the chancres. Another source of inaccuracy that pertains not only to this subject but to every other disease, is the frequency with which a patient will go from one hospital to another; this relates especially to the more ignorant class who quickly become dissatisfied when a cure is not effected in an unreasonably short time. Every physician who attends medical society meetings has noticed the frequency with which members remark that they have previously treated patients who are being shown. In private practice, of course, it is a different matter, as careful records of all cases are made, but here the percentage of extragenital chancres is obviously very small. The larger

chancres are seen in the dermatological departments than in the genitourinary.

Recently, I spoke to a very well known genitourinary specialist about three of the following cases in which the initial lesion was in the rectum. He told me he had not seen a case of this for years, though he is the head of the genitourinary department of a very large hospital. In the throat department they undoubtedly see many cases of initial lesion, but it is extremely rare to find any record of these cases.

From the methods of infection, extragenital chancres are divided into two types: First, that of the innocent in which some poor individual has, through no fault of his own, acquired the initial lesion. These are by no means rare, and it would be of great interest, though of little value, if it were possible to make even an approximate estimate of the percentage of these cases in comparison with the number of the genital lesions. I think we are prone to minimize the danger to which doctors and dentists are subjected, particularly the latter. With the modern ideas of antisepsis, the dentists of today are sterilizing each instrument after every patient, but this does not mitigate the risk from personal inoculation. For their own sakes, they should be better trained in the appearance of a mucous patch while in college, but to a very large extent they obtain their information only from books, moulages, and colored plates and not from living patients. In a new book, *Diseases of the Mouth*, which recently came to my notice, there are some wonderfully good illustrations, but a photograph made from a moulage does not depict the gradations in color and depth of the induration, and a dentist to whom I have shown this book, while acknowledging its worth, agrees with me that it is of little value to those who have not had experience with the actual lesions.

As will be shown by one of the following cases, the risk to the nurse and the midwife is a serious one. As a rule, midwives have had little or no experience in the lesions of syphilis, and nurses have little practical training in that line and yet they are in most intimate relationship with patients who may be syphilitic. There are so many ways in which the infection can be communicated, that it would be useless even to attempt to enumerate them.

In contradistinction to the accidental or innocent cases, the method of infection of the extragenital chancre is a deplorable one in which they are due to perverted sexual practices, the prevalence of which is a much discussed question. If a young lad is brought up in surroundings where immorality is practised openly, he very naturally associates with companions of immoral type and soon falls into their habits. Recently, I had occasion to question very closely a boy of sixteen years who had just been discharged from a reformatory. His account of the practices which had taken place there shows a wretched state of affairs. Boys of thirteen years who had been committed for truancy (as was the case of this boy) were intimately associating with the more or less hardened criminals of twenty and twenty-one. The practice of sodomy was very common, as were other forms of irregular intercourse. Yet, if this boy, a fine looking healthy animal, instead of being confined in an institution of that sort



number by far of those thus infected apply to hospitals and dispensaries for treatment.

The methods of examination of patients varies not only in different hospitals but in different departments of the same hospital and for obvious reasons. If a patient in applying for treatment says he has a sore on the penis, he is referred to the genitourinary department and an *a priori* diagnosis of syphilis is usually made. On the other hand, however, if the patient says he has an eruption all over the body, he will be referred to the dermatological department, and if syphilis is suspected, a careful search will be made for the chancre, which, if it is genital, helps greatly in the diagnosis; even though the clinical diagnosis is positively syphilis (the presence or absence of the chancre being regarded of little value), yet the discovery of the chancre will confirm the clinical diagnosis and in many cases avoid the necessity of the Wassermann test. It is due to this careful search being made, if for no other reason, that more cases of extragenital

for a childish misdemeanor which was undoubtedly the result of lack of training on the part of his parents, had been placed on a farm or some place where he could have had vigorous exercise and where he would have been tired enough to retire early, he would have avoided what may be to him a



Fig. 2 (Case IV).—Chancre of thumb.

life-long misery. His habits had been formed. Enforced idleness is certainly conducive to many bad habits, and the habitual young corner loafer with all day on his hands soon becomes as depraved as his older and more hardened associate.

It was partly on account of the recent conversation with the boy referred to that I compiled the histories of the following cases, which have come under my observation within a comparatively short time. It was only by the most careful inquiry and in some cases, diplomacy and strategy, that the truth regarding the method of infection was obtained.

CASE I. M. C. D., male, white, aged nineteen years, presented himself at the skin dispensary of the Jefferson Medical College Hospital, for falling of the hair. This condition is quite well shown in Fig. 1. The hair had been falling out for several weeks in small areas and bore a close resemblance to fur which has been moth eaten. There were no large areas of alopecia, simply a thinning in spots. In spite of the patient's assertion that he had no eruption on the body, he was carefully examined and a very fine fading macular eruption was discovered on the trunk, anterior and posterior; also to a very slight degree on the forearms and legs. No sore throat or bone pains. Though there was no chancre discernible, yet, a very careful examination was made for scars, and while this is not unusual in the late secondary stage of the disease, our curiosity was aroused. The patient, after thorough questioning, finally confessed that about three months previously one of his companions had had connection with his rectum. That there were five or six young men who resorted to this practice at the same time, and one at least had had a chancre on the penis, as the practice was quite freely indulged in. He recalled that it had been extremely painful for him to have a bowel movement for a period of three or four weeks, but that there was no pain or tenderness at the present time. This lad was not an invert, as practices of this kind were with him the exception rather than the rule. His moral tone obviously was low, but he had sufficient sense of shame to deny for a long time that he had resorted to such a practice. Normal sexual intercourse was frequently indulged in. Wassermann was 4 plus and he was kept under observation for many months and finally discharged as cured.

CASE II. J. S., male, white, aged fifteen years, came to the dispensary with a generalized eruption, large, flat, papular in character, which was unquestionably syphilitic in nature. Careful questioning failed to bring forth any history of an initial lesion. The boy denied sexual intercourse, but on careful examination by the use of the speculum, a sore was found well up in the rectum. Upon being confronted with this fact, he acknowledged that he and another boy had been in the habit of resorting to this means of intercourse for the last year and that recently he had practised sodomy with an older boy. The father was sent for and from him was obtained the history of the boy having been incorrigible and of having been committed to a reformatory where he had been confined for over a year and where he had undoubtedly acquired this habit. That same day the boy disappeared and while six months have elapsed, he has never been seen by any member of his family.

CASE III. M. N., male, white, aged twenty-three years, came to the hospital with a well marked macular syphilitic eruption. There was a general adenopathy, considerable sore throat, frontal headache, etc. There was no sign of chancre on the penis, but on account of the character of the man, a careful examination of the throat was made, but there were no suspicious lesions there. For fear that he might evade the question, he was asked directly *when* a man had had connection with his rectum. He seemed thoroughly surprised at the detective ability and confessed that the last time was within less than two weeks. With this patient, sodomy had been a regular practice for the last two years and always with the same man and for commercial reasons only. An elderly roué paid him a definite sum every two weeks. The man was so chagrined at his practices having been discovered, and he frankly said he did not have the courage to face us again and would not return, and in spite of the fact that the seriousness of the disease was fully explained to him, kept his word.

This patient was of an intelligent type, had lived a normal sexual life, and sodomy was to him disgusting, but the money appealed to him and he fell more for the need of it than from any other reason. He will not try to obtain relief, and in years to come may become a burden either to his family or some institution.

CASE IV. E. S., male, white, aged twenty-one years, came to the Jefferson Hospital for a sore about the size of a silver three cent piece on his thumb, which would not heal, and which had been present for three or four weeks. There was no pain other than the very slight one that came from bending his thumb. The lesion was on the first joint of the thumb of the right hand—Fig. 2—markedly indurated; edges were undermined and surrounded by an inflammatory zone. There was considerable discharge and glazing. The epitrochlear and axillary glands on the same side were enlarged to a considerable degree. The mode of infection was not difficult to obtain in this case, as the history was clear and was as follows: The patient and another young man were in an open motor boat in one of the back bays along the New Jersey coast. They met two girls of loose moral character and took them into the boat. Both men were extremely free with the girls and made digital explorations. In showing the picture, Fig. 2, the question has frequently been asked how such a lesion could occur on the thumb when it had been contracted in such a way. The explanation is very simple, in that the patient had no abrasion

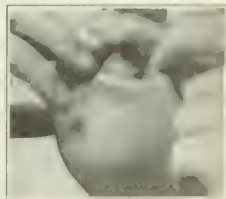


Fig. 3 (Case V).—Chancre of upper lip.

on the index finger, but casually rubbed that finger (as one would unconsciously do if there was any extraneous matter there) on the thumb on which there must have been an abrasion. This was followed by a violent papulopustular eruption of such intensity that the tertiary stage followed swiftly on the second so that they were practically



fully carried out for two years.

CASE V. B. B., male, clerk, aged twenty-two years; when this patient came to the dispensary he had on the upper lip to the left of the median line, a hard indurated lesion almost the size of a large pea, surrounded by a mildly inflammatory zone and partly covered with fine scaling and considerably elevated above the level of the skin (Fig. 3). This lesion had been present about ten days and was thought to be a fever blister. In less than two weeks, there was considerable ulceration and a "board-like rigidity" at the angle of the jaw on the same side. The patient was carefully questioned regarding the history, but had no recollection of anything that occurred within a reasonable time, from which he could have contracted this chancre. Kissing in a promiscuous way was acknowledged, but no perverted habits. He was employed in a broker's office and he was not aware of any of the men, with whom he associated and with whom he used the same towels, or drinking cup, having any lesion in the mouth. The generalized eruption appeared four weeks after the chancre was first noticed.

CASE VI. N. C., male, white, aged forty-two years, laborer, about three weeks prior to the time he was first seen noticed a small spot on the lower lip and upon examination there was found a little to the right of the median line, a hard papule with irregular edges, slightly elevated, and with marked induration surrounding it and covered with a distinct glazing (Fig. 4). The glands were involved on both sides, but those of the right submaxillary more than the left and later the typical boardlike rigidity at the angle of the jaw was very pronounced. Antisyphilitic treatment was immediately employed, but was maintained only a short time as the patient did not return.

CASE VII. D. F., white, female, aged eighteen years, worked in a mill and was referred from the gynecological department for a lesion on the inner side of the right leg, half way between the knee and the groin, and about the size of a twenty-five cent piece, markedly indurated, edges undermined, surrounded by a dusky areola. In spite of her protestations that no generalized eruption existed, a fine macular exanthem was discovered over the chest. The patient said that she had had this sore about five or six weeks. No attempt was made to go into the history, as the situation was the only unusual part of it and the diagnosis not open to question.

CASE VIII. Mrs. W. S., white, aged thirty-eight years,



a so called "practical nurse," came to Jefferson Hospital for a sore on the distal end of the index finger of the right hand, which she said she had noticed for the past four weeks. There was considerable induration, but no ulceration; the lesion was of a dusky blue red color, with the

glands on that side of the body enlarged. Examination of the body was made, but at that time no eruption was discovered. She was kept under close observation, diagnosis being withheld. At the expiration of one week, the lesion showed considerable ulceration, the induration was more marked as was the adenopathy, and at the expiration of another week, a generalized papular eruption appeared.

She gave the history of having attended a woman in confinement and having been instructed by the physician in charge of the case to push the afterbirth together to see if it was all there, and naturally used her index finger of her right hand. She was asked if she noticed anything unusual about this placenta. She said "Yes, it was filled with little gray islands." The physician in charge of this case evidently suspected syphilis because of these "islands," for if they were so evident that an untrained nurse would observe them, the physician must certainly have detected them. Not being willing to subject himself to the risk of contracting syphilis, he ordered this innocent woman to do what he would not do himself and without instructing her to take precautions. The patient was soon lost sight of.

CASE IX. F. H., female, white, aged eighteen years, came to the hospital for a small sore which was on the inner side of the lower lip fully half an inch below the vermilion border. She had noticed this for about two weeks, thinking it was a "canker sore." There was considerable induration and beginning ulceration. This sore was watched very carefully and, within a few weeks, there was a generalized eruption and a moderate degree of adenopathy. The usual boardlike rigidity found in the angle of the jaw in these cases of chancre of the lip, was entirely absent, though the submaxillary glands were slightly enlarged. The patient was extremely reticent in replying to questions regarding herself or the mode of infection, but there is every reason to think that this was not a case of syphilis insontium, for after the appearance of the secondary rash, the nature of the disease was explained to her and she did not return.

CASE X. M. A. L., white, female, aged forty years, at the inner canthus of the right eye had a hard papule, about the size of a small pea (Fig. 5), which the patient had noticed about two or three weeks. There was considerable induration, and at the central portion of the lesion was a very slight degree of ulceration. This lesion was kept under close observation and soon began to ulcerate. The induration was much more marked and the eye partly closed. The secondary rash was papulovesicular in character and the disease was typical in every way. She was a hard working woman and could give no information as to the source of infection. She had a large family and not only looked after the house, but took in washing. This is one of the cases in which there is no doubt of its being syphilis insontium, but like the majority of the dispensary patients as soon as the secondary rash disappeared, the patient discontinued treatment.

CASE XI. C. L., female, white, aged thirty-five years, had a lesion on the inner surface of the right wrist, which she said had been present for about five weeks and had started from a burn which occurred prior to that time. She was frying crullers and some of the fat flew out of the pan and burned her on the wrist. This was the only history that she gave and it was impossible to obtain information as to any mode of infection. This burn had partly healed and then had, as she suggested, "broken out again." At the time of examination, the lesion was about the size of a ten cent piece, markedly indurated, with inverted undermined edges, and covered with a brownish yellow exudate. There was considerable adenopathy on that one side, but no generalized eruption. The patient was not seen after the first visit, but the eruption was sufficiently distinctive to make the diagnosis positive.



FIG. 5 (Case X). Chancre of the inner canthus of the eye.

## OPPOSITE SEX TWINS IN ONE BODY?

*A Female with the Primary Sex Organs of the Male.*

BY WILLIAM LEE HOWARD, M. D.,  
Westboro, Mass.

Homosexuality is not an unusual condition today. Inversion and perversion in both sexes has kept me clinically busy for some years. Both these latter states appear to be on the increase. There seems to be, not a war of the sexes, so much as a struggle in nature to keep from reverting to the monosexual life of the remote past. In my opinion it is really a process of weeding out the sporadic increase of the sexually weak, indifferent, and psychically hermaphroditic—to prevent reproduction of sex weaklings. No race or nation can progress and develop strong men and women unless the sex differentiation, psychical and physical, is incisive, distinct, and forcible.

However, the fact remains that sex anomalies are on the increase. It might be argued that on account of the increased knowledge and attention now being paid to sex problems, we may see many cases which heretofore kept away from the physician. The fact that almost invariably the subjects possessed of some form of anatomical or psychical inversion or perversion, will not consult their family physicians, shows how well they realize that sympathy and understanding of these sad cases are not

generally a part of the medical man's make-up. Nevertheless, while many are now seeking aid from the understanding physician there still remains the fact that sex twistings are on the increase and that the "third sex" is an acknowledged condition.<sup>1</sup>

Too much chaffering with the world, neglect of early sex instruction and guidance, parental obmutescence, an anti social state which falsely puts a certain class of females into a mental attitude where they try to believe they are sexually independent of the male, to a great extent cause perversion or injurious suppression of sexuality.

In these cases of sex distortions and indifference the innate instinct to desire caresses and release some form of sexual expression, remains with them, and the woman of masculinity takes up and lives with one of pronounced feminine impulses. Sometimes these viragos will dress and act as a male, marry a simple minded and ignorant girl, and

sexually find satisfaction through perverted acts. These subjects are psychically inverted and perverted in the sex sense, or, as is really the case in a few, act and feel from a male sex centre in the cerebral cortex. The sex centre may be neuter; it may be entirely wanting, or at least impossible of sexual stimulation. Where there is a pronounced

male sex centre in the female body, the sexual desire is of course for a body of apparently the same sex.

Anatomically these "male souls in the female body" generally are complete women. Physiologically they represent many variants from the normal. If there is menstruation they seem to abhor the condition and will do anything to destroy that function. Exceptionally we find an enlarged clitoris resembling the penis of a boy of twelve years of age. In the case I now present the clitoris (penis?) in erection is as large and rigid as that of a youth sixteen years of age.



FIG. 2. Dr. William Lee Howard's patient; another view.



FIG. 1. Dr. William Lee Howard's patient.

In most of these cases, whether this enlargement has been developed through intercourse with girls, or whether it was originally as massive as it appears, is not generally ascertainable, for when the cases come under observation there has been a history of Lesbian love, cunnilingus, manustupration, or some other form of perverted tampering and abuse. I have had cases under care where the use of an overdeveloped clitoris began in girls of eight years of age. Yet we still hear from many sources that sex hygiene, sex toilet, and knowledge of normal and abnormal sex conditions should never reach the mother or daughter! Most of these acquired conditions could have been avoided and the congenital excrescence corrected had a little knowledge and purging of prudery been the lot of parents.

It is seldom indeed we find a human being whose primary sex organs are distinctly male, secondary sex organs and physical structure distinctly female, and whose psychic life and impulses at certain periods are dominated by the forces of each separate sex organ or organs. I have such a case under observation, as the photographs and clinical history show. Before giving my ideas and conclusions concerning this extraordinary subject, I herewith present the reports of three well known specialists who examined the man-woman. Dr. Charles Whitney, Dr. F. W. Johnson, and Dr. F. B. Lund, of Boston, spent much of their valuable time and took great interest in the unfortunate patient (patients?), and I take this opportunity to thank these gentlemen.

<sup>1</sup>See William Lee Howard, *Sex Problems in Work and Life*.

JAMES M. WHITNEY, PROFESSOR OF GYNECOLOGY,  
MAY 11, 1908, 1911.

The patient was examined three times. The examination of the scrotum as she entered the consulting room, that of the normal young woman of twenty five.

Upon complete examination, the following conditions were found to be present. Her face was of the feminine type, the skin soft and smooth and showing no signs of beard. The hair was long, soft, and arranged with characteristic feminine care. The body was of a purely feminine type, presenting the normal contour of hips, abdomen, and buttocks. The breasts were of medium size, of normal consistence, and having a well developed nipple and large, brown areolæ.

The examination of the genital region revealed a most extraordinary contrast to the characteristics just described. On first sight there appeared to be a penis and below it a blind scrotum, beyond the fold of which the penis projected. In detail, the organs presented in the pubic region an essentially feminine arrangement of the pubic hair, being somewhat triangular in shape and not extending up on the abdomen. At the upper portion was an organ having the anatomical appearance of a penis. Its circumference was two and a quarter inches and its length one and a half inch. It was covered with skin of soft texture, and at the extremity was folded over so that a somewhat short prepuce was present. There was a small but normal glans penis, in the end of which was a small depression where the meatus should have been found. There was a small but normal frenum; beneath it and beyond this a normal median raphe extending along the under surface. The organ was exceedingly sensitive, the slightest touch causing it to become firm and turgid and about double in size. This erectile condition showed that the corpora cavernosa were present and the presence of a glans penis rendered it almost sure that the corpus spongiosum was also in its normal position. The corpora cavernosa could be followed up to the pubic bone where the crura were distinctly palpable.

On either side of the organ and for the most part below it were two large pouches of skin, resembling that of the scrotum, not connected with each other. In each of these there were present an oval body identical in shape, consistence, and sensitiveness with that of a normal testis. Behind each was an elongated body, precisely corresponding in position and size to an epididymis. From each of these a cord extended to the inguinal region.

On the left a marked cremastic reflex was present, but in the right was much less marked. Between the two scrotal folds there was a line of firm, whitish tissue, and at the lower portion this resembled the mucous membrane of the urethra. Beyond a doubt this was a portion of the superior wall of the urethra in its normal position. Below and leading from this was a small orifice in the perineum, admitting the little finger and presenting at first sight, the appearance of a rudimentary vagina. A catheter, however, passed into it, revealed the fact that it entered directly into the bladder and was the posterior portion of the urethra.

On either side of the median line and about a half inch from it and below the scrotum, was a small elevation of tissue resembling the lower edge of a labium majus. Careful rectal examination showed no signs of a prostate gland or vesicles. Bimanual examination failed to show the presence of a uterus or ovaries.

In regard to the patient — whom I examined with Doctor Whitney, considering the breasts, the shape of the body, the hips, face, and hair, *I think she is a woman*. She has been brought up as one and I think ought to remain so.

There is no question that there is a testicle on either side and I think that might well be remedied by placing those out of the way under the abdominal fascia. In case she should want to be married, the most feasible method to make an artificial vagina is that by which it is made from a loop of the small intestine.

#### DOCTOR JOHNSON'S OPINION.

Thank you very much for the most interesting case you sent me. The face is of a woman, breasts like a woman, hips like a woman. I could find nothing in the pelvis like a uterus or ovaries. The two testicle shaped bodies, I think, are testicles. On repeated tests—and every time—

testicular pain was produced on squeezing the left body I think there is a short (three inches) vagina. This admits, fairly easily, the little finger. *I suppose she is or should be classed as a man* (italics mine. W. L. H.).

As I was present during Doctor Whitney's examination, and carefully considered what Professor Lund and Professor Johnson had to say about the case, I realized again what a chasm there is between the man who studies these cases from a psychological point of view and the surgical and gynecological facts upon which medical men base their opinions of sex.

To get at the approximate truth of the sex of this unfortunate person, it is absolutely necessary to have some understanding of her or his psychical states. Remember that in reality the sex is determined in the last analysis by the impulses, desires, and longings originating in the brain centres. So I present a few, a very few, of her or his mental long-

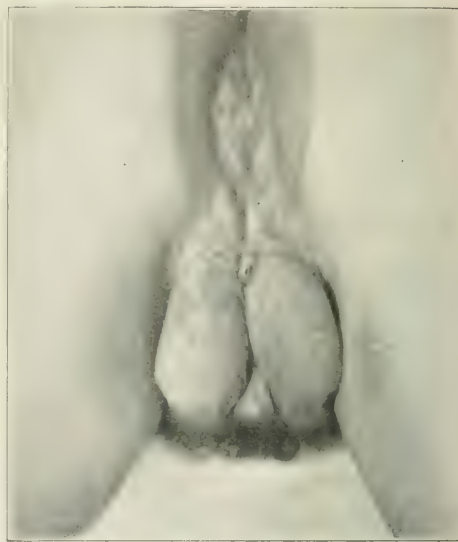


FIG. 3.—The scrotal region of Dr. William Lee Howard's "Sex" twins.

ings and the distressing cries from her or his psychic life. Let me say in advance that I think these cries come from the struggles of really two personalities or individuals enmeshed in one outward fleshy form; this form in its make-up showing a moulding of two individuals of opposite sex.

Psychologically considered, here are twins—male and female. Physiologically, as we shall see, they may be so considered, at least for a working hypothesis. As the Siamese and similar twins were bound together by an abdominal band of anatomical tissues, inseparable yet separate, so in this case we have twins, each one at times struggling to exert its sex and personality, yet unable to express any distinct somatic existence. Their souls, minds, instincts, impulses, are separate, but inseparable. They are rooted in one soil, confined in one mass of human stuff, coalesced, yet the sex instinct in each separate individual cries out for normal sexual relief. At certain periods the female twin wants the



caresses and embraces of a vigorous male. At certain periods the male twin is frantically desirous for sensual pleasures with a female.

The female cries for relief at periods which would correspond with a menstrual flow about every three or four weeks. About two weeks after these female crises, the male centre in brain and cord become sufficiently active to cause sensual dreams with normal orgasm. Masturbation takes place only when the male twin is in the ascendant. The female twin abhors manual or artificial relief, but has succumbed to the male organs of a boy in the assumed vagina and with men *inter femora*. The male organ, when the male is in ascendant, has been used upon girls with satisfaction to both participants.

Here is one of *her* letters to me. *His* letters are only male variants of the sister's:

My dear and kind Doctor Howard: have pity on me, the suspense is unbearable. God help me! There is a limit to human endurance. No one knows my heart better than you—for God's sake have mercy before it is too late. If anything can be done, it should be done now while there is yet breath of life in me. My heart is breaking. I feel I can't survive it any longer. Pity me, pity *us*, for mercy's sake—Have pity for me should I go out.

And yet often the public wonder why the newspapers state: "No reason is known for the suicide."

The reason I do not consider this a case of psychosexual hermaphroditism is because, while there exists a seeming heterosexuality, the separate impulses each have their specific and rightful causative factors. In my opinion the male and female instincts residing in the one body arise from distinct psychical and physiological entities. True heterosexuality is due to a weak or lessened sexuality in the male or female cerebral sex centres, and these centres being "on the fence" are stimulated into action by and through external influences and subtle suggestions. At no time is there a dominating sex impulse. In this case there are powerful dominating sex impulses. When the male is dominant any suggestion or thought contrary to the normal instinct is abhorrent and disgusting. The same mental attitude exists when the female element is dominant.

Furthermore, true psychosexual hermaphroditism is found in subjects whose primary and secondary sex organs are in accordance with the general sex anatomy belonging to those organs. A person may have all the primary and secondary sex organs of the male genital organs, beard, muscles, voice, skin, yet the cerebral sex centres be those of the opposite sex. Such a subject follows the impulses and instincts originating in the brain centres, and so seeks the apparent opposite sex—the male. Of course the same holds true in the reversed condition. For want of a better understanding and term, we have called this state homosexuality, but in reality it is a normal sex attitude obscured by the objectiveness of the external organs. These anatomical signs are only superfluous growths embryologically or cytologically speaking, grafted on to a female or male.

This brings us to the wall on the other side of which may lie the secret of the actual mechanism by which the offspring is formed from the body of the parent. Evidence of value, embryologically considered, has been obtained, all that is visible has been seen, but the mystery eludes us. There is a

force or power deeper than the physiological events themselves. Cytology has helped somewhat, especially in showing the accessory chromosome, which in some animals distinguishes the spermatozoon about to form a female in fertilization. Even it, according to Bateson, cannot be held to be the cause of sexual differentiation, for it may be paired in forms closely allied to those in which it is unpaired or accessory. "The distinction may be present or wanting, like any other secondary sexual character. Indeed, so long as no one can show consistent distinctions between the cytological characters of somatic tissues in the same individual, we can scarcely expect to perceive such distinctions between chromosomes of the various types" (Professor William Bateson).

I cannot see in this case of psychical and physiological twins any evidence to a tendency of reversion to the struggle between monosexuality and bisexuality. We are learning much from investigations in this matter and further studies and researches in ontogenetic and phylogenetic laws will, perhaps, show that my ideas and conclusions are faulty.

THASSELL.

## ENDAMEBIAC DYSENTERY.

### *Relapse after the Use of Emetine.*

By NATHAN BARLOW, M.D.

Cuyamel, Spanish Honduras

A careful search of the literature upon emetine fails to reveal any effort, excepting that of Allan (1), to determine the percentage of permanent cures accomplished by various methods of treatment.

The dose and duration of treatment needed to bring about a complete elimination of endamebas from the body can be determined only by the analysis of a number of carefully traced cases of different workers. To be of value, the cases must have been carefully examined and recorded; not less than six months must have elapsed since the cessation of all treatment; and the cases must be free from complications which might confuse the results. An intestinal infection with flagellates (2), or ciliates (3), or metazoa (4) has been found by the author and others to make the removal of the amebas much more difficult.

The difficulties of obtaining such series are very great. Through the courtesy of the officials of the Charity Hospital in New Orleans, an opportunity was afforded of reviewing the cases treated with emetine. Out of nearly 400 cases, only fifty-seven fulfilled all requirements, including that of lapse of time. Of these, only eighteen could be traced, of which one was fatal, eleven relapsed, and six remained clinically cured, after periods of from seven to sixteen months.

Owing to a card index system, it was possible at Cuyamel to trace all the patients who remained upon the plantation; forty were examined from eight to fourteen months after cessation of treatment; whenever possible, examination was made of a fresh stool after a saline cathartic.

The writer has treated over 300 cases of dysentery with emetine, and has the advantage of a card index

and of ability to summon any employee to the hospital, yet is able to report a series of only forty cases suitable for record.

It is, of course, possible that some cases of apparent relapse are really cases of reinfection, owing to the patient's return to the place where he contracted the disease. A comparison of the high percentage of recurrences with the low percentage of cases originating in the same locality, will make it evident that this factor does not seriously impair conclusions drawn from series of cases. In regard to the Cuyamel cases, it need not be considered, as the water supply is not contaminated and all of the patients brought their infection with them. Only on the outlying farms of the plantation do cases originate. These fifty-eight cases are tabulated below. A study of the results by an analytical cross tabulation, too complicated for reproduction, elicited the following results:

The percentage of complete cures is much greater in mild or moderate cases than in those with severe dysenteric symptoms.

It seems that extensive ulceration in the intestines affords harbors for endamebas in places in which the lack of adequate circulation prevents their being destroyed by emetine. This also explains the large number who remain free from relapse after a second course. The first treatment has so improved the condition of the tissues that the second treatment destroys all endamebas.

The high percentage of complete cures in cases of slight or moderate severity affords a strong argument in favor of the examination of the stools, after a saline, if necessary, as a routine measure in all cases of abdominal disease. A physician who makes a diagnosis of constipation, gastroptosis, etc., appendicitis, liver disease, or even peptic ulcer, without an examination for protozoal or metazoal parasites in the intestines, falls short of his full duty.

Patients with hepatitis or liver abscess usually remain free from relapse. Eustis (5), Philips (6), and Lyons (7) confirm this statement. It seems to be partly due to the fact that they receive longer and more thorough treatment, and partly to the usual absence of extensive ulceration and severe dysenteric symptoms, which prevent complete cure as stated above.

Anything less than nine days' treatment of at least one grain daily is almost certain to be followed by relapse. This conclusion is supported by a careful study of all the cases reported in the literature. At Cuyamel, over seventy-five patients, who are not included in this report on account of complicating diseases, and who failed to return after the symptoms were relieved, receiving from three to six days of treatment, returned to complete relapse.

After five or six days of emetine, it may be replaced by large daily doses of ipecac, and a considerable proportion of patients remain free from relapse; but the continuation of emetine for two weeks or more is productive of better ultimate results.

The use of emetine or ipecac should not be continued longer than from two to four weeks. It is generally recognized that after more or less time either emetine or ipecac produces an intestinal irritation which aggravates and prolongs the dysentery.

Lyons reports neuritis from emetine. The writer has never seen this complication in his own experience, and a scrutiny of the literature indicates that it is uncommon. An opportunity was afforded to see one of Lyons's patients, a highly intelligent and accurate person, engaged in scientific work. A very intractable neuritis was without any discoverable cause other than emetine, and subsided promptly upon the withdrawal of emetine and ipecac.

Even if amebas are still present in the stools after this length of treatment, it is better to treat with other means for a time, for example bismuth. After a rest from emetine and ipecac of a week or ten days, a second course of treatment usually brings relief.

The percentage of permanent cures with the same doses was much higher when few or no laxatives were given, or even when opiates were administered. Simon (8) has pointed out the same fact with reference to treatment by ipecac alone. This result lends support to the view that emetine is secreted within the intestinal canal, and that if allowed to accumulate it can destroy endamebas situated within or upon the epithelium. It seems wise, however, to clean out the bowels at the beginning of treatment and every five to seven days thereafter, to remove cysts that might be present in the bowel.

Other conditions being equal, the percentage of permanent cures was higher when the daily dose was at least one grain. Both in the literature and in the work at Cuyamel, the indications are that ill results from emetine follow long continued administration rather than large doses. The writer has on several occasions administered doses of one grain to children under two years of age, who were desperately ill with endamebic dysentery and in whom one half grain the previous day had failed to produce relief. Allan had two cases of his series which remained free from relapse after a treatment of less than nine days. This seems to be due to the large doses, up to four grains daily. He reports no ill result.

With the same number of days of treatment, the results were better in the cases receiving continuous treatment than in those whose treatment had intermissions of from one to three days. A longer intermission is equivalent to two separate treatments.

The results, both as to immediate improvement and as to the ultimate complete cure, were better when the daily dose was given at one time. Many of the endamebas lie in tissue with a much diminished blood supply, and it is likely that a high concentration of emetine in the blood stream may cause them to be destroyed, while more continuous but lower concentration may not reach them in sufficient quantity. Garrett (9) and Harper and Hadad (10) confirm this statement.

Another theoretical consideration regards the formation of cysts. Ujihara (11) has shown that cysts may remain alive for several months. Although they are known to occur in the pus from liver abscesses, the writer has been unable to find a report of their occurrence in the living tissues of the host, and Couret (12) states that he has not seen them in sections of tissue, nor any report of their presence in tissues. It seems probable, however, that under suitable conditions, the formation of cysts within the tissues might occur. If so, it is very likely that a

proportion of emetine insufficient to kill might induce the formation of cysts or resistant forms. At all events, it is certain that in the author's experience, the immediate and ultimate results are better if the treatment be begun with a large initial dose.

## INFECTIONS WITH ENDAMÆBA HISTOLYTICA.

| Therapeutic Case   | Charity Hospital Cases | Fatal | Relapse | Cured after          |                                |          | Per cent. |
|--|------------------------|-------|---------|----------------------|--------------------------------|----------|-----------|
|  |                        |       |         | Seven or More Months | Microscopically and Clinically | at Total |           |
| Less than 9 days' treatment  | 7                      | 1     | 1       | 1                    | 1                              | 1        | 0         |
| 9 days, 9 grains   | 1                      | 1     | 1       | 1                    | 1                              | 1        | 100       |
| 15 days, 9 grains  | 1                      | 1     | 1       | 1                    | 1                              | 1        | 100       |
| Cuyamel Cases.   |                        |       |         |                      |                                |          |           |
| 5 days   | 7                      | 1     | 1       | 1                    | 1                              | 1        | 0         |
| 15 days, 15 grains   | 2                      | 1     | 1       | 1                    | 1                              | 1        | 83.3      |
| Emetine 4 gr. ipecac   |                        |       |         |                      |                                |          |           |
| 9 days, emetine 8 days   | 1                      | 1     | 1       | 1                    | 1                              | 1        | 0         |
| 19-30 days, 20 gr. emetine   | 1                      | 1     | 1       | 1                    | 1                              | 1        | 100       |
| 25-30 days, 20 gr. emetine   | 1                      | 1     | 1       | 1                    | 1                              | 1        | 0         |
| Cuyamel Cases.   |                        |       |         |                      |                                |          |           |
| Emetine, 30-18 days, one grain daily; ipecac, 80 gr. daily, 5 days | 1                      | 1     | 1       | 1                    | 1                              | 1        | 91.7      |
| Emetine, 5-8 days; ipecac, 5 days                                  | 1                      | 1     | 1       | 1                    | 1                              | 1        | 25        |
| INFECTIONS WITH CRAIGIA  |                        |       |         |                      |                                |          |           |
| Emetine, 1 gr. daily, 15 days                                      | 31                     | 1     | 1       | 1                    | 1                              | 1        | 0         |
| Emetine, 2 gr. daily, 15 days                                      | 4                      | 1     | 1       | 1                    | 1                              | 1        | 33.3      |
| Emetine, 1 gr. daily, and ipecac 20 gr. 10-15 days                 | 1                      | 1     | 1       | 1                    | 1                              | 1        | 0         |
| ipecac two weeks longer  | 8                      | 4     | 12      | 12                   | 12                             | 12       | 0         |

## DEDUCTIONS.

About eighty per cent. or more of cases of infection with *Endamæba histolytica* remain free from relapse for seven months or more, if treated for at least ten days continuously and with not less than one grain daily of emetine.

If treated for less than nine days, relapse is almost inevitable.

The simultaneous administration of ipecac does not diminish the number of patients who show relapse; but the subsequent administration does diminish the number.

A permanent cure is possible in a shorter time with emetine than with ipecac.

It is preferable to inject the daily dose at one time, or at least in doses of not less than one grain.

Cases of hepatitis and liver abscess usually remain free from either intestinal or hepatic relapse, partly on account of the more thorough treatment which they receive.

The bowels should not be flushed with frequency. If there is marked diarrhea, opiates should be given in sufficient quantity to control it. The patient is relieved of suffering, and the retention of the emetine hastens the cure and decreases the likelihood of relapse.

If the patient can do so, he should report monthly for at least six months to someone competent to recognize either cysts or vegetative forms. Examination should be made after a saline, and immediately after the stool is passed. If either is found, another course of emetine, of at least one grain daily for nine days, should be given.

The alternative is the continuous or intermittent use of ipecac for at least six months, or successive courses of emetine of at least nine days.

Infections with *Craigia* are difficult to cure. They are best treated with ipecac and emetine in combination; but the treatment must be continued for at least one month, and, even then, a large proportion of relapses must be expected.

As dysentery is very prevalent around New Or-

leans, the plans of treatment which men prominent in the profession have adopted as a result of large experience, are of value.

Weiss (13) gives emetine one half to one grain daily, for five days, then sixteen salol coated five grain pills of ipecac, diminishing one pill each day for ten days; then repeats the treatment and, on discharge, gives the patient sixty to 100 pills to be taken two each night.

Bel (14) uses both emetine and ipecac, according to the requirements of the case, until a clinical cure is accomplished, and lays great stress upon an intermittent treatment by ipecac for from six to twelve months following.

Elliott (15) gives from one half to one grain daily, from fifteen to thirty days, accompanied by ipecac in decreasing doses, to be followed by an intermittent treatment by ipecac for several months.

It is to be understood that the foregoing outlines are only general plans, to be altered and supplemented to meet the requirements of individual cases.

The plan which the author considers best, according to our present knowledge, can be carried out only with intelligent patients who are within reach of a competent laboratory worker. One grain (or more, for one or two days) is given daily for fifteen days, followed by sixty to eighty grains of ipecac for from five to twenty days, according to whether intestinal irritation is produced or not. The bowels are cleansed by a saline at the beginning of treatment, and about every five days. If there is either diarrhea or colic, it is checked by opiates, usually paregoric, in small repeated doses, until comfort is obtained. If severe diarrhea is present, liquid diet and rest in bed are required until the symptoms improve, when a more nourishing diet and gentle exercise are allowed. On discharge the patient is instructed to return once each month for examination of a fresh stool obtained after a saline cathartic. If either *endamebas* (of any variety) or cysts of *Endamæba histolytica* are found, the treatment is repeated.

Of eighteen patients treated in this way, who left within seven months after treatment, and are not included in the table, all but four were both clinically and microscopically well from three to six months after treatment.

This plan has three advantages. First, even intelligent patients are not likely to keep up a prophylactic treatment, while, if amebas are actually found, they will readily take a second treatment. Second, when they are clinically well, and with merely a latent infection, the second course of treatment will usually result in a complete cure, while with an empirical aftertreatment with ipecac from six to twelve months must elapse, and even then several examinations are necessary to be certain of cure. Third, the repeated examination of cases results in the accumulation of data which make it possible to determine the dose and duration of treatment necessary for permanent cure, and is, therefore, of the highest scientific and practical value.

As this report does not pretend to be a discussion of the use of emetine, but only a small contribution to the knowledge which must be accumulated



Before the question of proper doses can be decided, no review of the literature is attempted, and only such references are given as have a bearing upon the point at issue.

## REFERENCES.

1. ALLEN, *Proc. Roy. Soc. Med.*, 1914, 7, 501-72.  
2. BARNARD, *Proc. Roy. Soc. Med.*, 1914, 7, 501-72.  
3. STEIN, *Proc. Roy. Soc. Med.*, 1914, 7, 501-72.  
4. ALLEN, *Proc. Roy. Soc. Med.*, 1914, 7, 501-72.  
5. STEIN, *Proc. Roy. Soc. Med.*, 1914, 7, 501-72.  
6. L. PHILIPS, *Brit. Med. Jour.*, 1914, 1, 816-818.  
7. R. LYONS: Personal communication.  
8. S. S. K. SIMON, *Proc. Roy. Soc. Med.*, 1914, 7, 501-72.  
9. F. D. GARRETT, *Proc. Roy. Soc. Med.*, 1914, 7, 501-72.  
10. J. HARPER and W. B. ALLEN, *Proc. Roy. Soc. Med.*, 1914, 7, 501-72.  
11. C. CHAKRA, *Proc. Roy. Soc. Med.*, 1914, 7, 501-72.  
12. M. COURT: Personal communication.  
13. J. D. WEIS: *Ibidem*.  
14. G. S. BEL: *Ibidem*.  
15. J. B. ELLIOTT, JR.: *Ibidem*.

## EPIDIDYMISS-VAS ANASTOMOSIS FOR STERILITY.

By WILLIAM F. BERNART, M.D.,  
Chicago.

THE COMMONEST cause of sterility in men is the occlusion of the lumen of the convoluted tubes of the epididymides. This occlusion due to bilateral epididymitis is most frequently found in the head of the epididymis, but it does not, to any material extent, involve the efferent ducts leading from the testicle or the beginning of the vascular cones, the terminal portion of these ducts. An anastomosis then, to be successful, should drain the area lying between the occluded portion of the head of the epididymis and the testicle.

Contrary to common supposition, lack of success in operating is not due to the vas failing to remain patulous, but rather to the fact that the wound in the head of the epididymis has a tendency to close rapidly. The mere insertion of a strand of silkworm gut or silver wire into the lumen of the vas deferens will not keep open the wound in the gland. This difficulty seems to be readily overcome by the looped wire herein described.

The openings into the vas deferens and head of the epididymis are made as usual. The anastomosing sutures of oo plain catgut are placed in position, and before being drawn taut, the silver wire is inserted in the lumen of the proximal portion of the vas until the loop engages in the wound. The loop is then imbedded in the epididymal wound and the sutures are tied. The free end of the wire is brought out of the scrotal wound. The wire is removed in from twenty-four to thirty hours. The wire is bent in such a manner that upon its removal the loop reseparates the adherent wound surfaces in the head of the gland.

The operation should be done under a general anesthetic or by nerve blocking at a distance from the site of the operative field. Local anesthetics, by direct infiltration into the parts, jeopardize operative results because of the distention of the tissues. A close fitting suspensory bandage is applied immediately after the operation, and the patient is kept in the recumbent position for four to six days.

This technic has proved successful in eight consecutive cases, compared to about thirty per cent. of failures otherwise. The wives of four of these patients became pregnant shortly after the operation. In view of the fact that these women had received various gynecological opinions as to the reasons for

their supposed unfruitfulness and treatment, therefore, it might not be amiss to suggest that after a period of barren marriage, if children are desired,

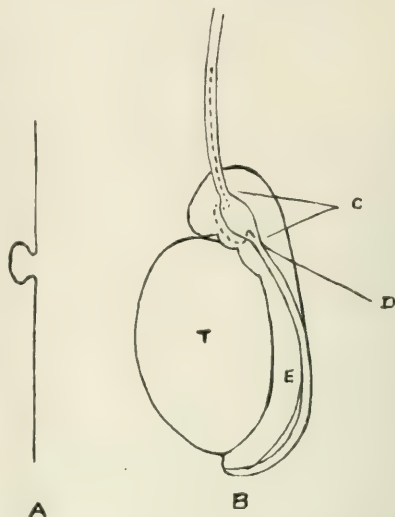


FIG.—Bernart's anastomosis for sterility in man. A, silver wire with loop. B, wire introduced into the lumen of the proximal portion of the vas deferens and the loop imbedded in the head of the epididymis. T, testicle. E, epididymis. C, point of anastomosis. D, distal portion of wire which protrudes from scrotal wound.

the husband be first examined, and then, if necessary, the wife.

29 EAST MADISON STREET.

## THE PHENOLTETRACHLORPHTHALEIN TEST OF LIVER FUNCTION.

By MAX KAHN, M.D., Ph.D.,  
Pittsburgh,

AND JAMES R. JOHNSTON, M.D.,  
Pittsburgh.

From the Biochemical Laboratories of the Beth Israel Hospital, New York, and the Western Pennsylvania Hospital, Pittsburgh.

When the experiments reported in this paper were almost completed, there appeared a communication by McLester and Frazier, in which they concluded from their observations that the phthalein test of the functional activity of the liver has no clinical value. This has also been our experience, and we wish here to report briefly our findings.

Rowntree, Marshall, and Chesney, in 1914, reviewed the literature on the tests of the functional activity of the liver. These tests can be classified in the following way:

1. A study of the carbohydrate tolerance of the liver; this will include the tests of general carbohydrate metabolism; tests of tolerance for special carbohydrates, for example, Bauer's galactose test, Strauss's levulose test, etc.

2. A study of the nitrogen excretion in the urine,

including the urea amino, and ammonia nitrogen fractions.

3. The urobilinogen excretion in the urine, which von Jaksch, in 1892, considered significant of liver disease. This is tested for by the paradimethylaminobenzaldehyde reagent of Ehrlich. The experiments of Wilbur and Addis and of Berkowitz have conclusively shown that this test has no specific value.

4. Analysis of the fibrinogen of the blood, which was found to disappear from the blood after liver extirpation (Doyon and Kareff, Nolf, Corin and Ansiaux, etc.).

5. A study of the lipase and fibrinolytic ferments of the blood (Whipple, Mason and Peightal, Goodpasture).

In 1909, Abel and Rowntree conducted pharmacological experiments on animals with phenoltetrachlorophthalein, which was synthesized by Professor Orndorff, of Cornell University. They found that this substance, when injected intravenously, was excreted in the bile. At the suggestion of Rowntree, Whipple, Mason, and Peightal studied the excretion of this substance in the bile when the liver was subjected to artificial lesions. These authors found that in dogs which had been poisoned by phosphorus, for example, the excretion of the phthalein was interfered with. It was then that Rowntree, Marshall, and Chesney applied the tests clinically and obtained rather encouraging results.

The phenoltetrachlorophthalein test is applied in the following manner:

The dye is to be prepared for use each time. One gram of the substance is placed in a 200 c. c. Erlenmeyer flask, with two c. c. of 2/N sodium hydroxide solution and eighteen c. c. of freshly distilled water. This is boiled for twenty minutes under a reflux condenser. The solution is filtered into a 100 c. c. flask, and is ready for use. This gives approximately a five per cent. solution, which is almost isotonic with blood. The solution is of an intense purplish red color; it will not keep for more than a few days. Arbitrarily eight c. c. of this solution, approximately 400 mgm. of the phthalein has been selected. This amount is sufficient to give a most intense purplish red color to twenty litres of water. Its administration in health is never followed by the appearance of the dye in the urine, and this amount insures in health an intense color in the final preparation of the feces, which is used for the quantitative determination. The dye is administered intravenously by gravity with antiseptic and aseptic precautions and with the usual intravenous technic. The funnel and system are filled with freshly distilled water, and after the flow is well established the phthalein solution is added. Fifty to 100 c. c. of water are used and the phthalein solution is washed in with freshly distilled water until the fluid entering the vein is colorless. Ten to fifteen minutes are required for its administration. Physiological salt solution may be preferable to distilled water for use in this injection.

Active purgation is instituted prior to the administration of the dye, and throughout the time of observation, usually by means of compound cathartic pills. The stools are collected for forty-eight hours, the urine for twenty-four hours. In the event of

little or no feces being obtained, enemata are used, but unless a normal amount of dye is recovered the test must be discarded, since low findings under this condition could not be accepted.

The total forty-eight hour feces are placed in a two litre bottle and diluted with water to one or 1.5 litre, depending on their amount. This is placed in a shaking machine for from five to twenty minutes. Without allowing time for sedimentation, one tenth of the total is placed in a one litre flask and to this is added five c. c. of forty per cent. sodium hydroxide, which causes the mixture to take on a very red color. Dilution is made with water to one litre. A stopper is inserted and the mixture thoroughly shaken. One hundred c. c. of this preparation is placed in a 200 c. c. flask, five c. c. of lead acetate added, resulting in a decolorization of the mixture and a throwing out a heavy lead precipitate which carries down all the pigments, leaving a clear colorless supernatant fluid. Five c. c. of forty per cent. sodium hydroxide are added; this again elicits the red phthalein color, but does not redissolve the other lead pigment combination. In certain instances five c. c. of sodium hydroxide at this point are not sufficient to elicit the maximum intensity of red, and more should be added until maximum intensity is reached, but not sufficient to free the other pigments from their insoluble lead combinations. The contents of the flask are made up to 200 c. c., shaken, and a small part filtered off, or the solution is allowed to stand for five minutes, when in many cases a clear red, supernatant fluid ready for estimation can be decanted. This solution is compared in a Rowntree and Geraghty modification of the Autenrieth and Kongsberger colorimeter with twenty mgm. to a litre solution of the disodium salt of tetrachlorophenolphthalein (e. g., 0.4 c. c. of the original solution to one litre, plus sufficient sodium hydroxide to insure maximum color). With these dilutions the amount of dye present is indicated directly in percentages.

When the amount recovered is below normal, it is advisable to add two to three c. c. more alkali to the 200 c. c. preparation, and redetermine, thus insuring that the maximum color has been elicited. The addition of large quantities of alkalies is undesirable, since it sets free the other pigments, rendering the solution yellowish red instead of purplish red. Not more than ten minutes are required to carry out this test after the feces are removed from the shaker. Where difficulty is experienced on account of the quality of the color, the following procedure may prove of some value in certain instances: After the addition of about ten c. c. of forty per cent. sodium hydroxide, the feces are made up with water to one litre. To one tenth of this is added five c. c. of sodium hydroxide and water up to one litre. Of this 100 c. c. are placed in a 200 c. c. flask and to it are added five to ten c. c. or more of calcium chloride mixture until the best quality of color is elicited. Dilution is made to 200 c. c., the mixture is allowed to stand from one half hour to twenty-four hours, and a small amount of the supernatant fluid is filtered off and read against the standard.

We applied this test in a series of thirty-four cases. This series included patients who were suffering from liver disease, as well as those who had no hepatic ailment. The test is not as easy to carry

out as the description indicates. It is rather difficult, and in many cases almost impossible to impress the nurse with the importance of collecting the entire quantity of feces. The duty is rather a disagreeable one and complaints are likely to arise. The chemical analysis is also a disagreeable procedure and in a number of instances almost discouraging. In these cases it is almost impossible to obtain a color which can be compared with the standard. In general this test is not easy; it requires some experience, and it needs a well equipped laboratory.

The accompanying table shows the percentages of dye recovered in the various cases. Certain cases which clinically were typical cases of liver involvement gave rather high figures for the phthalein excretion in the urine, whereas other cases in which the diagnosis pointed to nonhepatic involvement, there was frequently observed a very low phthalein output.

| No. | Name  | Diagnosis              | Output of phthalein, per cent. | Remarks       |
|-----|-------|------------------------|--------------------------------|---------------|
| 1   | R.    | Peritonitis            | 14                             |               |
| 2   | R.    | Peritonitis            | 28                             |               |
| 3   | R.    | Peritonitis            | 11                             |               |
| 4   | S.    | Malaria                | 99                             |               |
| 5   | H.    | Jaundice               | 5                              |               |
| 6   | H.    | Jaundice               | 92                             |               |
| 7   | H.    | Cholecystitis          | 30                             |               |
| 8   | B.    | Congestion of liver    | 34                             |               |
| 9   | D.    | Cholecystitis          | 28                             |               |
| 10  | D.    | Cholecystitis          | 28                             |               |
| 11  | H.    | Cholecystitis          | 22                             |               |
| 12  | R.    | Hernia                 | 27                             |               |
| 13  | K.    | Cholecystitis          | 12                             |               |
| 14  | D.    | Cholecystitis          | 21                             |               |
| 15  | D.    | Cholecystitis          | 21                             |               |
| 16  | S.    | Malaria                | 34                             |               |
| 17  | H.    | Cholecystitis          | 20                             | Jaundice      |
| 18  | R.    | Cholecystitis          | 26                             |               |
| 19  | R.    | Cholecystitis          | 14                             |               |
| 20  | R.    | No diagnosis           | 23                             |               |
| 21  | D.    | Liver congestion       | 25                             |               |
| 22  | H.    | Atrophic cirrhosis     | 25                             |               |
| 23  | W.    | Atrophic cirrhosis     | 17                             |               |
| 24  | E. P. | Atrophic cirrhosis     | 21                             |               |
| 25  | H.    | Sclerosing cholangitis | 14                             |               |
| 26  | H.    | Cholecystitis          | 19                             |               |
| 27  | T. M. | Cholecystitis          | 25                             | Jaundice      |
| 28  | R.    | Cholecystitis          | 20                             |               |
| 29  | R.    | Cholecystitis          | 28                             | Cholecystitis |
| 30  | R.    | Cholecystitis          | 20                             | Cholecystitis |
| 31  | W.    | Cholecystitis          | 20                             | Cholecystitis |
| 32  | L. Y. | Cancer of liver        | 17                             |               |
| 33  | H. P. | Cancer of liver        | 17                             |               |
| 34  | H. P. | Cancer of liver        | 17                             |               |

We concluded in several instances to compare this test with certain of the other tests for the degree of functional activity of the liver. In several instances we performed the levulose test; in other cases the test for urobilinogen; and in a third group of cases the determination of the urea, ammonia, and the ammonitrogen fractions of the urine. The determination of the nitrogen partition gave satisfactory results in several cases; i. e., in certain cases of known liver disease there was a decrease in the urea nitrogen and an increase in the ammonia nitrogen.

The phenoltetrachlorophthalein test for liver functional activity is difficult of performance, and does not give any information that should be of clinical value.

We are indebted to the various attending physicians and surgeons for permission to use their cases for this study.

#### REFERENCES.

- McLESTER and FRAZIER: *Journal A. M. A.*, lxx, 1915, p. 1071.
- WITTELL and HILF: *Arch. f. exp. Path. u. Ther.*, lxx, 1915, p. 1071.
- WITTELL and HILF: *Arch. f. exp. Path. u. Ther.*, lxx, 1915, p. 1071.
- WITTELL and HILF: *Arch. f. exp. Path. u. Ther.*, lxx, 1915, p. 1071.
- WITTELL and HILF: *Arch. f. exp. Path. u. Ther.*, lxx, 1915, p. 1071.
- WITTELL and HILF: *Arch. f. exp. Path. u. Ther.*, lxx, 1915, p. 1071.
- WITTELL and HILF: *Arch. f. exp. Path. u. Ther.*, lxx, 1915, p. 1071.
- WITTELL and HILF: *Arch. f. exp. Path. u. Ther.*, lxx, 1915, p. 1071.
- WITTELL and HILF: *Arch. f. exp. Path. u. Ther.*, lxx, 1915, p. 1071.
- WITTELL and HILF: *Arch. f. exp. Path. u. Ther.*, lxx, 1915, p. 1071.

- FAULK and SAML: *Zts. f. klin. Med.*, lxxviii, 1911, p. 383.
- LAESSNER: *Zts. f. exp. Path. u. Ther.*, lxx, 1915, p. 1071.
- LEAVENE and VAN SLAKE: *Jour. Biol. Chem.*, xiv, 1912, p. 301.
- VON JAKSCH: *Klinische Diagnostik*, 1892, p. 349.
- NEU: *Bauer, Stenzel, d. Ges. f. Morph. u. Phys.*, 1903, p. 17.
- EHR: *Lich. Ber.*, lxxviii, 1911, p. 235.
- BERKOWITZ: *Medical Record*, December 29, 1914, p. 612.
- DEYON and KAREP: *Comp. rend. soc. Biol.*, lxx, 1904, p. 612.
- NOLF: *Arch. inter. de Physiol.*, iii, 1905, p. 1.
- CORIN and ANSLAU: *Jahresb. u. d. Fortschr. d. Therichem.*, xxiv, 1894, p. 642.
- WHIPPLE, MASON, and PEIGHTAL: *Johns Hopkins Hosp. Bull.*, xxiv, p. 207, 1913.

For more extensive bibliography, see Rowntree, Marshall, and Chesney, l. c.

## INJURIES TO BONE AT TENDON AND LIGAMENT INSERTIONS WITHOUT LOCAL TENDERNESS.

### Their Medicolegal Import.

By A. H. P. LEUF, M. D.,  
Philadelphia.

My object is to call attention to an easily demonstrated, but seldom appreciated fact relating to chronic pain common in many old injuries; more especially such as is not evidenced by tenderness, and which cannot readily, if at all, be elicited by digital pressure or percussion. This is of special import in medicolegal cases, particularly in damage suits. The pains are almost always purely subjective, of which patients complain, often bitterly, though no lesion is evident to the examiner by local manipulation.

One reason for taking up this matter is the frequency with which these common conditions are overlooked, and the fact that they are almost always inadequately treated when recognized. The mistreatment is caused by failure to appreciate the true condition, and the lack of facilities on the part of most practitioners with which properly to apply the only remedial measures that can be expected to give relief. What these are will be considered later. Many physicians also usually cannot afford the time required for proper treatment.

An important reason for taking up this matter is its medicolegal aspect, for these conditions are largely due to injuries for which some one is legally responsible. Besides, the money needed for proper treatment is usually not possessed by the unfortunate victim, whose hope of ultimate cure lies in promptly securing a sufficient sum in damages. But here, however, the great obstacle to success consists in what should be its greatest aid, a court of law and the legal mind.

Much valuable testimony, for instance, is barred from the "legal mind," accustomed to "rules of evidence" that restrict the expert witness to the recital of only what he "knows" by means of his five special senses, because only admitting "inferences and deductions" as special opinion evidence based alone upon so limited a foundation. Logical deductions from facts, and inferences so reasonable as to be almost equivalent to certainty, have no weight, though by this means we are enabled successfully to treat some of our most intricate cases with a degree of success otherwise unattainable. A great deal of conflict of opinion between medical experts may be attributed to the habit of the courts in drawing too sharp a line of demarcation between fact and opinion evidence, and then not permitting the expert to prove



the correctness of his opinion, or at least show upon what it is based. We are not taught to think as is the lawyer, who often delights to make us look foolish because of our inability occasionally to view things his way. Many a medical witness is right and knows it, is sure of it, but is prevented, by the "rules of evidence" too strictly enforced, from telling, as he is sworn to do, "the truth, the whole truth, and nothing but the truth." This may be law, it may be rule, but it is not justice, it is not fair. The plaintiff, the defendant, the community, all suffer in consequence, for the ends of justice are not subserved. The ingenuity of the lawyer, the rigidity of the judge, the relative simplicity of the doctor, all combine to shut out essential facts and competent judgments, and lend themselves to the distortion of truth and the perversion of justice. This no one wants in a general sense, but special pleaders do in particular instances.

Much advantage to this end is taken of the distinction between objective and subjective symptoms. The iron moulder's and the sculptor's fine judgment as to just when to run the molten metal cannot be acquired by word of mouth or reading; it must be learned by practice, as is so finely shown in Cellini's account of his casting of his statue of Perseus. Likewise is the appreciation of colors and their proper mixing by painters an art that can be acquired only by experience, and the highest art can never be attained by the many, despite prolonged study and practice; its possession is only possible to unusual aptitude, the genius of the few.

Medicine is largely an art; its practitioners artists in varying degree according to length and variety of experience, kind of opportunity, natural ability, and amount of application. A physician's judgment and conclusions, consequently, cannot all be translated into words that will enable a layman fully to understand. The subtle psychic processes by which the artist forms his judgment are within the mental grasp of advanced students only. The greater refinements of physical diagnosis, as a concrete example, may truthfully be said to be beyond the reach of many students and practitioners. Realize then the incompleteness of the physician's testimony when restricted to what he can make clear to a lay mind, and its still greater incompleteness when he is denied the right of demonstration, the only way in which a layman may be made to understand, and, what is of vast importance, the perjured expert be exposed.

But I wish to hold to view an illustration exemplifying this thought. It comes as readily within the understanding of even the very ignorant layman as it does within that of the most erudite practitioner of the art of medicine. I refer to deep seated pain in bone and fibrous structures. For instance, a man is injured in his back, and he has pain persisting for many months, even for years. He sues for damages. Defendant's surgeon examines him. Although the patient complains of pain in the back, he manifests no sign of it on pressure or percussion, but does if he bends in certain directions, thereby putting a strain upon the ligamentous and bony attachments involved. But the defendant's examiner pronounces the pain fraudulent or grossly exaggerated; the patient's physician is certain of

the contrary; the sufferer alone actually knows. It appears to be a question of undemonstrable fact; but the probabilities should be clearly established. That is the sole function of the medical witness in a case of this kind, but he is seldom permitted to show this, for "argument belongs to the lawyer alone." Over this latter proposition I have no quarrel, though there should be some way to bring out all the factors needed to aid a proper understanding by the judge and jury.

Almost every adult has had experience with the stiff and sore back following long continued unusual bending forward or long standing. How slowly the back is straightened, and how painfully; and what a relief it is actually to pound the aching area with the closed fist. Here is one of numerous instances of severe acute pain, not only without tenderness, but actually relieved by vigorous percussion and firm pressure. This symptom is quite common; it is decided; and yet it is not "objective." This kind of pains are usually "laughed out of court," to the great benefit of the defendant, and the corresponding injury of the plaintiff; a result far from the real object of the court and jury and the intent of the law. Thus does the very proper effort to prevent imposition by impostors lead to overcaution that deprives the injured of their due.

I have found it customary for corporation examiners flippantly to discredit a patient who complains of pain without showing signs of it on pressure or percussion over the affected area, though this very fact should be considered presumptive of sincerity and truthfulness.

Having called attention to this very common form of purely "subjective" pain, it seems to me needless to do more than leave this matter to the thoughtful consideration of the reader. The reason for the lack of objectiveness in these conditions, I will consider further on, after dealing with other "subjective" pains just as real as any that are evident to the observer.

It may be trite to say that one can neither see, hear, smell, taste, nor feel another's pain, but this statement needs periodical reiteration to prevent its being overlooked when most needed. We should not forget that the only way we recognize the pain of another is by the usual evidence of physical suffering. These may be divided into two kinds: the prompt, very evident signs, such as outcries, facial distortion, and characteristic movements; and the slower, such as cautious attitudes and movements, avoidance of certain positions, postures, and movements, slowness of motion, and general more or less anxious alertness, evidence of which may often be found in the facial expression. While judges allow this kind of evidence of pain in varying degree, depending either or both upon the mental attitude of the judge and the mode of telling by the medical witness, the fact is that it is seldom realized that a careful examination by an astute and experienced physician will elicit these facts more unerringly than ever can be reliably shown by profuse testimony of relays of lay witnesses regarding the actions and complaints of the patient extending over a long period of time.

The reason why this kind of testimony is justly viewed with suspicion and is in disfavor, is because

it is so readily simulated. A man claiming compensation for injuries that are not easily evident is always justly under suspicion for reasons that are self evident, but for this very reason is he also entitled to a full opportunity to prove his truthfulness. A fact not so well understood, and which is very important, is that a competent physician can usually tell at a single careful examination whether or not a patient is malingering or exaggerating to any decided extent. Of this, also, more hereafter. I may, however, add that the violent movements and loud outcries of acute suffering are in many respects more readily simulated so as temporarily to deceive even a physician, than the much less evident manifestations of chronic suffering. The keynote to the detection of fraud is in the consistency of the complaints, in the harmony or agreement between the symptom complex and the natural effects of its alleged cause. To determine this satisfactorily may require repeated observations and watchings of the patient when he is off guard.

Now for an illustrative case, a concrete example. Some years ago a woman came to me with a pain in the upper part of the shoulder. As she alighted from a car, with one foot on the step and the other on the ground, the car started and threw her off her balance, which she recovered, however, by a quick, wholly spontaneous, upward thrust of her arm, carrying her hand above her head. She was fifty years of age. The shoulder pained her at once, and continued to do so for weeks afterward. Liniments, rubbings, massage, and gentle movements were unavailing in efforts at relief. When her arm was quiet for a while, the pain subsided, and at times left her. Pain could not be elicited by pressure or passive movement of the arm at the shoulder. When she moved it herself, however, but only in certain directions, there was pain.

Satisfied that she was telling the truth, I advised an appeal to the railway company for compensation. This was done at once, and she was examined by one of the corporation surgeons, who reported negatively on the ground that he could find no evidence of pain, and he promptly assumed, as is usual under such circumstances, and at times justly, that her claim was fraudulent. The adjuster of the company having my patient's claim in charge, with whom I was personally acquainted, called upon me to say that he was satisfied that I had been imposed upon, that the woman was a fraud, and that he would not pay her a cent. His opinion appeared to be strengthened by the fact of her having, as he informed me, settled with the company six months previously for injuries stated by her to have been sustained on one of their cars a short time before.

I went carefully over her case with him, showing what the company surgeon had probably, in fact certainly overlooked, and fully satisfied him that she could have been injured as stated, and, in fact, was hurt, with the chances against a complete recovery, at least until after a long time. He agreed then and there to pay to her \$100, which he did. The points follow to which I called his attention.

Viewing the muscles and bones as mechanisms, the former represent power and the latter levers. The usual form of leverage of bones is that of the third order, and of the most disadvantageous form

at that. The fulcrum (F) is at one end of the bone lever, the weight (W) at the other end, while the power (P) is applied in the continuity of the bone, quite near the fulcrum, which is at the joint. One of the so called "laws" of the lever is that "the power and weight are in the inverse ratio of their distances from the fulcrum."

Thus, if the weight is only one pound, and the power arm (i. e., the distance from F to P) is one inch, and the weight arm (F to W) is two inches, it requires a force of two pounds to raise the one pound. If the weight arm is increased to four inches, the power arm remaining one inch, it requires a four pound force to move the single pound weight. If the W arm is ten times the length of the P arm, a ten pound force is required.

If we take the elbow joint as an example, we find the joint to be the fulcrum, the insertions of the biceps and the brachialis anticus to be the points of application of the power, and the hand the seat of the weight to be raised. The distance from the middle of the elbow joint to the middle of the areas of insertion of the two flexor muscles just mentioned to the bicipital tuberosity of the radius and the base of the coronoid process of the ulna, respectively, is, roundly, one and a half square inch. This is the power arm. From the middle of the elbow joint to the middle of the palm is, roundly, fourteen inches. This is the weight arm. The forearm lever, then, is of the third order, the fulcrum at one end, the weight at the other, with the power applied between. The P arm is one and a half inch and the W arm fourteen inches in length, being 9.33 times longer than the P arm. Accordingly, to lift a ten pound weight with the hand would require a muscle contracting, a tendon pulling force of ninety-three pounds plus. The area of insertion of the two muscles is, approximately, half a square inch. The tensile force at their points of insertion is, therefore, ninety-three pounds plus, being at the rate of 186 pounds plus to the square inch—truly a very much greater strain upon the bone than one would unthinkingly suppose in lifting so light a weight as ten pounds.

There are other tendon insertions where the disadvantage is greater, as of the tendo Achillis at the heel, of the tendo patellæ to the tuberosity of the tibia and of the supraspinatus at the top of the greater tuberosity of the humerus, though this is at so enormous a disadvantage in efforts at abduction of the arm that it probably merely serves to hold the head of the humerus well up in the glenoid cavity. Measure any of these lever arms and areas of insertion, and then calculate the tensile force for each square inch necessarily applied to these parts in raising a certain weight, or otherwise exerting a given force. Even the enormous disproportion thus shown between mechanical achievement and the power required for its accomplishment is much exceeded in horizontal and parallel bar and flying rings work by the gymnast, all of which can be readily enough estimated. I may add, however, that in "chinning" on a horizontal bar the pull is enormously increased, for the entire body weight, say of 140 pounds, less that of the two hands and forearms, is divided between the two arms. Let me also instance the extreme tensile force at the

bicipital ridges of the humerus by the conjoined tendon of the latissimus dorsi and teres major when the gymnast mounts the horizontal bar by throwing his legs over it so as to bring the hips above the bar. Think, then, of the enormously disproportionate leverage of the spinal muscles in extension and rotation of the trunk.

The utter inutilty of looking for tenderness by digital pressure in many conditions of pain due to strain at the point of tendon or ligament attachment may be realized when it is remembered that the pain is due to tensile strain, whereas it is by the reverse of this, by pressure, and digital pressure at that, that tenderness is sought. Even, however, if this objection did not apply, the fact must not be overlooked that a fifteen to twenty-five pound force is about the limit a finger or thumb tip can exert against the many times greater force required to cause the pain. A five pound lift might be painless, while two to five times that amount of strain would be more than could be borne. Yet the five pound lift would entail a greater tensile strain at the point affected than could be exerted by pressure of the thumb or finger. Thus many of these pains are only brought out by a local tensile force much greater than can be exerted by pressure without destructive bruising of the soft parts, and impossible with the finger or thumb. This important fact is usually overlooked in medicolegal cases, and almost always in others; it is rarely considered. The proper method of examination in these cases is by resistance movements against the examiner's hand, or in the performance of graded tasks. Sometimes this is done to a limited extent, as in requiring a patient to pick an object off the floor in alleged injuries of the spine. But while this test is good and sufficient in certain classes of cases, it is too crude to be of use in the determination of lesser injuries, or in the initial stages of what may become grave conditions.

The strain and consequent liability to injury at the tendon attachment of bone is augmented by sudden and jerky movements, such, for instance, as those made reflexly, at times almost spasmodically in their quickness, to preserve the balance, or to escape real or fancied danger, at times happening too quickly for the mind to realize at the time. Yet witnesses, claimants who honestly admit their inability to recollect the exact mode and sequence of movements at the time of accident, are often ridiculed, and have their veracity challenged. All this is wrong, a fact that even most medical men do not seem clearly to appreciate. Hence judges, who are the main protection of a witness and claimant against unfairness, cannot act efficiently because they do not know these truths, and necessarily not so long as the medical profession itself does not realize them.

Recollect that there is such a thing as pain without tenderness. What I want to emphasize is the fact that very severe subjective pain often exists that cannot be elicited by local pressure, especially if the pain is deep seated, when it is also, but vaguely, indicated by the patient over a wide area proportionate to the depth of the pain from the surface, and more especially so when it is protected against outside influence by bony surroundings.

Consider, for instance, the depth and width of the vertebral column, notably in the lumbar region, and the impossibility of reaching by external pressure the intervertebral cartilages and articular surfaces. Much pain often follows inaction rest. This is due to passive congestion or strain, and becomes evident only on movement. For instance, the lumbar backache, at times is very intense, from prolonged stooping, which one unconsciously, but vainly, seeks to relieve by pounding of the painful area with the fist. Also the lumbar backaches so common after lying abed for some hours, prevent sleep for the remainder of the night. These conditions exist without causative injury, and are quite readily relieved by proper local and medicinal treatment, according to the nature of the trouble. But such conditions do not yield as readily to the same treatment if due to an injury, in which event they are usually sudden and severe in onset, with, generally, no previous trouble of that kind. Even, however, when there has been similar antecedent trouble, the nature and severity of the pain changes, and it is more resistant to treatment.

There are also injuries in which the initial pain is so slight as to escape serious attention, and which increases so very slowly that it does not become very evident till after a lapse of even many months, after which it may continue in its pathological course, especially if not properly treated, until the spine is seriously involved, its integrity threatened, and the spinal cord itself affected.

I have noticed many times, in bone and ligament injuries, that though they may get seemingly well within a few months, there is likely to be some slight lingering pain left, but not enough seriously to inconvenience the patient. This may increase again after an interval of a few weeks or months, and gradually grow worse, ending, if neglected, in a severe chronic congestive or subinflammatory condition very resistant to treatment, and yielding only to prolonged rest and subsequent very gradual and cautious resumption of function. Let me cite an instance:

CASE I. A man of family, Mr. O., aged about forty-four years, was standing by the side of a car track. He was holding one end of a heavy iron water pipe preparatory to lowering it into a ditch, when a slowly approaching car hit him in the back and threw him into the hole. He sued for damages, was examined by the company surgeon, and finally offered \$75 in settlement of his claim. His attorney wanted \$150, but referred him to me for examination, more than three months after the accident. I sent back word not to settle at any figure until he had seen me. The suit was for \$5,000. So sure was I of the gravity of his condition, that I advised asking for a larger sum. This was done, the case went to trial, and the final verdict was for \$12,000, the court cutting it down to \$7,000, which was paid. This man was never able to do any active work again. He had a permanently lame back, and had become and remained impotent.

CASE II. Miss L., aged forty-eight years, native of United States, teacher by occupation, a woman of superior ability and unusual energy, while in Galveston, Texas, twelve years ago, fell, striking the left submammary region against a wooden curb. The resulting bruise caused her to remain abed three days, though no ribs were broken nor was other injury sustained. Local pain continued for a while, diminishing gradually, until only moderate tenderness was left, which never disappeared entirely. In later years this increased, accompanied by marked local hyperesthesia, so that even the mildest attempts at light massage of the part, during a course of general treatment by



an experienced massager occasioned so much suffering that an area fully five inches square could not be manipulated. This aggravation of a continuous old condition resulting from an otherwise trivial injury showed what might follow even a slight bruise.

CASE III. Mrs. H., aged sixty-nine years, was thrown from a trolley car she was in the act of boarding and struck her head upon the stones of the street. She was dazed after being helped to rise, was assisted home, remained confused for some hours, and left her bed only after eight days, during which time her main complaint had been a dull, vaguely outlined, occipital pain, evidently deep, as well as superficial. It diminished, but never left her, at times growing worse, at others causing only moderate discomfort. After eighteen months of this suffering, the pain gradually increased, being marked by decided exacerbations, steadily growing more intense as well as enduring longer, and being separated by shorter intervals. Vertigo appeared in due season, with a constant tendency to turn to the left. In short, she developed the typical signs of a cerebellar tumor, which caused her death within five years of the date of the injury, to which her unfortunate condition and death must be attributed by the rules of logic applied according to the established facts of medical science.

The attempt is usually and successfully made to laugh these cases out of court, with resulting gross perversion of justice, and wrong and injury to the plaintiff.

These chronic congestions and subacute inflammations of the bones and ligaments of the spinal column may, and often do, gradually extend to the spinal nerves in the intervertebral foramina, and along them up to and involving the cord. The prognosis in this class of cases is always grave so far as perfect restoration of function is concerned, and this not so much because of the incurability of the condition, as because it is not fully recognized and properly treated. What this is, is another question; but it may be said to consist, in outline, of galvanism, deep massage, rest, and later passive movements, then calisthenics and such general medication as may tend to bring and hold the patient up to a normal level of general good health. This requires suitable apparatus and its proper use, together with the means necessary to procure them, and the time to use them. The facilities for such treatments are, to say the least, uncommon, and therefore costly, and their proper application is expensive. Because of the general failure to recognize these plain facts, a great many claimants in every large community are deprived of their just due, while those who are culpable escape punishment and the making of proper reparation.

Tendons unite muscle to bone by gradually becoming incorporated with the connective tissue of each, their fibres ramifying in all directions, spreading everywhere, so that the tensile strain becomes diffused over a relatively wide area. Ligaments are similarly transformed into the connective tissue of the bone and cartilage to which they are attached. The same nerves and bloodvessels supply continuous ligaments and tendons and the structures to which they are attached. Thus congestions and inflammations extend readily from one to the other by continuity of structure. Inflammation and its results, together with extravasated blood, also readily extend to the adjacent parts, as is so noticeable, for instance, in the puffiness and discoloration generally following even slight sprains of the ankle. Imagine, then, the result of a strain of the intervertebral articulations upon the nerve trunks pass-

ing through the adjoining narrow intervertebral foramina. It is no wonder that there is deep seated pain, that there may be tingling and numbness, or even pain in the area of distribution of the affected nerves, and that congestive and inflammatory processes of the adjacent joints may extend to them, and along their sheaths to that of the spinal cord, and ultimately to the cord itself. Nor is it remarkable that structures so deeply seated, and so subject to strain and pressure, should respond slowly to treatment. Besides, these tissues have very poor circulation, and are, therefore, not quick to become actively affected, and for the same reason are they slow to get well. Often do these structures seem to have been restored to normal, only to light up again in renewed activity on slight provocation, even by cessation of treatment. Because of the depth of the parts, of their poor circulation, and the non-existence of drugs having a selective effect upon them, these pathological conditions are not responsive to the modes of treatment that are effective in similar structures elsewhere. Unless tissues are very actively congested or inflamed, pain is not elicited by local pressure or percussion, but may discover itself in such movements as put a strain upon the affected parts, or it may result from compression due to standing or sitting for a long time in a fixed position, or may be caused by the strain of twisting or bending of the column while merely lying down.

When these conditions result from other causes than trauma, as from what we call rheumatism, or from syphilis, they may readily enough be relieved by suitable medication and local applications. When due to injuries, however, the main reliance must be upon electricity by virtue of its own effects when properly applied, as well as by cataphoresis, the carrying of suitable medication by the current directly to the parts through the intervening structures. But this must not be done too early. Rest is needed in the active stage, and this can be reasonably assured in severe cases only by the use of a plaster jacket. Subsequently dependence must be placed upon electricity and gentle deep massage, and later, light movements, gradually growing stronger until it is safe to attempt greater strains upon the affected parts. The work should be advanced very cautiously, for a little too much may produce renewed strain and a lighting up of the old trouble, when much of the first treatment will have to be resumed.

This is, in brief, a little upon a great subject, both from the medical as well as the medicolegal point of view. My aim has been to show that it is not appreciated as it should be, and to help secure to it more careful consideration by such members of both professions as may have the time and the patience to read this incomplete and hasty presentation of the matter.

The important things to remember are, that no injury to ligament or tendon insertions to bone is too slight to receive serious consideration; that conditions fraught with the most distressing aftereffects may result from seemingly trifling injuries; that they may light up again and grow important after being seemingly well; that these exacerbations are largely due to the original strain or injury being much severer than is generally realized at the be-

gimming; that augmentation of pathological conditions may be very slow because of negative circulation and low vitality of the parts, on which account they are also slow in getting well; that they are not affected by the usual medication if due to an injury; that the milder and chronic forms are not likely to evidence tenderness; that rest is the prime requisite in treatment during the acute stage; that electricity is the remedy *par excellence* after subsidence of the acute symptoms; that restoration of function must be preceded by easy stages of massage and light exercises very cautiously and judiciously practised; that relapses may readily occur; that congestion and inflammation may extend to adjacent parts, especially of the spinal nerves and cord when the spine is affected; that the simplest injuries may thus end in permanent invalidism; that it is never wise to assume complete recovery until it is proved by a clear demonstration of restoration of normal function, as shown by the resumption of full activity of the parts, and its continuance for a number of weeks without noticeable bad effects.

2034 ARCH STREET.

### A NEW PROFESSION—THE SOCIAL WELFARE WORKER.

BY MURRAY BURNES GORDON, M. D.,  
New York.

The history of medicine can well be told by epochs, starting with the empirical treatment by herbs and roots made up in concoctions which were dispensed by priest, medicine man, and witch, then through the dark ages when medicine was at a standstill, and thence through the anatomical, pathological, and polytherapeutic periods until we come to the modern altruistic epoch which can well be characterized as the age of prophylaxis. The modern physician finds that the trend of the times is aptly expressed in that old adage of "an ounce of prevention is worth a pound of cure." The physician of the future will seek his field more in the direction of prophylaxis than in that of treatment.

The present period differs from the others in that the layman is doing just as efficient work as the physician. Formerly everything was hidden under a veil of mysticism, superstition, and dead language. Now, the people are being educated as to the precise nature of the many different diseases that human flesh is heir to, they are being taught just what conditions produce or have a tendency to encourage the production of disease, and their cooperation is solicited to combat these conditions.

In this war on disease, the economic and social conditions must be considered. The very mode of existence of a good proportion of the people is such that this must be remedied before efficient work can be done. In addition, tradition, old established customs, and superstitions must be combated. To study these conditions, plan methods of amelioration, and carry them out practically, a new field or profession has been created—that of the social welfare worker.

Has social service a legitimate field? A careful study of the subject will demonstrate its need. Social service or social welfare work may be grouped under three heads—municipal, institutional,

and private. The first class includes that under the jurisdiction of cities or villages such as the district or town nurse; the second group refers to hospitals, dispensaries, and associations which have their separate social service; the third class is really an outgrowth of the college settlement and includes private individuals, generally college students and graduates. This classification is an arbitrary one and is used here only as a means of showing the extent to which this profession has grown.

No hospital can be considered modern or efficient unless it has a social welfare department. The scope of this service is to follow up the ward patients after they have been discharged from the hospital. The purpose of this is multifold. Further treatment may be necessary which can be obtained in the outpatient department or dispensary. Many a patient is discharged as "cured" only to suffer a relapse, which probably could have been avoided had the physician's orders been carried out and his directions followed. This does not always imply medical treatment alone, but may call for other measures, such as a vacation in the open country where there is plenty of fresh air and sunshine, or perhaps it may warrant the placing of the patient at a new occupation because his original vocation was harmful and injurious. It may perhaps mean a complete reorganization of his home life along avenues of cleanliness and proper dietary conditions, or it may necessitate, as it so often does, financial aid until such time as the patient is in a position to help himself.

In a dispensary the conditions are slightly different. Here are seen a greater number of cases and they are also seen earlier and for a longer period. The dispensary is a sort of clearing house for patients; they are classified, sent to this or that clinic, and, if necessary, to the hospital. In more than one instance, the hospital of which the dispensary is the outpatient department, is overcrowded and it falls within the scope of the social service to try to have that patient admitted to some other hospital. This is especially true of tuberculous or chronic heart and kidney cases. There are special tuberculosis hospitals which are under the control of the municipal authorities or private institutions. The chronic heart patients can sometimes be taken care of in special institutions where they are given individual attention and taught some occupation that does not call for arduous work.

The general type of dispensary patient is underdeveloped, undersized, and underfed, and therefore prone to be infected with almost any disease. Of how much benefit would it be to prescribe a tonic to a patient that can barely keep body and soul together? And these tonics, forsooth, are to be taken three times a day after meals; for all the difference it makes in the therapeutic action, they may as well be taken before or even with meals, if one wishes to dignify a bun and a cup of tea by calling the combination a meal. In cases like this, the social welfare worker visits the home, investigates the living conditions, perhaps finds employment for the husband, obtains milk, eggs, and other staples of life from some charitable organization and fuel and clothing from another. In the summer time, the weary mother and her half starved, tenement bred

children are treated to a day's outing on a boat with plenty of milk, bread and butter, fresh air and sunshine, or perhaps they are sent to the seashore for a week or two.

It is sad but true that dirt, filth, and unsanitary conditions are associated with poverty, and the social service worker finds that she has a Herculean task on her hands to bring about the proper degree of decency in such surroundings.

The culinary department of more than one home has been reorganized with beneficial results. People as a rule do not appreciate food values and therefore do not know how to purchase their foods for the smallest outlay and still obtain the largest possible nutritive return. The practical teaching of economics in the home is more than necessary. It is of very frequent occurrence for a social service worker to assume complete charge of a family or arrange for some one else to take care of it, because of the sudden illness of the mother which has necessitated hospital treatment. But more frequent is the case of the nursing baby to be placed in a nursery during the hours that the mother is compelled to work to make both ends meet.

While as a general rule the majority of dispensary patients are suffering from minor or chronic ailments, the number of acute cases that require hospital care is quite considerable. Superstition, tradition, and ignorance, together with a long standing fear of hospitals, cause these patients to refuse hospital treatment and thereby open up another avenue for the social service worker, wherein she administers treatment at the homes under the doctor's directions.

Banner work has been done in the field of infant feeding. Prior to the establishment of milk stations, the death rate of bottle fed babies was disgracefully high. Since then it has been gradually lowered year by year. The homes are visited, the mothers are instructed as to the proper care of utensils, demonstrations are given of the proper mode of making up the feedings in accordance with the physician's formula, and as a result more and more babies are saved every year. By means of the baby welfare movement, mothers are invited to enter their children in contests, the faults and defects, as well as the redeeming features of the child are pointed out, and the mother advised how to remedy them.

In a contagious disease hospital, the social service is under the direction of the board of health. This type is new and has not yet been fully developed. The work differs in that the patients are sent to the hospital for an ailment which is contagious and which is dangerous to the community only during its contagious period. Therefore no cognizance is taken of any other condition that the patient may be suffering from or which may develop in the course of the disease, except so far as it may require active treatment. Upon the discharge of the patient, the parents are notified that the child is suffering from a certain condition that requires attention, and are advised to have the patient treated by the family physician or, if they are financially unable to do that, to apply to some dispensary. The child is visited by a district nurse for a certain variable period, the case is watched, and conditions are

noted. This method assures attention and treatment, either medical or surgical, as may be called for. It also permits the formulation of statistics as to the further history of the complications and sequelæ of contagious disease.

In all this work it can readily be appreciated that the social service worker, while insistent as to the fulfillment of her orders, must be tactful and pleasant and endeavor not to antagonize or offend the patients in any way.

This proves that the new profession of social welfare worker is a necessity; it seems to furnish the missing link between the medical profession and the laity, proving to the one that mysticism and mystery have no place in modern medicine, and educating the other to the fact that health can be obtained and disease averted by a proper respect for Nature's laws and by active cooperation with the physician.

4402 TWELFTH AVENUE, BROOKLYN.

## RECTAL AND ANAL FISTULA.

BY JULIUS FRANKEL, M. D.,  
New York,

Assistant Surgeon, Har Moriah Hospital; Chief of Clinic, Surgical Division, Har Moriah Hospital.

Rectal and anal fistulae are diseases that cause enormous annoyance to sufferers. The frequency of their occurrence is greater than that of any other bowel disease, and they are also more frequent than the diseases of all other abdominal organs combined. Although such facts stare us in the face, yet our textbooks on surgery treat this subject so superficially and meagrely that the inexperienced student is inclined to think this malady a rarity and of almost no importance.

The disease is most prevalent among the middle aged and mostly in individuals of robust type. It occurs more frequently in men than women, although dystocia is an additional factor in etiology for women. I have seen but one case of external fistula in a newly born baby out of about twelve hundred confinement cases that came under my personal observation.

Almost all cases, except those produced mechanically through difficult labors and through foreign bodies in the rectum, are the result of some previously existing ulcer which leads to abscess formation in or around the rectum, called a periproctitic abscess. If not incised by the surgeon, it usually bursts spontaneously and gives the patient such a sense of relief that he fondly imagines himself to be at the end of his troubles, and consequently fails to seek further surgical aid. After the abscess has evacuated itself into the bowel or externally near the anal opening, the thickened granulating abscess walls never coalesce completely, owing to the differences in action between the intrinsic muscles of the bowels, the levator ani and the sphincter muscles of the anus during the act of defecation, therefore a spontaneous cure is almost impossible. The final result leads to more or less of a tortuous narrow canal surrounded by dense cicatricial tissue, lined by thickly formed granulations.

Syphilis is another great factor in producing rectal and anal abscesses that break down and subse-



quently lead to fistula. Tuberculous fistulae are often noticed among the richer classes, while among the poor, this malady is almost overlooked. Caries of the vertebral column, osteomyelitis of the sacrum and coccyx are also great factors in its production. Heredity has no bearing, except hereditary syphilis.

It has been stated that drunkards, big meat eaters, also eaters of rich foods are very much subject to this malady; it seems to me that this etiological factor is rather the result of immastication of the food they eat, which leads to indigestion. Large and hard particles are left to form sharp or pointed concretions in the residue to be discharged along with the feces through the rectum and anus; the mucosa becomes damaged and serrated. This damaged mucous membrane, in the presence of the acid feces becomes usually the seat of subsequent infection which forms ulcers, followed by abscess, which, when not attended to surgically, burst very often spontaneously and thus leave a tract for subsequent fistulas to form.

The diagnosis is an easy task if the fistula has an external opening, when on pressure a drop of pus can often be expressed from around a bluish thickened marginal orifice that usually leads to the tract; very often the opening is covered by the wrinkled skin of the sphincter, which must be spread out for its detection. Sometimes the sphincter must be dilated. The internal fistulous openings are often hard to locate and a proctoscopic examination with a good light is required. A round pointed probe is essential to determine where the fistula leads to, whether it has more than one tract, and whether it is a complete one, i. e., has external and internal openings, and whether the numerous tracts communicate with one another. There came lately a case under my observation that was diagnosed as an internal fistula and the surgeon was trying his best to induce operation. The (woman) patient complained of severe pain on walking, sitting, bearing down, especially so during the act of defecation. Pulse, temperature, and external appearance of the parts were negative. Rectal examination revealed a smooth mucosa, very painful on one side, just above the internal sphincter. I thought at that moment I had located the seat of the internal fistulous opening. On close questioning, the patient absolutely denied any previous disease in or around the rectum; her perineum, vagina, and cervix were almost normal, although she had given birth to four children. I then proctoscoped her and to my surprise detected a piece of chicken bone imbedded in the rectal mucous membrane, surrounded by fecal matter. The foreign body was removed and the irritated area was touched with silver nitrate. This case if continued unattended, surely would have led to infection, followed as usual by an ulcer, then an abscess and subsequently a fistulous tract. This case leads one to think of foreign bodies voluntarily or involuntarily inserted into the rectum as etiological factors. Diamond smugglers and dealers in precious articles, in order to escape revenue taxes, usually hide their goods in the rectum, as the vagina was discovered not to be safe enough. Some of the smugglers swallow their stuff before reaching a custom house. Perverts in sexuality are another class subject to internal fistulae.

*Prognosis.*—So far as the life of the patient is

concerned prognosis is very good, but as to recurrence it is often doubtful. I have seen as many as three recurrences in the same individual. I heard a patient denounce one of our leading surgeons because of a recurrence, which of course could always be prevented by a careful operation and by strict attention to aftertreatment which is very tedious and is usually left to the nurse or orderly; a most fatal mistake, for the surgeon and not the nurse or orderly is responsible for the successful outcome of the case.

*Treatment.*—It would be absolutely wrong to attempt operation for the cure of a fistula distended with pus, for this might lead to a severe form of cellulitis which is likely to cost the life of the patient. In such cases incise the abscess, provide for drainage, and tell your patient that a subsequent operation may be required for the cure of the fistula, for very seldom is such an abscess completely cured by incision.

*Operation for fistula.*—After the patient's bowels have been thoroughly evacuated, the patient anesthetized, the area shaved, the sphincter well dilated, thoroughly scrubbed, and rendered surgically clean, we must determine the kind of fistula we have to deal with. This is accomplished by probing the tract. If an external opening exists, a round pointed probe is carefully inserted into the fistula with one hand, while the index finger of the other hand is inserted into the rectum and helps to guide and regulate the probe in its travels. Frequently the probe has to be bent to accommodate itself to the shape of the tract. Often numerous attempts must be made at introducing and extracting the probe until the exact course of the fistula is determined. If, however, the fistula has an internal opening only, a complete dilatation of the sphincter is required, and under good light the opening is located by searching for an ulcer with granular bluish red margins. The probe is then inserted and lightly pushed outward and downward, guided in its travels by the index finger of the other hand, thereby determining the shape and size. The multiple branches must also be located. A more modern way of mapping out the tracts and its branches is to inject some sterilized coloring fluid (like methylene blue), which is forced into the opening through a blunt edged cannula attached to a syringe. This fluid colors almost the entire tract with its numerous branches. After all these details are accomplished, insert your groove director through the main channel, piercing the rectal mucosa at right angles to the sphincter; cut through all overlying tissue. Retract the cut surface with sharp retracting forceps, stop all bleeding points, and dissect with scalpel or with flat curved scissors (do not scrape) all granular and cicatricial tissue marked by your coloring fluid. If this dissection is carefully carried out and no islands of granulations are left, recurrence is almost impossible unless the aftertreatment is neglected. You then pack the wound with iodoform or plain sterile gauze covered by large gauze pads and a T shape binder.

To guard against incontinence, avoid cutting the sphincter in more than one place, no matter how many the branches or openings the fistula may have; I met once a case that had a double horseshoe shape fistula, but did not communicate subcutaneously.

These openings must be connected to the main channel and attended to as outlined above.

The aftertreatment is important and must be carried out with utmost surgical care to guard against infection and recurrence. This consists in giving the patient some form of opium. Tincture of opium, eight to ten drops three times a day, will cause constipation for at least three or four days. Moist antiseptic dressings are to be applied during the first two days, twice daily. On the third day, and subsequent to that, daily, the wound is opened and the very bottom of it is swabbed with tincture of iodine; a small moist sterile dressing is applied, which is in turn covered by large flaps of gauze and a T shape binder to keep the dressings firm. At the end of four or five days an olive oil enema is given, also some mild laxative by mouth. After every bowel movement a thorough washing of the parts is done, a swabbing with iodine, and a small moist dressing is applied, covered with large sterile flaps of gauze, kept in place by a suitable binder.

After about ten days the granulations usually have reached the height of the skin. The patient may then leave the bed with the following instructions: The bowels must move daily, followed by a washing with castile soap and warm water, and a mild antiseptic salve applied (boric acid salve) covered by sterile gauze and kept in place by a suitable binder. These instructions are to be observed until the parts are completely healed. Regular habits of rest, eating, and drinking must be established and rich food and midnight dinners avoided.

#### SUMMARY.

1. Never operate for fistula when abscess is present. Just incise the abscess and hint at a possible subsequent operation.
2. Locate the opening or openings; inject some coloring matter.
3. Insert a groove director and cut through all overlying tissue.
4. Connect all tracts or branches with the main channel.
5. Never cut the sphincter in more than one place.
6. Dissect (do not curette) all granulating and cicatricial tissue.
7. Attend to aftertreatment yourself or appoint a good assistant. Never rely on nurse or orderly if you want no recurrence.

218 EAST FIFTEENTH STREET.

### Abstracts and Reviews.

#### THE KINETIC DRIVE—ITS PHENOMENA AND ITS CONTROL.\*

By GEORGE W. CRUIE, M. D.,  
Cleveland.

At the present time the members of the human race throughout the world are living in an abnormal state of kinetic energy, either in the form of physical exertion, or as an unwonted intense mental and nervous strain. It seems profitable and interesting, therefore, to pause to consider the mechanism of this "kinetic drive" and to seek some means

either of reducing it or of combating its evil effects.

Man is a complex machine capable of the most diverse forms of activity, all of which, however, can be translated into terms of an expression of the liberation of kinetic energy. The great underlying function of his body is the conversion of potential into kinetic energy and the adaptation of this energy to work. The centre of the complex mechanism by which the kinetic energy is liberated, is the brain; but the brain cannot create energy and we must seek the source from which the motive force arises. This would seem to be the adrenal glands with their liberated epinephrine. As in other mechanisms dealing with kinetic energy some controlling factor is usually present. In man this control seems to reside in the thyroid gland, which may well be called the pacemaker. The adaptation of the energy and its expression in work are brought about through the muscular tissues and certain glandular structures.

Associated with the phenomena of the kinetic drive there is an increase in the tissue metabolism and a consequent liberation of acid byproducts into the blood stream. In order, however, that the blood may carry on its functions of nutrition, it must be kept neutral or faintly alkaline. This is accomplished by the liver, kidneys, and lungs for the most part. Powerful emotion, exertion, infection, pregnancy, protein intoxication, etc., are all capable of initiating and maintaining the kinetic drive in man and animals. If, therefore, the animal system acts as a unit in the production of the kinetic drive, the phenomena should be essentially the same whatever the cause of its initiation; so, also, should the tissue changes be fundamentally the same under all circumstances. We should expect to find an increased output of epinephrine; an increased activity of the thyroid gland; evidences of acidosis; and, if prolonged, changes in the liver and kidneys. Such is, in fact, the case and, irrespective of its primary causation, the kinetic drive leads to the following common phenomena: 1. An increased rate of respiration due to an increased hydrogen ion concentration in the blood which reaches the respiratory centre. 2. Thirst, which is an expression of the demand for water to dilute and wash out the excess of acids formed. 3. Sweating—an auxiliary means of acid elimination and an adjunct to temperature regulation. 4. Fever, fatigue, exhaustion, and even death. Histologically the brain cells show chromatolysis; the liver and renal cells show signs of exhaustion; the thyroid of increased activity and later of exhaustion, and the kidneys of overwork.

If the kinetic drive is of short duration, all these changes will be eradicated during the course of sleep. Rest alone, without actual sleep, will not bring about this restoration. If, on the other hand, the drive is long continued, anatomical lesions of a permanent character will develop in the cardiovascular system, the kidneys, or the brain. Life insurance statistics after the late Balkan war showed a great increase in cardiovascular and cardiorenal disease, in diabetes, neurasthenia, and insanity. These, too, are the diseases most commonly found among city dwellers and among masters of finance, great thinkers, and others who are continually living under high tension.

\* George W. Cruie, M. D., is Lecturer, Cleveland Institute of Medicine, Cleveland, Ohio. Address, 218 East Fifteenth Street, Cleveland, Ohio.

Extended clinical observations, the results of animal experimentation in our laboratory and in the laboratories of others, provide us with the facts upon which we may build up a theory of the mechanism of the kinetic drive or the transformation of potential into kinetic energy. We shall state this theory in a dogmatic manner for the sake of clarity and brevity and to facilitate discussion, although the dogmatism is unwarranted by the present state of our knowledge.

Experiments in which the adrenal glands have been isolated from central nerve impulses by section of their nerves, prove that the brain regulates and controls the output of epinephrine. Stimuli reach the brain through the special senses, and the brain, in turn, stimulates the adrenals to the liberation of epinephrine. The mobilized epinephrine then reaches the brain via the circulation, is there combined with oxygen, and thus leads to the transmission of energy impulses to the peripheral organs. These impulses have been shown to be probably identical with electricity. The continued liberation of epinephrine in sufficient amounts to provide the necessary energy impulses, would soon lead to the exhaustion of the adrenal glands, were it not for the influence of the thyroid, which is simultaneously stimulated by the brain. The activity of the thyroid secretion is proportional to its content of iodine—probably almost wholly due to it. Several competent observers have recently shown that iodine increases the permeability of living cells to electrical currents. In this way, therefore, the increased secretion of the thyroid gland would activate the epinephrine and render a smaller amount of it more effective than a large amount would be in the absence of thyroid secretion. The thyroiodine increases energy transformation and spares the epinephrine. It is interesting to note that the symptoms of iodism are those of the kinetic drive from any of the common causes. It should also be remarked that the symptoms of iodism are diminished in animals by adrenalectomy.

The all important roles of iodine (thyroiodine) and epinephrine in the production of the kinetic drive may be indicated further by the citation of a few experimental observations. In normal animals the brain cells show an initial hyperchromatism after an injection of strychnine, such as precedes any of the stimuli to the kinetic drive. When, however, the adrenals have been previously removed, the administration of strychnine no longer causes hyperchromatism. In Graves's disease there is a condition of increased secretion of the thyroid, and the phenomena are those of a very marked and prolonged kinetic drive. Experiments on dogs with crossed circulation have shown that when epinephrine reaches the brain alone, it produces the same degree of rise in blood pressure as when it is also present in the general circulation and acts directly on the heart and vessels. We might add, also, that in chronic diseases there is almost invariably some hypertrophy of the thyroid gland, and this is also seen as the result of prolonged overstrain or worry.

In chronic conditions in which the kinetic drive is long maintained, the danger arises from the permanent damage to the organs essential to life. Ar-

teriosclerosis, diabetes, chronic nephritis, and degeneration of the liver are the common causes of death under these circumstances.

Before passing to the means of controlling and preventing the kinetic drive and minimizing its ultimate effects, it would be well to reiterate the points in this theory which give us the master key to an understanding of the automatic action of the body. 1. The special senses send impulses to the brain. 2. The brain responds by stimulating the adrenal glands. 3. The liberated epinephrine reaching the brain is oxidized and gives rise to energy impulses of the nature of electricity. 4. These are facilitated in their transmission to the tissues by the activation through the thyroid secretion.

From what has gone before it is clear, then, that the most direct means of preventing or checking the kinetic drive is by isolating the brain from external impulses. This can be done by the administration of morphine, by the use of an anesthetic, by local anesthesia, and by a process of education by which the patient's apprehensions are reduced. Experimental study of these several methods has proved them to be more or less effective in both animals and man. The volatile anesthetics, however, permit many noxious impulses to reach the brain and are only partially effective. An exception to this is found in the case of nitrous oxide, which does not properly belong to this class of drugs. This anesthetic very effectively prevents chromatolysis in the brain cells, and an explanation of this fact seems to lie in its power to delay or prevent oxidation. In this way it almost completely checks the kinetic drive produced in surgical operations.

Peritonitis is one of the most serious cases of fatal kinetic drive with death from exhaustion, and this can often be prevented by the administration of large doses of morphine as first suggested by Alonzo Clark. This observation in confirmation of the theory just presented is one too common to be overlooked.

Recently we have had opportunities to put our theory to the test in man. Ten hopeless cases of epilepsy were operated in, partial thyroidectomy, ligation of the thyroid vessels, division of the cervical sympathetic nerves, and the removal of one adrenal gland being performed in several successive operations. This was done in the hope of reducing the capacity for the liberation of kinetic energy. It was not hoped that the patients would be cured, and they were not. In every instance, however, there was a great reduction in both number and severity of the attacks. A further test was recently made on an advanced diabetic who could not be rendered sugar free during a period of six months of treatment. The same operations were carried out as on the epileptics in the hope of reducing the effects of his continued kinetic drive, and we were surprised to find that after the operations his urine became sugar free and remained so. He has been reduced to a lower level of life and his kinetic possibilities have been permanently restricted. These cases are cited, not to suggest the use of these operations therapeutically, but merely to give confirmation to our theory as to the mechanism and control of the kinetic drive.



## Therapeutic Notes.

**Prevention of Hemorrhage in Obstructive Jaundice.**—Roger J. Lee and Beth Vincent, in the *Archives of Internal Medicine* for July, 1915, refer to the long recognized fact that in certain cases of obstructive jaundice there is a tendency to hemorrhage because of diminished coagulability and delayed clotting of the blood. Having first studied the processes of coagulation in normal blood, the authors have recently applied like methods in the investigation of the blood in the abnormal condition referred to. Their experience has coincided with that of other observers that the coagulation time is not markedly altered in catarrhal jaundice. Cases of liver disease with nonobstructive jaundice show a marked interference with coagulation, but the cause of this, in their opinion, is not the same as in the delay of coagulation in obstructive jaundice with a liver still functioning properly.

Clinical trials by the authors showed that in the last mentioned condition the delay in coagulation, resulting in the production of petechiae or other hemorrhagic manifestations and rendering operative surgical work unsafe, is due to a lack of calcium in the blood, and can be counteracted by the administration of calcium salts by mouth. The need of the system for calcium in these cases, they find, may be very simply demonstrated at the bedside by what they term the calcium *in vitro* test, which consists in adding three drops of a one per cent. solution of calcium chloride to one c. c. of the patient's blood and noting whether the coagulation time in this mixture is shorter than in a control one c. c. of blood to which calcium has not been added. Work by other investigators has suggested that the bile pigments in the blood in jaundice fix the normal calcium content so that it is not available for immediate use in coagulation. The effect of bile in delaying clotting, however, is largely counteracted by additional calcium, and where the calcium *in vitro* test is positive, showing a need of the body for calcium, calcium lactate in doses of 100 grains (6.5 grams) a day, should be administered. Clinical observation showed the efficacy of such medication in shortening the coagulation time and overcoming the hemorrhagic tendency. The drug must, however, be given for several days before any marked effect is seen. The necessity of using large doses arises from the difficulty of securing absorption of calcium in the alimentary tract. If an immediate effect is desired, intravenous injection of calcium salts is indicated, and may be performed without risk.

**Intrapericardial Medication and Massage in the Treatment of Cardiac Arrest.**—J. A. Gunn and P. A. Martin, in the *Journal of Pharmacology and Experimental Therapeutics* for July, 1915, report a series of investigations in which the fact was ascertained that epinephrine—as well as atropine and pilocarpine—when injected into the pericardial sac will rapidly produce its characteristic effects on the heart. Intrapericardial injection of epinephrine—five minims (0.3 c. c.) of a one in 10,000 solution,—artificial respiration through a tube in the trachea,

and cardiac massage through an opening in the abdomen, when begun ten minutes after arrest of the heart by chloroform in rabbits, brought about recovery in seventy per cent. of cases. Where cardiac massage was performed directly through an opening in the chest wall, the heart was revived in practically every case. If when the heart had been started, the blood pressure continued low, speedy and permanent improvement was obtained by intravenous injection of either epinephrine or pituitary extract. Treatment on these lines is suggested for cardiac arrest in man, occurring either in chloroform poisoning or in other conditions in which general recovery might be expected from resuscitation of the heart. In cardiac massage, best results were obtained when compression was gradual and relaxation rapid. The rate of compression should be at most less than one half the normal rate. Massage should be regularly interrupted at short intervals for a few seconds to allow the spontaneous beats to develop.

**The Clinical Effects of Veratrum.**—Russell J. Collins, in the *Archives of Internal Medicine* for July, 1915, reports the results of a clinical study made to ascertain definitely the effects of veratrum in man under abnormal as well as normal conditions. Each of the eight patients in whom the tests were made was convalescent with the exception of two, who were suffering from arterial hypertonus. The preparation used was a ten per cent. tincture of Veratrum album. This plant is recognized by the U. S. Pharmacopeia as suitable for the preparation of veratrum tincture. Each dose, with one exception, was given with from one to three glassfuls of water. One patient, who by mistake received only one fourth glassful, complained that each dose caused gastric irritation; with this none of the other patients was troubled.

The observations confirmed the view that veratrum is effectual in lowering blood pressure, but doses larger than those prescribed are required. A patient who received twenty minims (1.2 c. c.) of the tincture in one hour showed no appreciable effect on the pulse rate or blood pressure. The other cases, in which larger doses were used, showed a slowing of the pulse rate amounting to twelve to forty-two beats a minute, and a fall of the systolic blood pressure averaging thirty-nine mm. Hg. and of the diastolic pressure, thirty-two mm. Hg. Exceptions, however, were the two high pressure cases, in which, though the systolic pressure fell forty-nine mm., the diastolic but eight mm. Three cases presented toxic symptoms consisting of nausea, with or without vomiting, but these occurred independently of the circulatory effects, which always preceded them. Fullness and throbbing in the head were noted by all patients when the pulse rate reached its minimum. A recovery in the pulse rate took place to the extent of only ten to fifteen beats a minute in the six hours following the last dose of veratrum. Collins's conclusion is that the therapeutically effective dose of tincture of veratrum album in adults ranges from thirty to seventy-five minims. In the subjects studied these doses were given in divided amounts in the course of two to four hours.

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CHARLES E. DE M. SAJOUS, M.D., LL. D., Sc. D.

CLAUDE L. WHEELER, A.B., M.D.

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## THE ACUTE TYPES OF SENILE PULMON- ARY TUBERCULOSIS.

In a large proportion of cases, senile tuberculosis undergoes evolution as in the adult and can be as easily diagnosticated. Frequently, however, the disease develops in a latent way, the clinical signs being absent, while in others there are simply those of senile cachexia, such as asthenia, emaciation, and severe diarrhea without physical signs. In elderly subjects tuberculosis takes on the aspect of simple catarrhal bronchitis and is considered such. It is often an awakening of an old focus dating back to childhood or adult age, and if the patient is carefully examined we may obtain a history of a former chronic bronchitis or a hemoptysis.

There is a certain category of subjects, however, in whom such a history is unattainable, and as Peter long ago remarked, one can become tuberculous at any age. In some cases the affection must be considered to have begun in old age and in them nosocomial contagion plays the most important part, but no matter how important, it does not explain all, since the disease does not attack all subjects indifferently. The predisposing factors must be taken into account, particularly bad hygienic surroundings. Chronic alcoholism, diabetes, and cancer also play important parts in weakening organic resistance, often precarious in the aged, so that they are easy prey for Koch's bacillus.

As in adults, there are two principal classes of tuberculosis in the aged; on the one hand acute phthisis with its multiple miliary outbreaks and bronchopneumonia; on the other, chronic phthisis. Pulmonary tuberculosis may often develop rapidly in elderly subjects just as in adults, a fact contrary to general opinion, which supposes acute phthisis to be infrequent after the age of sixty years.

The diversity of the symptoms, the slight general reaction of the organism, and the habitual ignorance of the morbid antecedents of the patient often make the diagnosis wavering and, in the vast majority of cases it is only at autopsy that the miliary lesions and caseous bronchopneumonia are discovered. These facts, in opposition to the general character of senile phthisis, which is usually a torpid, latent affection, should always be recalled by the clinician, who may thus attach to their true cause the disparate symptoms undergoing evolution in an elderly subject.

The frequency of the acute types is worthy of consideration, all the more so since they are met with in extreme old age. For example, Le Coz, in his careful and complete study of the subject (*Thèse de Paris*, 1911), reports thirty-eight cases of acute phthisis under his observation. Of these, twelve took on the form of tuberculous bronchopneumonia with an acute evolution, seven were caseous pneumonias, five serofibrinous pleurisies, three purulent pleurisies (all acute), seven pleuropulmonary miliary tuberculosis, and three generalized miliary tuberculosis.

Clinically, acute senile pulmonary phthisis presents several absolutely different types and whether or not it is the grand finale of an old tuberculosis or a new infection, at least in appearance, this tuberculosis may be latent or assume the form of a true acute infection.

## ARCTIC COLDS.

Within the past few years many articles on colds, the writers of which were convinced that cold has nothing to do with these troublesome afflictions, have contained the assertion that colds are unknown in the Arctic regions and that explorers succumb to them only on returning to warmer regions. We have taken occasion to look up the experience of some of the Arctic explorers, and from volumes in which colds, often of considerable importance, were indexed, we hastily culled the following facts.

In Amundsen's *The Northwest Passage* we read: "We were somewhat plagued with colds. Manni [an Eskimo] especially suffered so much from them that we had to keep him in bed for several days at a time, notwithstanding his protests." In a later

Chapter Amundsen writes: "It has always been believed that the air in the Polar regions is absolutely pure and free from bacilli; this, however, is, to say the least, doubtful, in any case as far as the regions around King William's Land are concerned, for here the Eskimos nearly every winter—note the word, winter—were visited with quite an epidemic of colds. . . . Happily those on board the *Gyōa* escaped, but we certainly took due precautions." The precautions mentioned were against wearing wet clothing and getting chilled.

Mrs. Peary, in the *Journal* of her experiences in the Arctic, writes: "March 6th: I am recovering from an attack of the gripe. The thermometer registered about 35°. . . . April 3d: Mr. Peary's indisposition turned out to be an attack of the gripe and for two days he was very sick."

In MacMillan's *In Search of a New Land*, published in the October number of *Harper's Magazine*, we read how, early in his expedition, with the mercury at about 50° F., he came up with his advance party "encamped in snow igloos in the middle of Hayes Sound. Some had influenza, some had the mumps, and some had cold feet literally and figuratively." It was the literal cold feet that had brought on the colds.

On shipboard, in wooden dwellings, or in snow igloos, native and foreigner alike have colds, catarrhs, gripe, influenza, or whatever we care to call the unpleasant symptoms caused primarily by prolonged and chilling loss of body heat. The bacteria are borne by the individual who suffers, or are borrowed from a companion; but wherever these come from, it is cold which produces the condition of the body in which they get their freedom from restraint. Colds are as much a part of the experiences of the susceptible and the careless in the Arctic Circle as they are in the more changeable temperate zones. Their absence in the Polar regions is a myth.

#### THE HIGHER COST OF SICKNESS.

In the first few days after the declaration of war in Europe, the wholesale drug market of New York became so excited that neither dealers nor buyers were quite certain as to what was a fair price for the drugs particularly affected. After the sudden great rise in prices, a level was established which was looked upon as likely to prove stable. Recently, as we learn from the *American Druggist*, a still more violent agitation of the drug market has taken place, and there are even greater advances in prices. Moreover, the list has enlarged so as to include practically all botanical drugs of foreign origin and many chemicals which were not affected at first. Quinine, for instance, which importers sold

at fourteen cents an ounce in 100 ounce tins a few years ago, has been sold at \$2.50 an ounce. Opium and its derivatives have doubled in price. Carbolic acid and all its preparations, including the salicylates, cost from four to ten times as much as before the war. Some of the synthetic chemicals are not obtainable at all, while others are scarce and cost many times as much as they did under normal conditions.

It seems probable that prices will continue to advance until either hostilities cease or new supplies are produced in the United States. Patients must, therefore, be prepared to pay higher prices for drugs in prescriptions or over the counter.

#### A NEW AND EFFICIENT LIQUID DISINFECTANT.

Albert F. Stevenson, of the Public Health Service, in the *Reports* of that body for October 8, 1915, gives details of a new and efficient liquid disinfectant, to be known, he suggests, as hygienic laboratory pine oil disinfectant. The preparation is made from pine oil manufactured by the steam or solvent process, and emulsified with saponified rosin, according to a definite procedure. It has a hygienic laboratory phenol coefficient of between 4 and 6. The method of preparation is simple and can be carried out without special apparatus. Beside pine oil and rosin, the mixture contains sodium hydroxide solution. The first two ingredients are heated together in a covered enamel ware pail until the rosin is dissolved. The mixture is cooled to 80° C., sodium hydroxide solution added, and the liquid violently stirred for ten minutes with a rotary egg beater. Sufficient water is added to make the mixture of the original weight. The preparation is then cooled quickly by placing the pail in cold water and is stored in glass or metal containers until wanted. The finished disinfectant is a dark reddish brown liquid, rather thick and oily in appearance, and free from turbidity or cloudiness. It makes a perfectly white emulsion, much resembling milk when added to water. If the dilution water is at a temperature of less than 30° C. the emulsion will last for weeks. If hot water is used, a layer of oil eventually forms on the surface. The germicidal power of the disinfectant remains practically constant for about two months. After that, a noticeable deterioration occurs. Samples four months old show a phenol coefficient of about 3.5. The pine oil itself is more stable than the emulsified product. It is well to buy only a few months' supply of the oil at a time, and to make up only enough disinfectant for a month's use.

This disinfectant may be used wherever the ordinary coal tar compounds are used. It has a much



more pleasing odor than the coal tar compounds, and can be used where these products, on account of their odor, are not practical. It will not attack fabrics or metals and is recommended for the disinfection of all articles used in the care of contagious diseases. It has a not displeasing taste, and has been used with success as an antiseptic throat spray and tooth and mouth wash. It can be used in any dilution up to one in 500. The most economical strength depends wholly on the length of time it is allowed to act.

#### NEURASTHENIA AND ITS TREATMENT.

Affections of the nervous system are on the increase; the mode of life in civilized countries, and perhaps in America especially, used to be considered responsible for this state of affairs. The condition known as neurasthenia is probably, although this is rather a surmise than a statement, more prevalent in this country than in any other land. Owing to the effects of the terrible war, however, and the nerve racking ways of fighting, neurasthenia is prevalent in Europe and likely to be considerably more frequent. Not only are those engaged in the conflict often rendered neurasthenic, but their relatives and friends at home are in a similar state from the distress and shock of bereavement.

According to Hayes Hill, writing in the *Medical Press and Circular* for September 20, 1915, neurasthenia is a state of excessive fatigue, and he is inclined to the belief that it is further, a state of toxemia. It seems probable that this belief is well founded. If indeed such is the case, what is the cause of this toxemia? May it not be, as suggested by Lane and others, that this poisoning of the organism, including the nervous system, results from intestinal stasis? Disordered metabolism brought about by intestinal stasis, and the consequent toxemia will doubtless exert a profoundly injurious effect on the nervous system. *Pari passu* the vital forces of the mind and body are depressed and a vicious circle is established. The mind acts on the body to its detriment and the body reacts on the mind. Into the causation of neurasthenia many factors enter, such as overwork, sexual excess, nervous strain, worry, alcohol, but it sounds plausible that the toxemia arises in the first instance from the prolonged retention of waste food products in the intestines.

Proceeding on this line of argument, the course of treatment appears obvious, viz., the elimination of waste products. But the elimination of waste products is not a simple procedure. There are not many purgatives which will clear away from the

intestines effectively and permanently the waste food material retained there for a long period. Purified petroleum oil is said to accomplish the object with a great deal of success and its administration has been and is recommended for this purpose by many well known surgeons and physicians on both sides of the Atlantic. Castor oil, too, retains its multitudes of friends and advocates. Restoration of the tissues is an end to be aimed at, which signifies rest and plenty of good nourishing food. When the alimentary canal is in a state of atony, tonics are indicated and if insomnia, which is generally a troublesome symptom, is present, it must be treated by judicious means. Massage is almost invariably indicated and sometimes electricity produces beneficial effects.

If neurasthenia is regarded as the result of a state of toxemia caused by intestinal stasis, the first and imperative means of treatment is to drive out the long retained waste products, and above all to get the bowels into good working order and to keep them so.

#### THERAPEUTICS OF MAGNESIUM CHLORIDE.

Rosenblith, according to *Presse médicale* for September 30, 1915, informed the Académie de médecine on September 28th, that he had been using magnesium chloride for wounds in a strength of sixty c. c. of a twenty-five per cent. concentration in one litre of water. Cicatrization is rapid under this treatment, suppuration is cut short, and cytoly-sis is avoided. Rosenblith got the idea of using this new dressing from observing its effects in rheumatic and similar pains when combined in hypodermic injections with two per cent. sodium iodide solution.

#### A NEW CLINICAL JOURNAL.

A monthly journal devoted to the laboratory in its relation to medicine and surgery is the subtitle of the *Journal of Laboratory and Clinical Medicine*, the first issue of which is dated October, 1915. Dr. Victor C. Vaughan is editor in chief, and the publishers are the C. V. Mosby Company, of St. Louis; the subscription price is three dollars per annum. There are efficient associate editors in pharmacology, bacteriology, immunology and serology, physiological pathology, physiological chemistry and clinical physiology, and clinical microscopy and laboratory technic, and the contributors to the first number are Dr. Frederick P. Gay, Dr. George Dock, Dr. Roger S. Morris, Dr. Martin F. Engman, Dr. Louis B. Wilson, and Dr. Paul G. Woolley. As the editor says in his introductory message, the new journal will not be limited to the connection of the laboratory with curative medicine, but will include much in the art of the prevention of disease. We are glad to extend our best wishes to the newcomer.

## SEASICKNESS

A Herbert Hart, in a letter to the *Lancet* for October 2, 1915, adds to the voluminous literature of seasickness two prescriptions which he found useful in three cases, including his own. On rising the following is used: Strong liquor of iodine, dilute hydrocyanic acid, of each twelve minims, water to six ounces; one ounce is taken every ten minutes. Just before breakfast, an ounce of "Black Jack" or compound mixture of senna is taken. To counteract anorexia, Doctor Hart prescribes: Potassium bromide one dram, dilute hydrochloric acid three drams, liquor of strychnine one dram, compound tincture of gentian three drams, spirit of chloroform one dram, water to six ounces; dose, half an ounce in water five minutes before meals.

## News Items.

**Changes of Address.**—Dr. William C. Dobson, to 124 Hoyt Street, Brooklyn.

Dr. H. C. Allen, from Brooklyn, to Oxford, Chenango County, N. Y.

**Detroit Academy of Medicine.**—At the annual meeting at this body, held October 12, 1915, the following officers were elected: President, Dr. Charles D. Aaron; vice-president, Dr. Guy Connor; secretary and treasurer, Dr. Alpheus F. Jennings.

**Cholera in Germany.**—According to reports received in Washington by the United States Public Health Service, during the week ending August 21, 1915, 23 cases of cholera with 73 deaths were reported in Germany. Of these 3 cases with one death occurred among the civilian population, 7 cases and 2 deaths among German soldiers, and 25 cases and 70 deaths among prisoners of war.

**Clinical Lectures on Skin Diseases.**—The governors of the New York Skin and Cancer Hospital announce that Dr. L. Duncan Bulkley, assisted by the attending staff of the hospital, will give the seventeenth series of clinical lectures on diseases of the skin, in the out patient hall of the hospital, on Wednesday afternoons, beginning November 3d, at 4:15 o'clock. These lectures will be free to the medical profession, on the presentation of professional cards.

**Fifth District Branch of the Medical Society, of the State of New York.**—The following officers were elected at the annual meeting of the Fifth District Branch, held in Little Falls, on October 6th: President, Dr. J. F. McCaw, of Watertown, at which city the next meeting will be held; vice-presidents, Dr. G. M. Lewis, of Vernon, and Dr. George F. Clark, of Skaneateles; secretary, Dr. Horace T. Pritchard, of Syracuse; treasurer, Dr. Nelson O. Brooks, of Oneida.

**American Medical Editors' Association.**—The forty-sixth annual meeting of this association was held in New York, Monday and Tuesday, October 11th and 12th, under the presidency of Dr. H. Edwin Lewis, of New York. One hundred and twenty-five members, representing about 200 medical publications, were present. Dr. Edward C. Register, of Charlotte, N. C., was elected president, Dr. William A. Jones, of Minneapolis, first vice-president, and Dr. George M. Piersol, of Philadelphia, second vice-president. Dr. Joseph MacDonald, of New York, was reelected secretary and treasurer.

**Ether Day at the Massachusetts General Hospital.**—Dr. William Williams Keen, of Philadelphia, was the orator at the celebration of the sixty-ninth anniversary of Ether Day at the Massachusetts General Hospital on Saturday, October 16th. Dr. Henry P. Walcott, chairman of the board of trustees, presided at the exercises which consisted of demonstrations in the surgical amphitheatre of the hospital by several surgeons, luncheon at noon, the oration in the afternoon, and in the evening the annual dinner of the House Pupils' Alumni Association, which is composed of graduates of the hospital. There were about 300 persons present at the several events.

**Illinois Physicians Favor a Eugenic Marriage Law.**—At a meeting of the St. Clair County Medical Society, held recently in East St. Louis, Ill., steps were taken toward having the State legislature enact a law making it necessary for applicants for marriage licenses in the State to produce certificates of good health. Resolutions to that effect were adopted and forwarded to the State society.

**State Care of the Insane.**—A joint meeting of the Philadelphia Psychiatric Society, the Committee on Lunacy of the State Board of Charities, and the Association of Medical Superintendents of the State Incorporated Institutions for the Insane and Feeble-minded of Pennsylvania, will be held at the College of Physicians, Philadelphia, on Thursday evening, October 28th, to discuss the question of State care of the indigent insane. A number of distinguished men will take part in the discussion, among them being the Governor of the State.

**A Merger of Philadelphia Medical Colleges Planned.**—There is a probability of a merger of the University of Pennsylvania Medical School with that of the Medico-Chirurgical College of Philadelphia. If the amalgamation is consummated a great school for postgraduate medical work will be established at the University of Pennsylvania. The present students of the Medico-Chi would be transferred to the University Medical School, as well as a number of members of the faculty. Some of the Medico-Chi buildings, together with large additions, would become the headquarters for the postgraduate school.

**Merger of Medical Colleges in Baltimore.**—The College of physicians and surgeons of Baltimore was recently merged with the medical department of the University of Maryland under the title of University of Maryland School of Medicine and College of Physicians and Surgeons. Dr. William F. Lockwood, former dean of the College of Physicians and Surgeons, was elected dean of the new institution, and officers of the faculty were elected as follows: President, Dr. Randolph Winslow; vice-president, Dr. J. W. Chambers; secretary, Dr. J. H. M. Rowland; treasurer, Dr. Samuel K. Merrick. The informal opening of the school took place on October 6th.

**Annual Meeting of Women Physicians of Wisconsin.**—The following officers were elected at the annual meeting of the Wisconsin Medical Women's Society, held in Milwaukee on Tuesday, October 5th: Dr. Mary Piper Houck, of La Crosse, president; Dr. Minnie Hopkins, of Oconto, vice-president; Dr. Ada Chandler, of Parkville, secretary; Dr. C. Fay, of Whitewater, treasurer; Dr. Belle Nair, of Oshkosh, and Dr. Mary Fitzpatrick, of Milwaukee, members of the board of censors. La Crosse was chosen as the next meeting place and it is planned to make the meeting a tri-State affair, with the women physicians of Minnesota and Iowa participating.

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Monday, October 25th, North Branch of the County Medical Society, Section in General Medicine of the College of Physicians; Tuesday, October 26th, West Philadelphia Medical Association, Society of Normal and Pathological Physiology, St. Mary's Hospital Clinical Society, Medicolegal Society; Wednesday, October 27th, County Medical Society; Thursday, October 28th, Pathological Society, Northwest Branch of the County Medical Society, Union Meeting of the Psychiatric Society, State Charities Board Lunacy Committee, and Medical Superintendents of State Hospitals for the Insane; Friday, October 29th, Medical Club (directors).

**A Discussion of Typhus Fever.**—At a stated meeting of the New York Academy of Medicine, held last Thursday evening, the subject discussed was typhus fever. Dr. N. E. Brill read a paper entitled *The Form of Typhus that Is Endemic in New York and Has Been Unwisely Called Brill's Disease*. Dr. John F. Anderson, director of the Hygienic Laboratory, United States Public Health Service, Washington, D. C., read a paper dealing with typhus fever as he had observed it in its clinical and experimental aspects in Mexico, in England, and in the United States. The pathogenesis of the disease, as demonstrated in the pathological laboratory of Mount Sinai Hospital, was presented by Dr. Peter K. Olitsky. A general discussion followed, among those participating being Dr. G. A. Friedman, Dr. Lewis A. Conner, Dr. Hans Zinsser, and Dr. E. Libman.

**New York's Death Rate Higher Last Week.**—From figures compiled by the health department, it is learned that during the past week, there were 1,287 deaths in the city of New York, compared with 1,185 deaths during the corresponding week of 1914. The respective rates, however, were 11.56 and 11.07 per 1,000 population. The increased number of deaths during the past week is occasioned by the heavier mortality from the following diseases: Heart disease, pulmonary tuberculosis, and nephritis. The acute infectious diseases, except typhoid fever, show a decrease. The diarrheal diseases under five years of age also show a decrease. The rate for the first forty-two weeks of 1915 is 13.27, compared with 13.00 for the corresponding period of 1914.

**Wisconsin State Medical Society.**—Dr. Louis F. Jermain, dean of Marquette Medical College, was elected president of this society, at the annual meeting held in Milwaukee, Wednesday, Thursday, and Friday, October 6th, 7th, and 8th. Other officers were elected as follows: First vice-president, Dr. M. R. Wilkins, of Oconomowoc; second vice-president, Dr. N. F. Hosmer, of Ashland; third vice-president, Dr. R. W. Blumenthal, of Milwaukee; secretary, Dr. Rock Sleyster, of Waupun; treasurer, Dr. S. S. Hall, of Ripon. The house of delegates selected Madison as the next place of meeting. The following committee on health and public instruction was appointed: Dr. Edward Evans, of La Crosse; Dr. W. F. Zierath, of Sheboygan, and Dr. J. M. Beffel, of Milwaukee. Dr. L. F. Jermain and Dr. G. V. Van de Erve, of Milwaukee, and Dr. C. K. Bardeen, of Madison, were appointed on the committee on education.

**Dedication of the Elizabeth Steel Magee Hospital.**—The trustees and the medical director of the Elizabeth Steel Magee Hospital, of Pittsburgh, have issued invitations to the dedication of the new hospital building, Wednesday, October 27th. The order of exercises which will be held in Memorial Hall, at eleven o'clock, is as follows: Invocation, by the Right Reverend Conradt Whitehead, D.D., Bishop of Pittsburgh; Addresses: Christopher Lyman Magee and His Gift, Rev. David Jones, D.D., Waynesburg, Pa., representing the hospital trustees; The Elizabeth Steel Magee Hospital and Its Work, Charles Edward Ziegler, M.D., F.A.C.S., medical director; The Magee Hospital and Medical Education, Samuel Black McCormick, D.D., LL.D., Chancellor of the University of Pittsburgh; The Teacher's Inheritance, Walter William Chipman, M.D., F.R.C.S., F.A.C.S., McGill University, Medical School, Montreal. Then will follow the conferring of honorary degrees by the University of Pittsburgh. In the afternoon, from two to six o'clock, the new hospital buildings will be open for inspection, and at 8 p. m. there will be a subscription dinner at the Hotel Schenley. Tickets for the dinner may be obtained through Dr. S. B. Linhart, of the University of Pittsburgh.

**The Constitution in Relation to Compensation for Occupational Diseases.**—It was wholly from the standpoint of disease prevention that the city department of health inaugurated last year its work in industrial hygiene. The control of occupational diseases is, however, of great economic importance; this will soon be realized if the new State constitution is adopted and if the legislature makes use of the power which the constitution confers upon it, to amend the Workmen's Compensation Act, so as to provide, at the expense of the employer or, to be accurate, of the industry, compensation for diseases which may be traced to occupational causes.

Section 19 of Article 1 of the proposed constitution provides in part, as follows:

Section 19. Nothing contained in this constitution shall be construed to limit the power of the legislature to enact laws for the protection of the lives, health, or safety of employees; or for the payment, either by employers, or by employers and employees or otherwise, either directly or through a State or other system of insurance or otherwise, of compensation for injuries to or occupational diseases of employees or for death of employees resulting from such injuries. Any action taken by the legislature to provide compensation for the injured employee to bring about the injury or death of himself or of another, or where the injury results solely from the intoxication of the injured employee while on duty or for the adjustment, determination, and settlement, with or without trial by jury, of issues which may arise under such legislation; or providing that the right to such compensation, and the remedy therefore shall be exclusive of all other rights and remedies for such injuries or diseases or death. But all monies paid by the State or other system of insurance or otherwise, of compensation for injuries to or occupational diseases of employees or for death of employees resulting from such injuries, shall be paid out of the State or other system of insurance or otherwise, of compensation for injuries to or occupational diseases of employees or for death of employees resulting from such injuries.

**The Pan American Scientific Congress.**—The first Pan-American Scientific Congress was held in Santiago, Chile, December 25, 1908, to January 5, 1909, and the second will be held in Washington, D. C., under the auspices of the United States Government, December 27, 1915, to January 8, 1916. Surgeon General William C. Gorgas, of the United States army, is a member of the executive committee, and Dr. William H. Welch, of Johns Hopkins University, is honorary vice-chairman. Colonel Gorgas is also in charge of the Section in Public Health and Medical Science.

**County Medical Society Elections.**—The ninety-second annual meeting of the Medical Society of the County of Steuben, N. Y., was held in Bath on October 12th and officers were elected as follows: President, Dr. L. M. Kysor, of Hornell; vice-president, Dr. F. S. Swain, of Corning; secretary and treasurer, Dr. B. R. Wakeman, of Hornell.

At the annual meeting of the Washington County Medical Society, held recently in Hudson Falls, Dr. Robert A. Heenan, of Hudson Falls, was elected president, and other officers were elected as follows: Dr. William L. Munson, of Granville, vice-president; Dr. S. J. Banker, of Fort Edward, secretary, and Dr. R. C. Lewis, of Hudson Falls, treasurer. The members of the board of censors were all reelected.

Dr. Henry C. Sears, of Binghamton, was elected president of the Broome County Medical Society, at the annual meeting held in Binghamton on October 12th; Dr. George Fox was elected vice-president, Dr. H. D. Watson, secretary, and Dr. F. M. Dyer, treasurer.

At the annual meeting of the Madison County Medical Society, held on October 5th, at Oneida, Dr. George F. Mills, health officer of Oneida, was elected president, and other officers were chosen as follows: Dr. L. B. Chase, of Morrisville, vice-president; Dr. George W. Miles, of Oneida, reelected secretary; Dr. N. O. Brooks, of Oneida, treasurer.

**Personal.**—Dr. Luther C. Peter has been appointed associate professor of diseases of the eye in the Philadelphia Polyclinic.

Dr. C. A. E. Codman, president elect of the Medical Society of the State of Pennsylvania, will be the guest of honor at a reception to be held in the Hotel Rittenhouse, Tuesday evening, October 26th, by the West Philadelphia Medical Association.

Dr. William B. Swartley, of Philadelphia, has gone to France for three months' service in the American Ambulance Hospital, Paris.

Dr. John A. Kolmer, of Philadelphia, was recently appointed assistant professor of experimental pathology at the University of Pennsylvania.

Dr. H. Mulloney, formerly a member of the Boston Board of Health, has been appointed deputy health commissioner.

Dr. Ray Lyman Wilbur has been appointed president of Leland Stanford, Jr., University, succeeding Dr. John Casper Branner, who retires on January 1, 1916. Doctor Wilbur is now head of the medical department of the university.

Dr. Wilbur A. Sawyer, director of the State Hygienic Laboratory and lecturer in preventive medicine at the University of California, has been appointed secretary of the California State Board of Health.

Dr. Ernest La Place, of Philadelphia, was the guest of honor at a banquet given in the Hotel Windsor in Shamokin, Pa., which brought to a close the annual reunion of the Medico-Chirurgical Alumni Association of Columbia, Union, Northumberland, and Montour counties, including the graduates in medicine, pharmacy, and dentistry.

Dr. Milton J. Rosenau, professor of hygiene and preventive medicine at Harvard University, has resigned from the Public Health Council of Boston.

Dr. John D. Blake, of Baltimore, has been appointed commissioner of health to succeed Dr. Nathan R. Gorter. Doctor Gorter has been made a member of the Maryland State Board of Health.

Dr. John W. West has been elected president of the Ohio Society of Philadelphia for the next year.

Dr. Laura A. C. Hughes, of Boston, has been placed in charge of the division of child hygiene of the Health Department of Boston.



## Path of Current Literature.

## MEDIZINISCHE KLINIK.

**Pneumonia.** by H. Hochhaus. Beyond a full account of the symptoms and signs of pneumonia, the prognosis and treatment of the disease are discussed in part. As long as the pulse remains strong and regular with a rate of 100 to 110 in men and not over 120 in women the outlook is favorable. When the pulse rate from the onset ranges above 120 and when it is small and irregular, the prognosis is unfavorable. In the treatment of pneumonia some favorable results have been reported from the early use of serum. The author's experience confirms these so far as its producing an earlier crisis is concerned. To secure any effect the serum must be begun in the earliest days of the disease and should be administered intravenously. No definite judgment can yet be passed on the value of optochin, but the evidence from the literature seems to show that it may hasten the onset of the crisis. It, too, must be given early if any results from its use are to be expected. It is not free from danger and several cases of disturbance of one or other of the nerves of special sense have been reported. Digitalis has proved of great value in the hands of the author, especially when used to combat the sudden heart failure near the crisis. For this purpose large doses intravenously or larger doses by mouth seem to be required. The use of camphor is advocated, but caution should be exercised not to give doses which are too large. Caffeine also is of great value as a vasomotor stimulant. Morphine for the temporary relief of the great pain of the onset and to relieve the intense dyspnea and restlessness is of high therapeutic value. Expectorants such as apomorphine or ipecac also give considerable relief when the sputum is hard to raise.

**The Detrimental Action on the Central Nervous System of Operations in Narcosis and Under Local Anesthesia.** by Ernst Weber. By means of the hand or arm plethysmograph two disturbances of the circulation referable to changes in the central nervous system could be defined. The disturbance of the first kind consisted in a more or less persistent dilatation of the peripheral vessels following local muscle movement. The second grade disturbance consisted in a complete reversal of the response of the vasomotor nerves to local muscular exercise. After local anesthesia a reaction of the first grade was observed lasting for one or two days and half of the cases also showed a reaction of the second grade during the first day only. Following chloroform narcosis a reaction of the first grade persisted for five to seven days and one of the second grade up to six weeks. In the case of the local anesthetic and of chloroform, the reaction of the first grade was referable to the direct toxic action of the drug on the brain and not to nervous shock. In the case of the reactions of the second grade, shock is more probably of some significance, but pure psychic shock cannot produce this reaction and it requires severe and prolonged painful stimuli for its production. Ether narcosis stands in a position mid-

way between local anesthesia and chloroform anesthesia in the damage which ensues to the brain structures.

## BULLETIN DE L'ACADÉMIE DE MÉDECINE

**Combined Antityphoid and Antiparatyphoid Vaccination,** by Fernand Widal.—Antityphoid vaccination, as now carried out, fails to protect against paratyphoid infections, the frequency of which has recently been found in French military hospitals actually to exceed that of typhoid infection. This is ascribed in part to a recrudescence of paratyphoid infections owing to the poor hygienic conditions to which the soldiers in the field are subjected, but mainly to the pronounced reduction in the incidence of typhoid fever resulting from antityphoid immunization. Successive separate immunization against the typhoid bacillus and the A and B paratyphoid organisms being impracticable owing to the number of injections and length of time required, Widal investigated the possibilities of simultaneous vaccination against two or all three of these organisms. The mixtures used each contained one billion organisms to the c. c. and were sterilized by subjection to a temperature of 56° C. for half an hour. For inoculations against the typhoid organism alone two and a half billion bacilli had been given in four injections, in double and triple inoculations, respectively, five and seven and a half billions were given. Experimental and clinical investigations showed that a satisfactory immunity could thus be established against each of the organisms inoculated with perfect safety and without any increase in the local and general reaction beyond that caused by antityphoid vaccination alone. Seven and a half billion organisms were even given in three doses without any unusual reaction.

**Specific Treatment of Cholera,** by Petrovitch.—In an epidemic of Asiatic cholera at Valjevo, Serbia, 1153 relatively mild cases of the disease were treated with hypodermic injections of an anticholera vaccine prepared by Wright and the Institut Pasteur. The pure vaccine was diluted with ten to fifty parts of saline solution, and the amount of the diluted vaccine injected at a time ranged between 0.5 and three c. c. The frequency of the bowel movements was constantly reduced by the first injection, and the pulse became stronger and more regular. Injections were in most instances given daily, and the total ranged between two and five, the diarrhea terminating on the second to the sixth day. Convalescence as a rule promptly followed, and only two deaths took place in the entire series. In ninety other cases of medium intensity, with repeated vomiting, cramps, pallor, ischuria, and dyspnea, as well as in 157 severe cases, some of them in an algid state, intravenous injections of one c. c. of diluted vaccine, added to 100 to 500 c. c. of saline solution, were given often twice and even three times in the twenty-four hours. Striking benefit resulted. All the cases of moderate severity recovered, and of the severe cases but 14.4 per cent. were fatal, while among ninety cases of moderate severity not treated with vaccine 9.4 per cent. were fatal, and among 120 severe cases treated with the customary nonspecific measures fifty-eight per cent. were fatal.

## PRESSE MÉDICALE.

August 5, 1915.

**Diagnosis of Icterus Due to Picric Acid**, by M. Wahl. The disturbances caused by absorption of picric acid, viz., a yellow coloration of the skin and mucous membranes, digestive disorder, prostration, and a dark discoloration of the urine, are strongly suggestive of catarrhal jaundice. Detection of picric acid or its decomposition products in the urine appears to be the chief factor in differential diagnosis between these two conditions, but Wahl's tests in animals and clinical experimentation showed that all the reactions for picric acid derivatives give positive results likewise with the urine of jaundiced patients known to be suffering with hepatic disease. The difficulty lies in the fact that nearly all the picric acid taken into the system is eliminated, not as such, but in the form of these derivatives. Under these circumstances, the only definite indication available of picric acid as the cause of an icteric condition is an absence of bile pigments in the urine, when these are sought by the usual tests.

**Sterilization of Water with Iodine**, by A. Gascard and G. Laroche.—By the following procedure complete destruction of the bacteria in water can be effected with the least possible amount of iodine sufficient for the purpose. One c. c. of tincture of iodine (French Pharmacopœia) is diluted with nine c. c. of ninety-five per cent. alcohol. Into a series of tumblers numbered from one to five and each containing 100 c. c. of the water to be sterilized are dropped, respectively 1, 2, 3, 4, and 5 drops of the dilute iodine tincture. The contents of each tumbler are shaken up. After an interval of twenty minutes a little starch paste is added to each glass. Several of the specimens will then acquire a blue color. Adding three to the number of the glass in which the least amount of iodine was required to produce a blue color gives the number of drops (from the same dropper) of undiluted tincture of iodine which must be added to one litre of water to sterilize it. The effect of the iodine in the water is completed in half an hour. To remove the taste of iodine from the water as many drops of a ten per cent. solution of sodium thiosulphate (hyposulphate) as have previously been used of tincture of iodine are added. Water thus treated has no special taste and contains in one litre, on an average, only about 0.014 gram of sodium iodide, together with a little harmless sodium tetrathionate.

## RIFORMA MEDICA.

September 15, 1915.

**Monstrous Obesity in Nursing Infants**, by L. Ferrannini.—Heckel describes this rare condition as a progressive evolution from simple fatness to obesity and then to monstrosity. Ferrannini has recently seen two cases on successive days of which the first was a female child of nine months weighing 17.3 kilograms (over thirty-five pounds) and measuring seventy-three c.m. in height (28.7 inches) and the second was also a girl weighing ten kilograms at the eighth month. Although heredity is ordinarily an important factor in the etiology these two cases had no such predisposition. Overfeeding does not usually produce obesity in infants, but on

the contrary, loss of weight with marked digestive disturbance and pathological obesity is due rather to a disturbed metabolism. There is undoubtedly in the human system a regulatory mechanism which is disturbed in such cases. This mechanism according to Apert and others is in the ductless glands, while Leven considers it to be in the nervous system. A third theory, that of Erdheim, places it in a special centre at the base of the brain. Pancreatic lesions may be an important cause of the condition.

**Echinococcus Cyst of the Brain**, by C. Todde.—This case was of unusual interest inasmuch as the symptom complex was that of cerebellar disease with signs of paranoiac dementia, although the lesion was in the right cerebral hemisphere. This proves that functional cerebellar disturbances which are secondary to encephalitis may dominate the entire character of the symptoms. The mental symptoms in this case may be ascribed either to the situation and localization of the cyst or to mechanical factors, or again possibly to the toxic action of the parasites.

## REVISTA DE MEDICINA Y CIRUGIA PRÁCTICAS

September 7, 1915.

**Vomiting of Inanition in Breastfed Infants**, by P. Pereda Y. Elordi.—In reporting a series of cases, the diagnosis and treatment are gone into. This condition must be differentiated from gastroenteritis in which the stools are more frequent and liquid, vomiting is forcible and fatiguing, and there is fever and pain. When the child's system does not receive enough nourishment to sustain it or to provide for growth, then the tissues of the body are consumed in proportion to the deficiency of food supply. It is a notable fact that the bony skeleton seems to continue in its growth in such cases at the expense of the muscles and fatty tissues. The functional test of Finkelstein is of service in diagnosis. In this way it is determined whether or not the child gains in weight in proportion to the amount of nourishment ingested or whether on the other hand the paradoxical reaction exists in which the child actually diminishes in weight in spite of augmented food supply. It is calculated that seventy calories to the kilogram of weight is sufficient to supply the wants of the system as far as maintenance of weight is concerned, but on the other hand in order to insure an increase in weight this ratio must be raised to 100 or 120 calories a kilogram. Citrate of sodium in 1.5 per cent. solution in water is of great service in these cases in preventing vomiting and aiding digestion.

## HYGIEA.

August 1, 1915.

**Pathogenesis, Treatment, and Prophylaxis of Mercurial Stomatitis**, by Johan Almkvist.—In contrast to the old theory that the saliva was the irritant factor in producing stomatitis and the later one that mercury secreted through the mucosa was the cause, various bacteria also playing an essential role in the same, the author has through exhaustive and long continued studies arrived at the conclusion that the combined effect of mercury in the blood and local decomposition processes setting free sul-

guide of hydrogen lead to the ulcerative process. The mercury in the blood of the superficial capillaries absorbs the sulphide of hydrogen from decomposing albuminous food particles in the pockets of the gums, forming mercurous sulphide as a granular deposit in the endothelium of the capillaries—these last have been actually demonstrated to stiffen—and the vitiated circulation causes a beginning degeneration in the epidermis, thus making it a suitable medium for the bacteria of the mouth, those especially concerned being *Bacillus fusiformis* and *Spirochaeta dentium*; the work of destruction now goes on to ulceration. The sites of predilection primarily are the gums, the angle behind the last upper molar, and the tonsils whose crypts and lacunae offer a nidus analogous to the gingival pockets. Secondly affected are the tongue, labial mucosa, and the mouth, from attrition and contiguity with a mercurial gingivitis, and the periosteum by extension of the process downward, resulting in loosening of the teeth or even a deep necrotic process, notably around the lower wisdom tooth, one case of which ended fatally by septic absorption. Regeneration would consist in the gradual resorption of the mercurous sulphide deposit in the capillaries, a process which is at times imperfectly accomplished, and this theory would explain the phenomenon of relapses, some of them as late as a year after the original stomatitis. Treatment consists in strong antiseptics such as bichloride and cyanide of mercury and silver nitrate and oxidizing agents such as permanganate and chlorate of potassium and hydrogen peroxide, especially the latter in twenty-one per cent. strength injected with a curved syringe. Attention to mouth hygiene and careful disinfection of pockets will increase the resistance and the attempt to use in the treatment of syphilis preparations that do not combine with sulphide of hydrogen, one of them being a nucleide of mercury, has met with partial success.

LANCET.

**Treatment of Typhoid Fever by Stock Vaccine.** by H. W. Wiltshire and A. R. N. MacGillcuddy.—Results of this treatment in fifty cases were of three kinds. In six cases, the vaccine did harm. In three of these, the harm came from repeating the doses at forty-eight hour intervals. These showed an increase of pulse rate and fever, lasting for several days. In the other three cases, bronchopneumonia occurred and seemed to be made worse by the vaccine. Twelve cases were neither helped nor harmed by the vaccine. In five of these the vaccine was given a thorough trial. In the remaining seven its use was stopped on account of complications. The last group, thirty-two cases, showed benefit from the vaccine. In twenty-four, definite improvement after the first or second dose continued until recovery. Five patients showed no improvement until more than two doses had been given. In one case the vaccine was not used until late in the disease but was followed by marked improvement. The two remaining patients responded well to the initial doses, but later doses seemed to coincide with relapses which ran their courses unmodified by the treatment. It was noted that the

patients who responded best to the vaccine seemed to present an unusually large proportion of true relapses which, however, were not severe. The doses of vaccine given began with 250 million and rose by this amount at each subsequent dose after the first three doses. The second dose was 375 and the third 500 million. Where a reaction followed which was more than very slight the dose was either repeated of the same size or a reduction was made. An interval of three days separated the doses, longer intervals leading to more intense reactions and shorter ones to an increase in the symptoms. The temperature was found to be the most trustworthy guide to the severity of the toxemia and to the size of the initial dose.

**Nervous Furring of the Tongue and Disturbed Taste,** by James Goodhart.—A consideration of two cases in which both a bad taste and furring of the tongue were persistently present in spite of all methods of treatment, and in which no definite cause for the condition could be found, either in the alimentary canal or in the form of an infection or toxemia, led to the belief that the condition might have arisen from some nervous disturbance. This was supported by the fact that one patient was of the overwrought energetic type and the other of the indolent, hypochondriacal type. Additional support was derived from the fact that a case of fracture of the base of the skull was observed in which furring of the tongue resulted promptly and other cases with cerebral disease were frequently noted in which the condition was obstinately present. Cases of this type included brain tumor, epilepsy, etc. The exact nature and mechanism of the nervous disturbance which leads to these phenomena are not understood and, in fact, the explanation is only suggested without direct evidence of its accuracy.

**Neurasthenia gastrica,** by J. Campbell McClure. The symptoms of this condition are very constant. The patients are tired easily, both physically and mentally, they cannot concentrate their attention, memory is poor, headaches are frequent and there is an uneasiness in the left hypochondrium after food. Sometimes the gastric symptoms are marked, there being nausea and vomiting, great flatulence, a sense of constriction on swallowing and sometimes salivation. Palpitation is common, precordial pain not infrequent and, at times, there are attacks like true angina. Insomnia is typical and either comes on in the early morning hours after a period of sleep, or may occur throughout the first portion of the night and pass off toward morning. The sleeplessness may be induced by the gastric distress in many. Lane's stigmata of intestinal stasis are very often present and marked. Psychasthenia is common, there being either moroseness and suspiciousness, or a true excitability. Physical examination may show a bradycardia, a tachycardia, or a normal heart rate and some increase in the tendon reflexes, but with no definite signs except gastric. There may be anacidity, or hyperacidity. The hyperacidity is due to an excess of combined acids and acids other than hydrochloric, which is low or normal. Dilatation of the stomach is present without exception in this class of patients. There may be merely functional dilatation or this may be associated with a spasm of the pylorus. The differ-



ence can be detected by listening over the pylorus and stimulating the stomach to contract by the method of Wethers. If there is free passage of fluid or gas the dilatation is purely functional. Aside from the general methods of treatment of neurasthenia, which include a suitable change of scene, rest and an encouragement to take up some pleasing and diverting avocation, attention should be directed to the dilated stomach. This is best treated by daily stimulation by the method of Wethers which consists in evoking the gastrocutaneous reflex by gentle upward stroking of the skin below the scapula to the tenth left costal cartilages. By this means the stomach can be restored to its normal size in a few weeks or months even if very greatly dilated. With it should be combined a careful restriction in the diet, both as to composition and quantity. The prognosis in these cases is exceedingly good under proper treatment.

#### CANADIAN MEDICAL ASSOCIATION JOURNAL

September, 1938

**Bacteriology of Hodgkin's Disease**, by Lawrence J. Rhea.—Bacilli were found in smears and sections made from lymph nodes in Hodgkin's disease. A diphtheroid pleomorphic organism was isolated in pure culture from the lymph nodes of a number of patients who showed the clinical signs and symptoms of this disease, and whose lymph nodes corresponded both grossly and microscopically to those ordinarily found. A diphtheroid organism has been cultivated from the hyperplastic lymph nodes in other diseases, such as tuberculosis, and has been recovered from the circulating blood in cases of acute Hodgkin's disease; while a similar organism has been isolated from focal lesions of the mouth. The question is undecided whether *Bacterium hodekini* is or is not the specific cause.

**Practical Value of a Knowledge of the Sympathetic and Autonomic Nervous System**, by J. W. McIntosh.—McIntosh maintains that the study of the sympathetic and autonomic nervous system is useful in several ways: 1. To stimulate observation and understanding of the constitution of one's patient; 2. to aid diagnosis of general and local disease; 3. to use therapeutic drug tests; 4. to throw light on the etiology of many obscure phenomena, including vascular crises and certain abdominal abnormalities; 5. in the treatment of symptoms due to over action or under action of the heart; 6. in avoiding serious or unpleasant results of idiosyncrasies to drugs; 7. in avoiding shock after operation and any special danger from inhalation pneumonia; and, 8. in showing the intimate connection of the ductless glands with the sympathetic system and their combined influence in metabolism.

#### JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

October 6, 1938

**Gastric Cancer as a Sequel to Gastric Ulcer**, by William Fitch Cheney.—Three propositions are offered: 1. Gastric cancer arises from gastric ulcer far more frequently than was formerly thought. 2. There are no diagnostic methods which enable us to tell positively when a chronic gastric ulcer has become malignant until the malignant condition has become far advanced. 3. Surgery should be rec-

ommended as the treatment far more frequently in the future in cases of ulcer, and it should be undertaken without the delay so common in the past. In support of the validity of these propositions the literature was exhaustively reviewed and the evidence showed that probably ulcer leads to cancer in at least half of the cases. The evidence from the same source pointed conclusively to the fact that the presence of cancerous change in an ulcer could not be excluded by any means now available clinically. The best plan of operative treatment of ulcer would seem to be by resection combined with gastroenterostomy. Resection alone does not insure against the development of a new ulcer, but gastroenterostomy permits regurgitation into the stomach of the duodenal contents and probably exerts some degree of protection against the formation of cancer.

**Stone in the Kidney and Ureter**, by Hugh Cabot.—A critical study of 157 cases showed that most of the patients came for treatment when in the third and fourth decades of life. If, however, the time from the onset of the first symptoms was taken, the period of greatest frequency covered the second, third and fourth decades. One hundred and eight of the patients were men and forty-six women, which did not agree with the general statistics. The right side seemed to be more often involved in women and the left in men. The more common mobility of the right kidney in women would seem to account in some measure for the greater frequency of stone on this side. Colicky pain occurred at some time in about two thirds of all the cases, but was the presenting symptom in less than one third. Dull pain referred to the kidney region was the presenting symptom in thirty-two cases, and pain in the right lower abdominal quadrant in twelve. The urine examinations in 150 of the cases showed that there was no abnormality in fourteen per cent.; albumin was present in seventy-four per cent.; microscopic or macroscopic blood was found in sixty-eight per cent.; pus was present in an equal proportion. Röntgenograms were persistently negative in six per cent. of 127 cases, but this figure is probably too high to give a correct idea of the frequency with which the x ray fails to reveal the stone. Operation was undertaken in 140 cases and the mortality amounted to three per cent. Twenty-six of the patients had previously been subjected to operation for other conditions believed to be present, but the symptoms of which were produced by the stones. Eighty-five of the patients have been examined two years or more after operation and fifty-one per cent. of those who had renal calculus were well, while seventy-one per cent. of those who had stone in the ureter were cured.

**Leucemia; an Infection?** by Ray Lyman Wilbur.—A review of more than fifty papers in the literature and the study of three cases led to the conclusion that the available evidence strongly points to some infection as the cause of leucemia. Organisms of low virulence, but of various kinds, possibly in a soil previously prepared by earlier infection may become established in the bone marrow, spleen or lymph nodes and cause the leucemic reaction, either alone or in combination with some

disturbance of the red cell mechanism. Streptococci have been the most commonly discovered organisms in the blood and tissues in leucemia and were found in two of the cases here reported. The leucemias and pseudoleucemias cannot be rigidly classified on purely morphological grounds.

**Placental Bacteremia**, by J. Morris Slemmons.—

Three cases of fetal death due to placental bacteremia are reported and the cause of the condition analyzed. Bacteremia of the placenta is more common than is generally appreciated and may be expected in any case in which there has been a rupture of the membranes many hours before delivery. The infection seems to be introduced from without and the organisms are to be found in and beneath the amnion on the placenta and occasionally the cord. This infection may spread to the mother as well as to the fetus and cases of intra partum fever are often due to this cause. Their prognosis can best be estimated by blood cultures taken on the mother the day following delivery. If these are negative the prognosis is good. The fetal mortality in cases with intra partum fever was found to be very high, statistics varying from eighteen to sixty-one per cent.

**Pancreatic Ferment Determination in Pulmonary Tuberculosis**, by Ethan Gray and Olga Pickmann.—Trypsin and amylase were determined in the stools in a series of nearly one hundred cases of tuberculosis and it was found that the pancreatic secretion was seriously reduced by the toxins of tuberculosis. Rest, either in bed, or by means of pneumothorax, reduced the formation of toxins and permitted the pancreatic ferments to return toward normal. Persistently low trypsin index was found to be of bad prognostic significance, but low amylase readings were less unfavorable. The interpretation of the index must always take into consideration anorexia, overeating, and diarrhea.

**MEDICAL RECORD.**

*(Continued from page 868.)*

**Cardiovascular Renal Disease**, by Louis Faureges Bishop.—Dietetics is of great value in the treatment of arteriosclerosis as well as hydrotherapy, rest, and exercise. This disease is without symptoms during the first five years of existence and often even without objective signs. Pain in the cardiac region is one of the earliest of all symptoms noticed usually on exertion but sometimes also after meals, thus giving rise frequently to an erroneous diagnosis of gastric fermentation. Arteriosclerotics are sensitive to meat proteins while some are also sensitive to fish and egg proteins. The flesh of fowl is frequently tolerated by these patients. Alcohol and tobacco are not necessarily completely forbidden but must be used in great moderation. In starting the treatment the patient is given an ounce of castor oil every other day for three days. Exercise is the best cardiac stimulant and the best remedy for intestinal inactivity. We must primarily treat the disturbed metabolism by cutting out proteins to which the individual is sensitive, at the same time eliminating products of fermentation.

**Anorectal Affections, Rectal Constipation, Intestinal Stasis**, by S. G. Gant.—The common

practice of purging and of colonic washings in preparation of the rectum for operation is now replaced by a simple small soapsuds enema followed by a mopping over of the mucous membrane with peroxide of hydrogen. The parts are never shaved except where sutures are used. Local anesthesia is indicated in eighty per cent. of rectal operations and a one eighth per cent. eucaine solution is the best. After operation Gant keeps his patients on a regular diet and does not order a laxative unless the stools are hard. Wounds are not now cauterized but are drained and packed, while tardy healing is stimulated by six per cent. silver nitrate, ten per cent. ichthylol or twenty per cent. balsam of Peru. Pain from local applications can be reduced by the use of ten per cent. of eucaine. External thrombotic hemorrhoids should be slit with a bistoury while cutaneous hemorrhoids should be removed with knife or scissors under eucaine anesthesia. The ligature operation for internal hemorrhoids is the best for general purposes. Whitehead's operation is unjustifiable in uncomplicated hemorrhoids. Fissure is best treated by incision while fistulas should be treated by division. There is no danger of fecal incontinence in such cases if the sphincter is cut at right angles and the wound drained without packing, care being taken to prevent skin and mucous membrane from growing down into the cut. The rational treatment of stricture of the rectum is division in low cases, excision in higher cases, and colostomy in inoperable cases. Intestinal stasis may be induced by constipation or obstipation, and care should be taken in such cases to try carefully nonoperative measures and to be sure that dangerous surgical operations are done only when imperative.

**Exudates in Artificial Pneumothorax**, by L. S. Peters.—From close observation Peters thinks that, given the proper amount of time ninety to 100 per cent. of these cases will show varying amounts of fluid. When these exudates become purulent they usually show a pure culture of the tubercle bacillus. This complication occurs more frequently in cold or wet weather and the effect of effusions is disputed. Some writers believe that effusion is due to the presence of antibodies, but it would seem that the mechanical explanation is the logical one. The ultimate outcome of all fluid cases except mixed infection is good and unless pressure symptoms exist or fever is high they should be left alone. All mixed infection exudates should receive proper drainage by surgical methods and the percentage of effusion cases is not large enough, according to Peters, to influence the indications for artificial pneumothorax.

**Relation of Nasal Symptoms to Endamebic Infections of Nose and Mouth**, by A. C. Howe.—Baffling recurrent colds in the head are now frequently shown to be caused by a variety of ameba called *Endameba nasalis*, which differs radically from the variety found in the mouth but which resembles closely *Endameba histolytica*. The chronicity of certain nasal symptoms and sinus discharge is maintained by this ameba and the specific action of emetine on these organisms makes it possible successfully to treat many of such cases.

## LANCET-CLINIC.

October 23, 1935.

**Diagnosis and Treatment of Fistula in ano,** by Rollin H. Barnes.—The patient should be made to go into detail in the anamnesis in these cases, as by locating the place of first infection one may often find an explanation of conditions puzzling at first. Palpation is the most important diagnostic means, especially in long standing cases where thickening of the rectal walls can be felt. Injections of coloring substances or of bismuth paste with the x ray may be of assistance, but are not to be depended on. In the treatment, the fistula should be thought of as a chronic abscess. Cutting of the sphincters is mutilating and unnecessary. In operating, Barnes makes an incision outside the sphincter, according to the location of the abscess cavity, and opens by skin incision all underlying tracts. Since the underlying tissues heal less quickly than the skin, the incisions are made freely, though with attention to the deformity that may result. The condition having thus been traced to the internal opening in the rectum, submucous dissection from the anal skin margin to the internal opening is practised, and a gauze drain connecting the skin margin with this opening introduced. This gauze is kept in place until the abscess cavity is so healed that it will not be contaminated from the rectum. The submucous tract is then incised as is usual in the treatment of submucous fistula. The author condemns the performance of Etling's operation in fistula, the use of the curette, the packing of a fistula, and the careless use of a grooved director in locating the internal opening.

**Obscure Fevers of Infancy and Childhood,** by B. K. Rachford.—The age of the child has an important bearing on diagnosis in obscure fevers. In the absence of an evident cause of illness, fever during the first week of life may be assumed to be of the inanition type, and should be treated by the administration of water or breast milk in quantities sufficient to promote elimination of the toxic substances responsible. Severe, prostrating fever beginning in the second week of life may, in the absence of marked intestinal disturbance or other evident cause, be considered due to sepsis. In children over one month and under two years of age intestinal toxemia is the commonest cause of fever. If the temperature falls and remains low under catharsis and starvation for twenty-four hours, the diagnosis is confirmed. If fever continues for three or four days, otitis media should be thought of, even in the absence of aural or mastoid symptoms. A sustained high temperature of  $103^{\circ}$  or  $104^{\circ}$  F. in infants should always be treated as a lobar pneumonia until a definite diagnosis can be made. In a child over three years of age free from signs of pneumonia, continuous fever should lead to a tentative diagnosis of typhoid. The fever of tuberculosis is characterized by the slight degree of accompanying discomfort.

## AMERICAN JOURNAL OF THE MEDICAL SCIENCES.

October, 1935.

**Our Experiences with Gastroenterostomy: A Study of One Hundred Cases Compared with a Similar Number of Cases of Pyloroplasty,** by J. M. T. Finney and Julius Friedenwald.—It seems

to be evident from this study that the immediate as well as the final results are in favor of pyloroplasty. The cases in which gastroenterostomy is preferable are those in which there is an inability to mobilize the duodenum when adhesions are too dense, and those in which there is a thickening and infiltration about the pylorus due to hypertrophic ulceration, but such cases seem to be rare. There is no possibility of excising the ulcers when performing gastroenterostomy, but this can be done frequently in pyloroplasty, when they are in the anterior wall. Gastroenterostomy should be limited, as far as possible to relief of stenosis of the pylorus, when due to malignant disease, for in nearly all other conditions pyloroplasty and pylorotomy are safer and more satisfactory procedures.

**Splenic Enlargement in Early Syphilis,** by Udo J. Wile and Joseph A. Elliott.—Acute splenic enlargement occurs in a large number of cases of early syphilis before the secondary manifestations appear, and probably represents the earliest syphilitic disease of the viscera. The enlargement may be in the form of a soft tumor, not unlike that of any other infection, or as a firm, tense tumor. Tenderness is present in a small number of cases, and may be extreme. The enlargement is found most often when the general health has been seriously involved. It tends to disappear under treatment, but may persist and resist treatment longer than any other early manifestation. It was noted frequently in association with early central nervous manifestations, but in none of the cases in this series was it associated with enlargement of the liver.

**Appendicitis as a Sequel of Tonsillitis,** by H. B. Anderson.—European writers have called attention to appendicitis secondary to tonsillitis, but the subject has received less attention in America and Great Britain than its practical importance warrants. Three cases are reported in which tonsillitis was followed by appendicitis, and the writer emphasizes the importance of bearing in mind the possibility of such an occurrence. The appendicitis may be only part of a generalized infection, so that the gravity of such cases may be out of proportion to the local symptoms. Such cases tend to be atypical in their clinical course, to smoulder; suddenly manifesting fulminating symptoms. Chronic tonsillar infections may possibly cause similar infections of the appendix.

## JOURNAL OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

October, 1935.

**Lingual Tonsillitis,** by J. G. Parsons.—Primary inflammation of the lingual tonsil is very rare. However, sharing as it does the same lymphoid structure as the faucial and pharyngeal tonsils, it is often involved in inflammatory conditions affecting the other parts of the lymphoid ring. It is rarely the site of neoplasms. The lingual tonsil tends to increase in size with age, while the other structures in the ring normally atrophy. The different infections which attack the upper respiratory passages during childhood and early adult life tend to lymphoid hypertrophy. Autotoxemia has quite an important bearing. In common with the rest of the lymphoid ring, the lingual tonsil suffers from the effects of obstructed nasal breathing. Small



torus, bodies not infrequently set up an acute irritation which persists after the body has been removed. The symptoms are quite variable. Cough is fairly constant. In the more acute conditions there may be pain deep in the throat, associated with more or less difficulty in swallowing. Occasionally there is a marked edema, or even abscess formation, causing dyspnea. The engorgement of the lymph circulation from any cause may give rise to congestion about the Eustachian tube and ear-ache.

#### NEW ORLEANS MEDICAL AND SURGICAL JOURNAL.

##### Intravenous Injection of Diphtheria Antitoxin,

by M. Thompson.—The writer has adopted the intravenous administration as the routine method in all cases and reports the results in thirty-two cases. Twenty-one of these were of a severe type of diphtheria and eight were fatal, seven after complications, one after a serum reaction. Severe reaction was observed in two cases. The author believes that the injection should not be made at once when the patient enters the hospital walking, or after exertions, but after rest for at least one hour in bed, except in severe laryngeal cases. The striking serum reactions are not contraindications to the intravenous administration of diphtheria antitoxin.

**Pellagra in the United States**, by E. M. Perdue.—Pellagra is a chronic intoxication caused by colloidal silica in drinking water; the disease is strictly localized and is contracted in those regions where the water commonly drunk is derived from clay. Pellagra is prevented by drinking hard water, which may be made from soft by the addition of lime. It is cured by the administration of any alkali that will neutralize the silica. The simplest treatment is the hypodermic administration of a ten per cent. solution of sodium citrate once a day at first, later on alternate days. The same remedy has been successful when administered by the mouth, but more is required, as well as a longer time.

**Experimental Ligation of the Splenic Arteries in Dogs**, by S. O. J. Jamison.—Ten dogs were operated on. The abdomen was opened through a left rectus incision, the spleen delivered and the pedicle firmly ligated, both the veins and the arteries being included in the ligatures. Two dogs died within a few hours, four lived less than three weeks, and four lived over four months apparently in perfect health. Of the four that lived over a week and less than three, necrosis of the spleen was demonstrated in three; while the other had an enormous abscess of the spleen from which no microorganisms could be obtained. Of the dogs that survived, two were laparotomized four months after the first operation and the atrophied spleens removed; both recovered without incident. One dog died five months after operation; the spleen was atrophied, but no evidence could be found that its condition had contributed to death; the liver was infected with the coccidia and affected with cirrhosis, and filarial worms were found in the heart, the latter probably causing death. It is evident that mere ligation of the splenic pedicle is extremely unsatisfactory and that it would be unjustifiable to subject a human being to such a risk. Two other

dogs were operated on in the same way, except that the large veins were not included in the ligature; both died within ten days and both spleens were found to be necrotic, showing that patency of the veins does not prevent necrosis. Jamison finds that when the dogs recovered, the spleen was absolutely covered by the omentum, but when the spleen showed necrosis the omentum had apparently failed to envelop it. In one dog the omentum enveloped half of the spleen, which was atrophic, while the uncovered part was necrotic. Five dogs ligated as described, and then with the spleens covered with omentum recovered without incident.

#### SURGERY, GYNECOLOGY, AND OBSTETRICS.

##### Perinephritic Abscess, by E. P. Richardson.—

The commonest organism, the staphylococcus, producing primary perinephritic abscess is also the organism most frequently concerned in producing cortical abscess in the kidney. Primary perinephritic abscess occasionally follows peripheral pus foci. In such cases it is reasonable to suppose that infection has had a metastatic hematogenous course. A urine normal on clinical examination does not exclude the possibility of cortical renal abscess. The previous occurrence of a peripheral pus focus due to the staphylococcus may be of some importance in the diagnosis of continued fever with leucocytosis and lumbar or abdominal pain.

**Diagnosis of Enteroliths by Röntgen Rays**, by G. E. Pfahler and C. J. Stamm.—Enteroliths should be suspected when there is a movable mass in the abdomen, or when opaque bodies are found in the appendicular region during the course of a Röntgen examination of the ureters. They can be definitely demonstrated by filling the colon with gas, or better by filling it with an opaque enema and demonstrating the mass within the lumen of the bowel. By means of glycerin enemata and manipulation, these enteroliths in the bowel can probably be removed without operation.

**Blood Transfusion by the Citrate Method**, by Richard Lewisohn.—The donor is put on the table, a tourniquet applied to the arm, and the vein punctured with a cannula. The blood is received in a sterile graduated glass 500 c. c. jar containing twenty-five c. c. of a two per cent. sterile solution of sodium citrate at the bottom. While the blood is running into the glass receptacle, it is well mixed with the citrate solution by means of a glass rod. After 250 c. c. of blood have been taken, another twenty-five c. c. of citrate solution is added. If less than 500 c. c. is taken (i. e., in infants), the amount of citrate solution added to the blood is reduced accordingly. In cases where one expects to take more than 500 c. c. of blood, one has another 500 c. c. glass container ready to be used in exactly the same manner. The glass jar containing the blood is then put aside and covered with a towel to guard against contamination, the recipient's vein is then punctured or exposed by a small incision, the cannula is introduced and attached to a salvasan flask or a glass funnel. It is advisable to fill the rubber tube connection between flask and cannula with some saline solution, so as to prevent air from getting into the circulation. After the connec-

tion is made, the blood is poured into the salsaparilla apparatus. In order to prevent sudden overloading of the circulation, it is advisable (especially in larger transfusions) to stop the flow of blood from time to time by compressing the rubber tube. After the blood has been injected, the cannula is removed and the transfusion is thus ended. The whole procedure can be performed with the greatest ease and without any hurry, because the citrated blood can be kept for two or three days in the glass jar without danger of clotting. It is of the greatest importance for the successful application of the citrate method that a large size cannula is used in taking the donor's blood.

**Disinfection before Operation,** by Ellice McDonald.—The following solution has been used by the writer for the sterilization of the hands and the sterilization of the skin of the abdomen before operation for more than a year with uniformly satisfactory results: Acetone (commercial), forty parts; denatured alcohol, sixty parts; pyxol, two parts. In the sterilization of the skin of the abdomen, it is rubbed on for two minutes before operation after the patient is under ether without any preliminary washing. It speedily evaporates from the skin. With this solution, in no case was any growth obtained after thirty seconds immersion. This period is too short in practice, and one minute is advised to provide a margin of safety. The method advised is to treat the hands in the germicidal solution in a vessel sufficiently large and to rub the nails with a brush and the arms with a gauze cloth, to aid the solution in permeating every crevice. The solution is inexpensive, unirritating to the skin, and efficient. It may be used repeatedly. It will acquire a sediment of various detritus which in no way impairs its efficiency.

### Proceedings of Societies.

#### MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.

*Sixty-fifth Annual Meeting, Held at Philadelphia, September 20-25, 1915.*

The Retiring President, Dr. EDWARD B. HECKEL, of Pittsburgh, in the Chair.

(Continued from page 820.)

**Cholesteatoma of the Spinal Cord.**—Dr. WILLIAM EGBERT ROBERTSON and Dr. SAMUEL D. INGLIAM, of Philadelphia, presented a case of a young woman taken from school when fifteen years of age because of increasing languor and anemia. She was first seen on December 28, 1914. There was progressive loss of flesh, intermittent insomnia, motor and sensory disturbance of the left leg, later of the right, variable in character; with obstinate constipation and involvement of the bladder, with marked cystitis and a mixed spastic and steppage gait. At operation, on March 31, 1914, by Dr. W. Wayne Babcock, a tumor five and a half inches long was removed, which microscopic examination showed to be a cholesteatoma. The patient has gained twenty-five pounds in weight. There was still moderate foot drop in the left leg, with a little

anesthesia and loss of muscle sense, but there was considerable gain in power with increased size of the left leg, and gait was almost normal.

**Factors Influencing the Present Mortality in Peritonitis.**—Dr. DAMON B. PEIFFER, of Philadelphia, stated that there was a marked reduction in the mortality in peritonitis during the past few years, owing to recognition of the principle of early operation and to evolution of improved operative methods. The present medical treatment founded upon incorrect reasoning and older teaching was responsible for a large part of the present mortality. It was urged that practitioners adopt methods which surgeons had found to be most efficacious in the general treatment of peritonitis.

**Value of the Psychopathic Hospital.**—Dr. D. J. MCCARTHY, of Philadelphia, referred to the need of a better equipment for the care, study, and prevention of mental disease. He would divide the psychopathic hospital into: 1. The clearing house type for the reception and distribution of mental cases; 2, the psychopathic, the primary function of which was for the investigation of mental cases; 3, the psychopathic hospital for the cure of borderline cases. There should be facilities in every general hospital for the care of temporary cases of mental disease. He would favor also a preventorium type of institution for the reception of all types of disease needing rest, fresh air, physical training, occupation, open to borderline cases and the functional types of nervous cases, latent tuberculosis, functional and early organic heart, liver, kidney diseases, etc. All such institutions should have departments for partial and full pay in addition to provision for the State charges.

Dr. JAMES HENDRIE LLOYD, of Philadelphia, said that the term, psychopathic hospital, had come to be a favorite one at the present time and much used by persons of an optimistic turn of mind. It was meant to note progress, and was used to signify an institution which was different and theoretically better than the thing meant by the old fashioned term, insane asylum. In so far as the term meant progress, it was commendable. Progress did not, however, depend upon mere words. A psychopathic hospital was after all nothing but a hospital for the study and treatment of the insane; they should not be deceived by a name; the treatment of the insane should be practically the same in all hospitals. He believed that a large municipal hospital offered the equipment and facilities desirable for mental cases.

Dr. GEORGE E. PRICE, of Philadelphia, did not agree entirely with Doctor Lloyd that the psychopathic hospital should be entirely under the care of the municipality. The great difficulty in the present situation was that people of moderate means had no hospital to which they could go, except the municipal hospital at Blockley. He believed that every large general hospital, particularly those connected with the teaching institutions, should make provision for the mentally sick, just as they would for the man with acute pneumonia or nephritis. The case could be received and studied, and then provision should be made to meet the indications.

Dr. ALFRED GORDON, of Philadelphia, made a plea for the many persons seeking medical advice who were not insane in the true sense of the word and

for the normal mentally, such persons were seen who, though free from delusions and capable of reasoning, were in a state of mental disquietude and caused anxiety to their friends. For these he felt there should be a place between the general hospital and the hospital for the truly insane. There should be considered also the social nature of the question, for in spite of the teaching that insanity was a disease, a stigma attached to the placing of a patient in an asylum for the insane.

**The Treatment of Exophthalmic Goitre by Means of the Röntgen Rays.**—Dr. GEORGE E. PFÄHLER and Dr. J. D. ZULICK, of Philadelphia, believed that the trial of treatment for one series with an interval of waiting of one month was justifiable in all cases, for if operation was decided upon, nothing was lost and many operations might be avoided. Treatment should be directed toward both the thyroid and the thymus glands. An increase in weight and a decrease in pulse were the first signs of improvement and were practically always found. Treatment should not be prolonged over too great a period, or hypothyroidism might be produced. The goitre and the exophthalmos were the last to show improvement and in many cases showed no change.

Dr. ARDREY W. DOWNS, of Philadelphia, in experimental work by the administration of thyroid gland to rabbits until hyperthyroidism appeared, had been able to produce hypertrophy of the thymus gland in seven out of nine cases. While the number was too small to have definite value, taken in connection with similar reports, he inclined to the belief in an intimate relationship between the thyroid and thymus glands. He questioned whether it might not be possible that a persistent thymus gland, stirred to activity by overexcitement, anemia, etc., was the real cause of exophthalmic goitre. The necessity for accurate doses of Röntgen rays was a point he wished to emphasize.

**Treatment of Fractures a Lost Art.**—Dr. JOHN B. ROBERTS, of Philadelphia, stated that non-operative treatment of bone wounds had been neglected in recent years. Adherence to the ancient idea that loss of rigidity and displacement of fragments alone needed treatment was a common error. Some closed fractures must be incised and "fixed" directly. Some were treated well either by operative attack or a non-bloodshedding method. Others should not be operated upon even by the most sanguine surgeons. Vivicsection and carpentry were not the sole method of obtaining good union and good function. Mechanical instinct, anatomical knowledge and surgical common sense were the keys to success. The essentials of subcutaneous fracture treatment, so far as the injury was concerned, were anesthesia, with comparison of the normal limb and accurate reconstruction of bony contours; verification of line of fracture and accuracy of reduction by x rays when practicable; anatomical and physiological knowledge of muscles and bones; well fitting retentive appliances; early frictions, skillful early mobilization, and careful massage with frequent inspection.

**Treatment of Complicated Fractures.**—Dr. JOHN B. LOWMAN, of Holmstown, stated that open treatment of fractures had taught them that in some cases delayed union was caused by too close approximation thus inhibiting callus formation, producing

bone absorption and leading to infection and necrosis of bone; it had also taught them never to plate a compound fracture. The open treatment was indicated in fractures which could not be properly reduced, especially complicated fractures around joints. Bone grafting seemed to be superior to all other methods, although those other methods had their advantages. In all fractures of the bone shaft, plating was the best method and should be done as early as possible. Out of twenty-five patients with fracture of the shaft of the femur plated, twenty-three were back at work at their former occupation; this had been the exception to those treated by the closed method. Bone transplants from one species to another did not grow; those from one person to another grew in forty or fifty per cent. of cases, while those which were autogenous grew with very few exceptions. The success of open treatment depended upon the mastery of the careful technic which bone surgery required.

Dr. WILLIAM L. ESTES, of South Bethlehem, said that the American Surgical Association had appointed a committee two years ago to standardize as far as practicable the various results of the treatment of fractures; but at the very outset the committee's work was almost entirely nullified by the sad fact that they could get proper records from only a few sources in the United States, and for that reason the committee elaborated a form of record which they were trying to have introduced and which they believed would give an opportunity to collect data which would finally lead to establishing the proper treatment of the ordinary fracture.

Dr. P. G. SKILLERN, Jr., of Philadelphia, stated that nitrous oxide should always be administered to afford the surgeon as well as the patient the best conditions for complete reduction. After the attempt at reduction a skiagram should be taken. If the fragments were still unreduced, the cycle of administering gas, reducing, and taking a skiagram should be repeated. It might be necessary to repeat this cycle two, four, even six times in obstinate cases, but each cycle was harmless, though perhaps slightly inconvenient to the patient. It was only after such repeated attempts by their failure had the fracture to be clinically irreducible that operative treatment was indicated. After reduction a copiously padded and carefully applied fixation dressing should be put on, treating each fracture in an individual and not a routine manner. Of the methods of operative fixation, that by the use of metal plates was the least desirable, and, if indicated at all, metal fixation was best employed for fresh fractures and not—and Mr. Lane himself emphasized this—for cases of nonunion. For nonunion by far the best method was the autogenous bonegraft.

Dr. EDWARD MARTIN, of Philadelphia, appealed to the assembled surgeons to aid in the work of the fracture committee of the American Surgical Association by insisting upon the keeping of adequate records graphic, mensural, and verbal, of cases of fracture; the treatment, the complications, and the immediate and remote functional and anatomical result. Thus quickly would be available a mass of accurate information upon which might rationally be based a formulation of the successful treatment of fractures. Metal plates always delayed union, and were to be avoided save in exceptional cases. The



statistics studied by Estes showed that operative treatment was less frequently required in children than in adults. This in part was due to the fact that in the young a moderate deformity had a tendency on use to gradual correction. Such tendency was never exhibited in the adult. In the latter a good union with moderate and allowable deformity, if the bone was a weight bearing one, might become on use a crippling and deforming one. Hence, given a slight angulation of the leg bone, weight bearing should not be allowed for many months. Moreover, for his own protection, it was of vital importance that the surgeon have written measures and x ray records of the case on discharge and evidence that advice against weight bearing was given.

Dr. CHARLES E. THOMSON, of Scranton, stated that the atmosphere of mystery surrounding fractures was being cleared up very rapidly since all were working on the subject. Doctor Martin had alluded to the Buck's extension. The speaker regarded it as the always delusive or defective Buck's extension and he took this stand because it did not extend. In regard to Doctor Estes's statement that fractures should be treated by skilled surgeons, that was not practicable. Fractures occurred in the country while the skilled surgeons were expected to live in the big medical centres. The general practitioner had to treat a good many fractures. They had always had to treat them and they would continue to have to treat them. Doctor Roberts struck the keynote in saying, "teach your students to treat fractures."

**Acute Pancreatitis.**—Dr. JOHN B. DEAYER, of Philadelphia, stated that by acute pancreatitis they ordinarily understood the classical severe type described by Fitz, in which there was hemorrhage and extravasation of pancreatic juice resulting in profound general shock, intoxication, and local destruction of tissues with ensuing gangrene or suppuration. In the last few years surgery had revealed that the lesser inflammatory lesions of the pancreas were common. It had not been sufficiently pointed out that acute pancreatitis without the severer manifestations of hemorrhage and extravasated ferments, was not uncommon. Many cases had been operated in, unrecognized and attributed to disease of the biliary tract. The treatment of pancreatitis had not as yet been standardized because of lack of knowledge of its cause and the mechanism of its production. Pancreatitis was a result of infection or duct obstruction or a combination of the two. Operative intervention should aim to establish the cause and relieve it. Infective pancreatitis secondary to disease of the biliary tract should be treated by the measures adapted to relief of biliary infection. Obstructive pancreatitis due to stone in the papilla of Vater or to other abnormality of the papilla, demanded relief of the obstruction. In ultracut cases the question of operability entered strongly and might forbid everything except simple drainage. The speaker protested against the sending of acute abdominal cases to the medical wards of the hospital. By the time they reached the surgeon in this roundabout way, much valuable time had been lost.

Dr. ERNEST LAPLACE, of Philadelphia, said there had always been some mystery connected with the question of disease of the pancreas. This question of pancreatitis was in the same condition as appendi-

citis was fifteen or twenty years ago. There was no such thing as a pancreatitis alone any more than appendicitis alone. When violent pain occurred in the epigastrium with symptoms of shock, immediately the patient should be transferred to the surgeon and they would be able to drain at once. Some of these cases were accompanied by a dilated duodenum with intestinal sepsis as a predisposing cause to the infections which would travel up through the ampulla of Vater and give to the pancreas whatever infection had found its way up there. In regard to the complications of pancreatitis and cholecystitis, they traveled together. It was the same infection. Doctor Deaver had rendered the profession a great service when he called attention to the lymphatics.

Dr. LAWRENCE LITCHFIELD, of Pittsburgh, had been associated with medical wards for the past twenty-five years and had often regretted the time lost by the fact that these cases were first sent to the medical wards. Valuable time was also lost by delaying operation in the hope of making a definite positive diagnosis. There were several conditions in which an operation must be undertaken before a positive diagnosis could be made if the patient's life was to be saved.

**Management of Toxic Goitre.**—Dr. CHARLES H. FRAZIER, of Philadelphia, said that toxic goitre might be either that which began as simple goitre and became transformed into the toxic variety, or the true exophthalmic goitre. The principal distinction surgically was in reference to the severity of the case. The treatment belonged essentially to surgery. If the circumstances of a person suffering with moderate thyrotoxicosis were such as to render impracticable a prolonged period of rest, he strongly urged immediate operation and proceeded to the removal of as much of the offending gland as conditions indicated. The mortality was insignificant; personally he had not lost a case. In a grave form of intoxication the watchword was caution. It was out of the question to say what the order of procedure should be until after the patient had been under observation in bed for a few days, during which a study of the body functions and all the available secretions and fluids had been made. Each case presented its own problem, whether it should be treated by boiling water injections, ligation of one or more vessels at one or more sittings, or by partial thyroidectomy. A good working rule was to err on the side of conservatism. A patient should not be operated upon during the stage of acute exacerbation. Rest was the most fruitful nonoperative measure. He had tried the x rays and radium without appreciable effect. In all operative cases anoci-association was employed successfully. Nitrous oxide anesthesia was always used. The relation of the thyroid to other ductless glands, especially the thymus, should not be overlooked. In seventy-six thyroidectomies for toxic goitre he had had no deaths and in twenty-four ligations two deaths. He would not at this time consider such cases as the two fatal ones suitable for that particular operation at that cycle of the disease.

Dr. JOHN D. SINGLEY, of Pittsburgh, emphasized the necessity for discriminating between the acute exacerbations of toxic goitre and the terminal stages of the disease with impending death. Careful interpretation of the history and of the clinical mani-

operations had taught them to avoid operation during exacerbation and in the final stages. To this, much more than to any great improvement in operative technique, was due the marked reduction in operative mortality in recent years. The earlier goitre patients were operated upon after the onset of toxic symptoms; provided that operation was not done during acute exacerbations, the better the results, both immediate and remote. No operation was of any avail and any would probably be fatal in the most serious advanced cases, with widespread terminal degenerations, especially of the heart muscle, with irregular pulse, low blood pressure, and periodical attacks of delirium cordis (Kocher). The aftertreatment was of the greatest importance. These patients should not be discharged to work out their own salvation as they too often were. Careful supervision by a competent medical adviser should be carried out for several years at least.

Dr. JAMES D. HEARD, of Pittsburgh, stated that the severity of the cardiovascular disturbances in toxic goitre made it important that patients should be carefully studied in regard to disturbances of cardiac mechanism before submitting them to operation. Alternation in force of ventricular systole should be diligently sought for, and, when found in connection with a heart rate which was approximately normal, it was to be regarded as increasing the gravity of prognosis. The administration of belladonna should not be a routine. It should be remembered that belladonna in full doses removed the inhibiting action of the vagus and that this would be undesirable where the heart rate was already accelerated. For like reason, the administration of atropine to guard morphine would be unscientific. Morphine required no guarding. It acted favorably in these cases, particularly through its action on the vagus, and it would be a distinct disadvantage to remove this inhibitory action where the heart rate was already accelerated.

Dr. G. M. ASTLEY, of Philadelphia, from what he had seen, questioned whether injections of boiling water should not be used first. The problem seemed to be the throwing out of commission of a certain amount of gland substance. That was done by ligation or boiling water. He had known that where boiling water was used the subsequent surgical sections were very simple.

Dr. S. J. WATERWORTH, of Clearfield, stated that if they avoided the trachea he believed they would have fewer symptoms after operation. As to operation after hot water injections, he had injected with hot water and knew it rendered operation much more difficult. There was produced a general thyroiditis. The tissues became matted together and there was more difficulty in getting the goitre out. He thought there was a distinction to be made between the patients coming into the office with the first flush of hyperthyroidism and those who were older. Upon discrimination of the surgeon would rest his mortality rate.

Doctor FRAZIER was not prepared to speak enthusiastically about boiling water, as he had used it in only three cases. He was interested in regard to what Doctor Heard said in reference to careful studies of heart action before operation. Certainly surgeons should avail themselves of opportunities to

have experts and consultants come in and study these cases whenever possible. The suggestions Doctor Heard made in regard to tracings and belladonna he was very grateful for.

**Rectal Anesthesia in Thyroidectomy.**—Dr. WALTER LATHROP, of Hazleton, said that in the oil-ether rectal anesthesia the brain was not deeply narcotized and the patient regained consciousness rapidly, while the sensation of pain was held in abeyance for a considerable time; the eye reflex was seldom lost, but muscular relaxation was complete. The method was valuable where fear was a prominent element as in hyperthyroidism. The post-operative effects were much milder than after inhalation narcosis. In thyroidectomy, where freedom from obstruction in the operative region was desirable, the rectal method was ideal. The patient could be anesthetized in bed and removed to the operating room and thus have no conception of what had occurred. This was a great aid in realization of anociassociation. Lathrop had used the method in 118 cases since June, 1914, with most satisfactory results.

Dr. JOHN W. LUTHER, of Palmerton, stated that his experience with colon oil-ether anesthesia was limited to forty-seven cases. However, his experience differed from Doctor Lathrop's in that thirty-six were abdominal operations where complete muscular relaxation was of greater importance than in head and neck work. In twenty-two of his cases no additional anesthesia was required, and in eighteen of the remaining cases only a dram to an ounce of ether by inhalation was needed. The duration of operation varied from fifteen minutes to two hours. On account of the slowness in preparation the method was not suitable when several cases were to be operated in. One of his cases ended fatally of pneumonia seven days after operation, but this was a septic case and the result could not be attributed to ether. The narcosis was uniform from start to finish.

Dr. W. HERSEY THOMAS, of Philadelphia, said that his experience in operating upon seventy-three patients under colonic anesthesia had convinced him of its value. He had not found that rapid return to consciousness was the rule. Although the presence of some of the superficial reflexes would indicate a light anesthesia, the great majority of his patients were profoundly anesthetized. He had seen the anesthesia deepen after return of the patient to the ward in spite of rectal irrigation. The conviction had grown that the liver, which bore the brunt of the attack, was markedly affected, and that it was a toxic change in this viscus that prolonged the anesthesia. The return of consciousness was hastened by the introduction of saline solution. The patient should be kept under skilled observation for several hours after return to the ward.

Doctor LATHROP said in abdominal cases he had had quite an experience, especially in miners with asthmatic conditions. If ether was started in these cases they choked right up and they had to stop. These patients slept perfectly under rectal anesthesia; he had seen very few who could not be aroused.

**Surgical Treatment of Ascites.**—Dr. ROBERT T. MILLER, JR., of Pittsburgh, dealt only with that

group of cases in which ascites was associated with cirrhosis of the liver. Five cases were considered, four of which were due to alcoholic or luetic cirrhosis and the fifth almost certainly due to malignant disease. The patients varied in age from eighteen to sixty years. Ruotte's operation was done in each case, four times unilaterally and once bilaterally (two sittings); in three cases general anesthesia was used and in two local anesthesia. There was no mortality except in the malignant case, wherein death was apparently not due to operation. In all but the malignant case, abdominal paracentesis was necessary at frequent intervals before operation; after operation, the necessity for tapping the abdomen was absolutely done away with in two cases and all but eliminated in two other cases, while in the fifth case (malignant) the abdomen was not tapped either before or after operation. In one case operation (double) was followed by a decrease of the umbilical circumference from 110 to ninety-seven cms. and an increase in average daily urinary output from 480 c. c. to 1,250 c. c. Of the four patients with cirrhosis of the liver, three were restored to self support and the fourth, a boy of eighteen years, was advanced from a condition of invalidism to a position of helpfulness in the household. In no instance was any ill effect observed from drainage of the ascitic fluid directly into the circulation. Five cases were too few from which to generalize, but the speaker felt that the results were so good as to warrant him in warmly recommending a trial of the method.

Dr. JAMES D. HEARD, of Pittsburgh, advocated surgical procedure to supplant the so called medical treatment of ascites due to cirrhosis of the liver. Statistics available as to the result of the Talma operation showed that thirty-five to fifty per cent. of cases of ascites due to cirrhosis might be cured by early operation. These statistics should be brought prominently to the notice of internists. The statistics of Route, Soyesima, and Miller indicated that venoperitonostomy was capable of yielding favorable results. Operative measures should be resorted to before the patient had been subjected to the local irritation which resulted from frequent tapings, repeated withdrawal causing loss of proteid and general failure of the patient, owing to the continued presence of a condition which, in spite of repeated tapings, usually slowly progressed toward an unfavorable end.

Dr. J. E. SWEET, of Philadelphia, said that, in 1876, a Russian army surgeon, von Eck, devised his operation called the Eck fistula, that was, anastomosis between the portal vein and the vena cava. This operation had been applied only three or four times. Usually in true cirrhosis the portal vein was so tied up in adhesions that a true Eck fistula was not feasible. Dr. Edward Martin and he had devised a modification of the Eck fistula consisting of an anastomosis of one of the large mesenteric veins with the iliac vein at the point where they crossed. He felt that some modification of the Eck fistula would be a more positively curative procedure than the operation of Doctor Miller, which amounted, in his mind, to continuous tapping.

**Fulguration of Bladder Papilloma.**—Dr. A. A.

UHLE and Dr. W. H. MACKINNEY, of Philadelphia, believed that all urologists now agreed that high frequency destruction was the method of choice in the treatment of benign papilloma, but that it had no value in the treatment of true infiltrating carcinoma. Diagnosis must be established by cystoscopic examination or by the examination of portions of tissue passed or removed by special instruments. Since November, 1911, when they first employed high frequency destruction, they had observed fifty-one primary neoplasms of the bladder. A diagnosis of benign papilloma was made in twenty-two cases, of papillary carcinoma in three, and carcinoma in twenty-six. High frequency destruction was employed in nineteen of the benign papillomata, in three cases of papillary carcinomata, and seven cases of infiltrating carcinomata. In all cases of tumor of the bladder hemorrhage was the predominating and frequently the only early symptom; bleeding was usually marked and ceased as promptly as it began. With three exceptions the monopolar Oudin current generated from a Wappler coil, was employed and found perfectly satisfactory. The illumination was derived from a dry cell battery and the spark from the circuit. General anesthesia was not necessary, satisfactory local anesthesia being obtained with novocaine. In nervous patients or patients with a highly sensitive urethra, treatment might be facilitated by a hypodermic injection of morphine one hour previously. A clinical cure was based upon freedom from symptoms, a clear urine, microscopically free from blood and pus, and the absence of evidence of tumor by cystoscopic examination three months after the last treatment. Every patient was impressed with the possibility and danger of recurrence and advised to return at intervals of six months for cystoscopic examination.

Dr. B. A. THOMAS, of Philadelphia, remarked that to treat a papilloma of the bladder by any means other than high frequency sparking or electrocoagulation, must be regarded as a serious surgical error, poor judgment, or selfishness. On the other hand, any form of intravesical treatment for a malignant growth, preeminently sessile carcinoma, provided that it was curable radically, was the height of folly. His experience comprised no fewer than sixty-nine tumors, varying in size from a pin-head to masses almost completely filling the bladder. Almost invariably bleeding had been a prominent factor, but fortunately, as a rule, the first effect of electrocoagulation was hemostatic. A few patients had been so exsanguinated as to require preliminary supporting measures. In one case with hemoglobin of nineteen per cent., two transfusions were done before undertaking the treatment of the tumor. Without exception cure had resulted in each case of papilloma, also papillary carcinoma with a nondegenerated pedicle. In no case of sessile carcinoma or other malignant growth involving the bladder wall had cure been obtained. The speaker had employed both the Oudin and d'Arsonval currents and preferred the former. It made little or no difference whether the current was generated by a static machine or a coil; the results were equally good with the latter.



## Book Reviews.

of the most important and interesting subjects in the history of medicine, and our readers are likely to be interested.]

*Twelve Lectures on the Modern Treatment of Gonorrhea in the Male.* By Dr. P. ASCH (Strassburg). Translated by A. VON T. FANTON, F. GAYNER, M.D., Lecturer in Venereal Diseases, Central Military Hospital, New York. Polyclinic; Assistant Genitourinary Surgeon, Bellevue Hospital, etc. Illustrated. New York: Rebinan Company, 1914.

As it comprises but 104 pages, this book is necessarily incomplete; for instance, such an important subject as the complement fixation test is not mentioned. Likewise, operative indications are often vague, e. g., page 41, "when-ever a pus collection of any appreciable size can be diagnosed in the prostate, operation is by far the best treatment." The book has a number of original and not altogether, as far as we know, ideas which are generally accepted. For example, on page 2 we find, "an incubation period of gonorrhea of from four to eight weeks is by no means as uncommon as generally thought"; on page 61, "it seems necessary to leave specimens of prostatic secretion intended for microscopical examination exposed to the air for twenty-four hours to dry spontaneously." The author seems overenthusiastic about the electrolgal treatment for epididymitis, making most extravagant claims for its virtues. He is likewise very enthusiastic over his "irrigation method" treatment of acute gonorrhea, stating that epididymitis never complicates. The chapters on anterior and posterior urethroscopy are much the best in the book.

The translation is not altogether happy, many German and French constructions cropping up, and making its perusal by neutrals difficult.

*Physical Diagnosis.* By RICHARD C. CABOT, M.D., Assistant Professor of Medicine in Harvard University, Chief of the West Medical Service at the Massachusetts General Hospital. Sixth Edition. Revised and Enlarged, with 6 Plates and 268 Figures in the Text. New York: William Wood & Co., 1915. Pp. xxi-521. (Price, \$3.25.)

The sixth edition of this valuable book brings with it the introduction of Cabot's recent classification of heart disease into the "rheumatic," syphilitic, arteriosclerotic, nephritic, and the forms due to congenital malformations. To this may be added a final small group of doubtful cases. This classification has been followed by the author in the discussion of the physical diagnosis of heart disease, and this section of the book has been entirely rewritten and greatly improved. He has preserved his originality of style and interpretation in the new section and has succeeded in making it one of the best discussions of the physical diagnostic features of cardiac disease that we have met with in the English language. The volume remains as in the previous edition in all other portions, except that of the diseases of the lungs which has also been rewritten. The revision of this section has followed along the lines of the recent work by Frederick T. Lord on *Diseases of the Bronchi, Lungs, and Pleura*, and is an excellent exposition of the subject; the value of the book is greatly enhanced by the fact that the statements made and the methods suggested are based almost exclusively upon the author's own extensive experience in the teaching of physical diagnosis.

TAYLOR, M.D., Gynecologist to the Roosevelt Hospital, New York; Professor of Clinical Gynecology, Columbia University, etc. Philadelphia and New York: Lea & Febiger, 1915. Pp. vi-332.

In this volume is a very good condensation of the large amount of scattered information concerning cancer. The greater part is devoted to the consideration, largely of a statistical nature, of cancer of different portions of the

As the publication is for the purpose of bringing the various phases of the problem before the medical profession, it seems a pity that the statements should be made that "a malignant tumor means a cancer" and "that the two common varieties of cancer are carcinomata and sarcomata." It would be better to employ the word as it is

usually understood, limiting it to the epithelial type of malignant tumor.

*Transactions of the American Urological Association.* Thirteenth Annual Meeting at Philadelphia, Pa., June 18, 19, and 20, 1914. Pp. viii-327.

The publication of such volumes as these transactions is of real value to the medical profession. They afford a better brief chronicle of the time than can be accumulated by any more artificial method; for here may be read not only the presentation of such topics in urinary surgery as are of interest to the leading lights of that specialty, but also the commentary therein of their peers.

This volume surpasses its predecessors, both in size and in interest. The American Urological Association evidently has a great future before it.

## Interclinical Notes.

*Medical Pickwick* for October has a beautiful blue cover, symbolic perhaps of the blues which the contents will surely dispel. When this joyous periodical first appeared, a literary friend expressed a doubt as to whether the supply of humorous copy coming exclusively from the medical profession, would keep up. The flow does keep up, and if there is any change, it is toward improvement. The editor lets each contributor tell his tale in much his own way, with literary results that are unusual, but, on the whole, refreshing and unconventional.

One of the most scholarly and enjoyable essays that we have had the pleasure of reading for some time, is *Thanatophobia and Immortality*, by G. Stanley Hall, which appears in the October, 1915, number of the *American Journal of Psychology*. It testifies to a broadly educated mind, literary skill of a high order, and almost unexampled ingenuity in implanting hope of some kind of future existence. We commend the essay to philosophic doubters.

The *Survey* for October 16th gives the report of Joseph J. Weber, secretary of the Committee on Hospitals of the State Charities Aid Association, on a survey of sickness made in Dutchess County, N. Y., which shows, as might have been expected, that there is a great deal of preventable sickness and that the facilities for the care of the sick are most inadequate. The *Survey* also reprints the posters used in the Boston campaign against alcoholism; very striking some of them are. There is a sympathetic discussion of Doctor Chapin's admirable address before the recent meeting of the American Public Health Association, in which he showed up some of the fallacies regarding dirt on which the public is fed by poorly instructed teachers. The prophylactic work against venereal disease of the German army is also referred to. There is special praise for the health work of our competent assistant editor, Dr. Charles Bolduan, of the city health department.

*Leslie's* for October 7th objects to the characterization of southern men as "tired"; and it gives a short list of distinguished sons of the south whom the epithet does not fit very accurately: George Washington, Patrick Henry, Light Horse Harry Lee, Marion and Sumter, Jefferson, Madison, Monroe, Andrew Jackson, Davy Crockett, Taylor of Buena Vista, Robert E. Lee, David Farragut, and Woodrow Wilson.

The always interesting details of a delayed payment of an insurance claim make up the story, *The Mystery of Crowhurst Aylmer*, in the October *Hide World*, by One Who Investigated It. We note by the way that the anonymous author speaks of a salary of six pounds a week as "prosperity." The mystery is a deep one, but is satisfactorily elucidated. There is a photograph in this issue of a whale eighty-eight feet in length and weighing ninety-two tons; it is fortunate that the intelligence of whales is not in proportion to their bulk.

The *Outlook* for October 13th refers editorially to the Government's demonstration in Louisiana that the pig is dirty only because man has not permitted it to be otherwise; a clean, well cared for pig sold for \$65, whereas a neglected razor back of the same kind went for \$8. We believe that there are sociological deductions of great value

to be made from this demonstration; environment is nine tenths of the battle with human beings, provided that there is a normal mentality to deal with; but it is becoming increasingly difficult for a poor boy to rise to the top, and still harder for a rich boy to sink to his proper level, owing to the vast fortunes which have accumulated during the past two decades.

Our friendly contemporary, *Puck*, had one of its best studies of female anatomy in its issue for October 7th; our older readers can refresh their memories of this important science by keeping an eye on *Puck*. Then they will find the department of the Seven Arts, in charge of James Huneker, alone worth more than the price of admission. Here is a jest that shows knowledge: "We shall not get any answers from those circulars we sent out the other day," said the office manager. "Why not?" inquired the senior partner. "The names were no good. The boy made a mistake. They were the signatures to a lot of patent medicine testimonials."

Not so many years ago a committee of New York doctors made a deplorable exhibition of themselves by certifying on the public stage to some mysterious source of bodily strength of a so called "magnetic" girl, who simply by the knowledge of a few principles in physics was able to do some apparently very remarkable feats of physical prowess. W. Banquier, an English "strong man," in the September *Strand*, tells how some of these tricks are accomplished. No professional strong man is above resorting to them when he is fatigued or for other reasons, and it is well that doctors should be familiar with the principles involved, not only to avoid falling into some press agent's trap, but because the feats themselves may prove extremely useful in an emergency.

Harry Langton, the narrator of The Great German Plot, in the September *Strand*, has not yet discovered what has become of Dr. Duncan Frazer, whom he picked out last month to be the hero of this serial tale; but he is having an exciting time in some of the small islands off the coast of Scotland. Arson and a spirited revolver battle are some of the incidents.

Dear Enemy, the story by Jean Webster which is continued in the October *Century*, is an extraordinary *tour de force* for a young woman; the doctor, nurses, and trustees of the orphan asylum where the scene is laid are sketched with a sure hand. The doctor has positively not made a single foolish break since the tale began, while the suggestions made by the youthful matron as to improvements in the asylum are really admirable. The asylum is rapidly becoming a much more comfortable place for a child than many a home that the practising doctor sees on his rounds.

The Friends, by Stacy Aumonier, in the October *Century* is one of the new style temperance stories, a tremendous improvement on the old style. The reader is not aware that he is perusing a powerful tract, for the story is a story first and last, and the fate of the heroes is quite logical, to say nothing of the artistically sustained interest in their downfall. The new kind of drunkard's wife we meet in this story will be welcome to those who knew the tearful slattern of the old Sunday school book; her pathos is genuine.

## Meetings of Local Medical Societies.

MONDAY, October 25th.—Medical Society of the County of New York.

TUESDAY, October 26th.—New York Psychoanalytic Society; New York Dermatological Society; Metropolitan Medical Society of New York City; Buffalo Academy of Medicine (Section in Pathology); New York Medical Union; New York City Riverside Practitioners' Society; Valentine Mott Medical Society; Washington Heights Medical Society.

WEDNESDAY, October 27th.—New York Academy of Medicine (Section in Laryngology); New York Surgical Society; New York Society of Internal Medicine; Schenectady Academy of Medicine.

THURSDAY, October 28th.—New York Academy of Medicine (Section in Obstetrics and Gynecology); Ex-Intern Society of Seney Hospital, Brooklyn; Medical Union, Buffalo; Hospital Graduates' Club, New York; New York Physicians' Association.

FRIDAY, October 29th.—Academy of Pathological Science, New York; Hospital Graduates' Club, Brooklyn.

## Official News.

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending October 13, 1915:*

**Bolten**, Joseph, Assistant Surgeon. Granted twenty days' leave of absence from October 11, 1915. **Carter**, H. R., Assistant Surgeon General. Directed to proceed to Richmond and other points in Virginia to advise with the health authorities in regard to antimalaria measures. **Christian**, S. L., Assistant Surgeon. Ordered to rejoin station at Marine Hospital, New Orleans, La. **Cobb**, J. O., Surgeon. Authorized to direct Assistant Surgeon Charles J. McDevitt to proceed when necessary to various points in the District of the Great Lakes for investigation of sanitary conditions. **Cox**, O. H., Assistant Surgeon. Granted one day's leave of absence, October 7, 1915. **Gardner**, C. H., Surgeon. Granted one day's leave of absence, October 12, 1915, under paragraph 193, Service Regulations. **Prather**, D. J., Assistant Surgeon. Ordered to rejoin station, Hygienic Laboratory, Washington, D. C. **Raynor**, R. W., Acting Assistant Surgeon. Directed to proceed from Hindman, Ky., to Welch, W. Va., for temporary duty. **Wertenbaker**, C. P., Surgeon. Granted three months' leave of absence from October 1, 1915, and placed on waiting orders, beginning January 1, 1916. **White**, J. H., Senior Surgeon. Granted six days' leave of absence, from October 11, 1915. **Young**, George B., Surgeon. Directed to proceed to Cape Charles Quarantine Station to take charge during the absence of Acting Assistant Surgeon W. B. MacCaffry.

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending October 6, 1915:*

**Cofe**, L. E., Assistant Surgeon General. Directed to proceed to Boston, Mass., for conference with the medical officers of the Service regarding quarantine and immigration matters. **Kerr**, J. W., Assistant Surgeon General. Detailed to represent the department and the Service at the sanitation day exercises, held at Fredonia, Kansas, October 5, 1915. **Mullan**, E. H., Passed Assistant Surgeon. Directed to report at the Bureau to assist in the mental and physical examination of candidates for appointment as assistant surgeon. **Paine**, Liston, Assistant Surgeon. Granted one day's leave of absence en route to station, and twelve days' leave of absence from October 5, 1915. **Parcher**, George, Passed Assistant Surgeon. Relieved at Ellis Island, N. Y., and continued on duty at the Marcus Hook Quarantine Station; granted twenty-five days' leave of absence from October 8, 1915. **Perry**, J. C., Senior Surgeon. Detailed to attend the second annual Southern Tuberculosis Conference at Columbia, S. C., October 8-9, 1915. **Pierce**, C. C., Senior Surgeon. Directed to present an address before the World's Insurance Congress at San Francisco, Cal., October 12, 1915. **Scott**, E. W., Assistant Surgeon. Granted one month's leave of absence from October 6, 1915. **Spencer**, R. R., Assistant Surgeon. Granted fourteen days' leave of absence, from October 25, 1915. **Stevenson**, A. F., Sanitary Chemist. Directed to proceed to Wilmington, N. C., for the purpose of obtaining data necessary for the studies of disinfectants. **Treadway**, W. L., Assistant Surgeon. Directed to proceed to Washington, D. C., for conference and for the preparation of the report on investigations of school hygiene in Porter County, Ind. **Williams**, L. L., Surgeon. Granted one day's leave of absence en route to station. **Wilson**, R. L., Surgeon. Granted two days' leave of absence, September 24-25, 1915.

*Board continued*

Board of commissioned medical officers convened at the Hotel Manhattan, New York, N. Y., for the examination of candidates to determine their fitness for appointment as assistant surgeon. Detail for the board: Assistant Surgeon General W. C. Rucker, chairman; Surgeon A. M. Connors, member; Passed Assistant Surgeon L. A. Sweet, recorder.

**United States Army Intelligence:**

*On the first of September the status and duty of officers serving in the Medical Corps of the United States Army for the week ending September 10, 1915.*

**Bayley, R. W.**, First Lieutenant, Medical Reserve Corps. Granted three months and eighteen days' leave of absence, effective December 1, 1915. **Beeuwkes, Henry**, Captain, Medical Corps. Granted ten days' leave of absence. **Foster, George B., Jr.**, Captain, Medical Corps. Granted fifteen days' leave of absence. **Frick, Euclid B.**, Lieutenant Colonel, Medical Corps. Upon demobilization of the Second Division, ordered to return to his station. **Gentry, Ernst R.**, Captain, Medical Corps. Granted three months and eighteen days' leave of absence, effective December 1, 1915. **Hagood, Rufus H., Jr.**, First Lieutenant, Medical Corps. Granted leave of absence for one month. **Hall, William E.**, Captain, Medical Corps. Ordered to proceed to Harlingen, Texas, for duty with the Twenty-sixth Infantry. **Ireland, Merritt W.**, Lieutenant Colonel, Medical Corps. Ordered to report in person to the commanding general, Southern Department, for assignment to duty as surgeon, Fort Sam Houston, Texas. **Jervey, Allen J.**, First Lieutenant, Medical Reserve Corps. Ordered to active duty from October 24 to 30, 1915, and will report in person to the commanding officer, Fort Moultrie, South Carolina, for duty during the absence of the surgeon with troops at the State Fair, Columbia, S. C., and by letter to the commanding general, Eastern Department. **Lincoln, H. F.**, First Lieutenant, Medical Reserve Corps. Granted ten days' leave of absence. **McAfee, Larry D.**, Captain, Medical Corps. Granted fifteen days' leave of absence. **Maguire, D. F.**, Captain, Medical Corps. Granted one month's leave of absence. **Maul, Herman G.**, First Lieutenant, Medical Corps. Ordered to proceed to Douglas, Ariz., for duty with the Sixth Brigade. **Meister, William B.**, Captain, Medical Corps. Granted three months' leave of absence effective after arrival at his home; after arrival in the United States and upon expiration of all leave of absence, ordered to proceed to Fort Sam Houston, Texas, and report to the commanding general, Southern Department, for duty temporarily with station at Fort Mackenzie, Wyoming. **Metcalf, Albert W., Jr.**, First Lieutenant, Medical Reserve Corps. Relieved from duty at the Army Medical School and ordered to proceed to his home, and after telegraphing to the Adjutant General of the Army, will stand relieved from active duty in the Medical Reserve Corps. **Morse, Charles F.**, Captain, Medical Corps. Granted one month and seven days' leave of absence, effective on relief from his present duties. **Munson, Edward L.**, Lieutenant Colonel, Medical Corps. Granted one month's leave of absence. **Pyles, Will L.**, Captain, Medical Corps. Ordered to proceed at once to Jefferson Barracks, Missouri, and report in person to the commanding officer of that post for duty. **Robbins, Chandler P.**, Major, Medical Corps. Ordered to proceed to Fort Riley, Kansas, and report to the commanding officer of that post for duty, and by letter to the commanding general, Central Department. **Schmitter, Ferdinand**, Captain, Medical Corps. Granted one month's leave of absence. **Souter, William N.**, First Lieutenant, Medical Reserve Corps. Ordered to active duty and will report to the commanding officer, Fort Constitution, New Hampshire, for duty during the absence of the surgeon on two months' leave; upon completion of this duty ordered to proceed to his home, and after reporting to the Adjutant General of the Army, will stand relieved from active duty in the Medical Reserve Corps. **Stacey, Royal K.**, First Lieutenant, Medical Reserve Corps. Ordered to report in person to the commanding officer, Ninth Infantry, for duty, and by letter to the commanding general, Southern Department. **Waring, John B. H.**, Captain,

Medical Corps. Granted twenty days' leave of absence.

Upon the demobilization of the Second Division the following officers will proceed to the stations designated after their names: Major Clyde S. Ford, Sixteenth Infantry, El Paso, Texas; Major William N. Bispham, Ninth Cavalry, Douglas, Ariz.; First Lieutenant Rufus H. Hagood, Jr., Twelfth Infantry, Nogales, Ariz.

**Births, Marriages, and Deaths.***Married.*

**Breslin—Taber.**—In Charlestown, Mass., on Wednesday, October 6th, Dr. John G. Breslin and Miss May Evelyn Taber. **Corey—Henninger.**—In Havana, Ill., on Wednesday, October 6th, Dr. Frederick J. Corey and Miss Ethel Henninger. **Crawford—Swamley.**—In McClure, Pa., on Monday, October 4th, Dr. William Lewis Crawford, of Dillsburg, Pa., and Miss Emma E. Swamley. **Gray—Meeker.**—In Chicago, Ill., on Saturday, October 16th, Dr. Horace Gray, of Boston, Mass., and Miss Katherine Meeker. **Heydemann—Pelonsky.**—In Boston, Mass., on Wednesday, October 6th, Dr. Martin Heydemann and Miss Lillian A. Pelonsky. **Kibourn—Kent.**—In South Norwalk, Conn., on Tuesday, October 5th, Dr. Joseph Austen Kibourn, of Hartford, and Miss Clara Vivell Kent. **Kleinschmidt—McNabney.**—In Sparta, Ill., on Thursday, October 7th, Dr. H. E. Kleinschmidt and Miss Anna McNabney. **MacDonald—Weaver.**—In Bloomsburg, Pa., on Friday, October 8th, Dr. John T. MacDonald and Miss Nora B. Weaver. **Pierson—Starr.**—In New Albany, Ind., on Monday, September 27th, Dr. Percy Pierson and Miss Madge Estelle Starr. **Smcek—Titth.**—In Detroit, Mich., on Friday, October 1st, Dr. Arthur R. Smcek and Miss Helen Titth. **Williams—Christiansen.**—In Denver, Colo., on Saturday, October 2d, Dr. Louis A. Williams and Miss Eleanor Christiansen. **Wilmar—Epperson.**—In Canton, Ohio, on Wednesday, September 29th, Dr. Alvin H. Wilmar, of Paso Robles, Cal., and Miss Edna Epperson.

*Died.*

**Barron.**—In Gray, Ga., on Saturday, October 2d, Dr. R. B. Barron, aged fifty-six years. **Corbin.**—In Ashland, Va., on Monday, October 4th, Dr. N. M. Corbin, aged seventy-three years. **Flinn.**—In Oakland, Cal., on Tuesday, October 5th, Dr. M. Bonner Flinn, formerly of Worcester, Mass., aged seventy-two years. **Gendron.**—In Worcester, Mass., on Tuesday, October 5th, Dr. Joseph E. Gendron, aged seventy-one years. **Hammond.**—In Glyndon, Md., on Sunday, October 10th, Dr. William E. Hammond, aged fifty-five years. **Hunter.**—In Leechburg, Pa., on Monday, October 4th, Dr. William G. Hunter, of Tusla, Okla., aged sixty-nine years. **Kennedy.**—In Mount Olive, N. C., on Tuesday, September 28th, Dr. J. B. Kennedy, aged seventy years. **Kleppinger.**—In Allentown, Pa., on Saturday, October 9th, Dr. Warren D. Kleppinger, aged twenty-nine years. **Klonk.**—In Oakland, Cal., on Monday, October 4th, Dr. F. W. Max Klonk, aged sixty-eight years. **Lefler.**—In Gloversville, N. Y., on Wednesday, October 6th, Dr. Charles M. Lefler, aged sixty-seven years. **Long.**—In Bowmansville, Pa., on Sunday, October 10th, Dr. John A. Long, aged forty-five years. **McCoy.**—In Wenatchee, Wash., on Friday, October 1st, Dr. W. M. McCoy, aged thirty-nine years. **Miller.**—In Charlottesville, Va., on Wednesday, October 6th, Dr. Hiram C. Miller, aged ninety-one years. **Newton.**—In Sherburne, N. Y., on Monday, October 11th, Dr. Homer G. Newton, aged eighty-one years. **Rabon.**—In Cleveland, Ohio, on Sunday, October 10th, Dr. Janet Rabon, aged ninety-two years. **Rihl.**—In Philadelphia, on Sunday, October 10th, Dr. Henry Washington Rihl, aged ninety-two years. **Stiles.**—In Somerville, Mass., on Thursday, October 7th, Dr. Charles W. Stiles, aged sixty-five years. **Sutton.**—In Seattle, Wash., on Friday, October 1st, Dr. Edward O. Sutton, aged forty years. **Thayer.**—In Boston, Mass., on Monday, October 11th, Dr. Samuel C. Thayer, aged fifty-four years. **Wilson.**—In Albion, Me., on Tuesday, October 5th, Dr. George Hamlin Wilson, aged eighty-seven years. **Young.**—In Atlanta, Ga., on Wednesday, October 6th, Dr. F. M. Young, aged fifty years.



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### Original Communications.

#### AN EIGHTEENTH CENTURY QUACK IN FRENCH CANADA.

By WILLIAM RENWICK RIDDELL, LL. D., F. R. H.S.,  
ETC.,  
Toronto.

A lawsuit which took place a century and three quarters ago sheds an interesting sidelight on the state of medicine in French Canada in the eighteenth century. In 1737, Ives Phlem brought an action at Quebec against Madame Marie Turgeon, widow of Jean Bilodeau, based upon an agreement made between her late husband and the plaintiff Phlem; and the following are the facts:

Phlem was a bas Breton, born at Morlaix, some thirty-seven miles east northeast from Brest, France. When a lad he was taught to bleed and to dress wounds; he learned simple remedies for various ailments; and he acquired somewhat of a reputation among his townfolk. But every Breton is by nature a sailor and a wanderer; *naturam expellat furcâ, tamen usque recurret*, and the young Ives set sail from Jacques Cartier's port, St. Malo, for Canada. Arriving there, he was seized with a severe illness, which left him in a deplorable state.

He had the utmost difficulty in making a living; the art which he had in a sense acquired at home in France he could not exercise because he spoke only Breton, a Celtic language closely allied to Welsh and ancient Cornish, and as different from French (which with the exception of some Indian dialects was the only language spoken in Canada) as Gaelic is from English. This difficulty, however, was at length overcome; and he secured a fairly large list of patients who consulted him for different maladies; his reputation grew and he became well known throughout the colony for his treatment, especially of cancer.

In 1742, he settled in St. Anne de la Pêrade, a village on the north side of the St. Lawrence, about fifty miles above Quebec, at the mouth of the river St. Anne; a village in what is now Champlain county, with a present population of about 1,500, and even then of some relative importance. He was held in great esteem by the people and his reputation as a surgeon increased and broadened.

In 1735, there came to consult him Jean Bilodeau, a farmer of the Parish of Cotte (*Côte*) St. Francis, on the Island of Orleans (*Île d'Orléans* as the contemporary manuscript has it). Bilodeau was suffering from a cancer in an advanced stage; it had al-

ready eaten into the lower lip on the left side. He had been attended by a competent surgeon of St. Jean on the Island of Orleans, Jean Mauvide, who treated him for several months without success and gave an alarming prognosis. Bilodeau then went to Quebec and consulted Sieur Berthier, surgeon to the Hôtel-Dieu and the Jesuit, Boispineau; they both told him that his case was hopeless and that the malady would cease only with his life.

The fame of Phlem came to his mind and he went to consult this cancer doctor, empiric as he was. Phlem gave him encouragement as is the wont of quacks, and promised to cure him, which is also the universal custom. Phlem kept a private hospital or boarding house for patients residing at a distance and requiring constant attention; and accordingly Bilodeau went to live with him, September 16, 1735. Phlem took no chances: he went with his new patient to the curé of the parish and had a written agreement drawn up and signed in presence of two parties. To make certain that the document could not be repudiated, the witnesses were of the highest station, the Seigneur Longval de la Pêrade and Joseph Gouin, the captain of militia in the place.

The *soi disant* surgeon agreed to look after the patient in the best manner possible, for six months commencing September 16, 1735, unless he should be sooner cured, to supply him with all necessary food and also fluid for dressing the wound, drink, washing, and all other necessities of life—and to dress the wound with care twice a day. Bilodeau agreed to pay for the six months 500 livres (a little over \$100), 200 in dry goods, October 1, 1735; 150, October 1, 1736, and 150 in money, October 1, 1737. This agreement was duly entered in the books of the notary, Pollet.

After eight months' stay with Phlem, Bilodeau, in May, 1736, departed for a better world, *parti pour un monde meilleur*; his widow refused to pay and Phlem sued.

It was in vain that he pleaded the parable of the talents which impelled him not to hide in a napkin his one talent of healing—it was in vain that he urged the distance of his village from Quebec—in vain, too, that he produced the minutes officially and notarially certified of an enthusiastic mass meeting held at St. Anne de la Pêrade, at which were present the curé, the seigneur, and *tous les habitants de la paroisse*, which declared confidence in "Doctor Phlem"—in vain he produced many sworn certificates from those whom he had cured of cancer, among them one Grenier, a novice whom the Jesuits were forced to reject because of a cancer of the jaw which Boispineau and the celebrated Doctor Sar-

razin both declared incurable. Boispineau indeed had told him that if the cancer were opened, he would soon die, but if he let it alone he would live longer. Grenier left Quebec for Montreal, but hearing of Phlem he stopped at St. Anne, where he remained three months and left wholly cured; Phlem ~~then~~ the tumor had took out a portion of the jaw-bone.

The court dismissed the action so far as it was based upon services as a surgeon, but allowed for board and lodging for the eight months 125 livres (say \$27.25) and also for thirty livres paid by Phlem for Bilodeau; and ordered Phlem not to hold himself out as a surgeon unless he received a license from Lajus, the deputy of the king's prime surgeon. Moreover, the curé, the seigneur, and the people of St. Anne were rebuked for holding such a meeting and forbidden to hold the like again without permission, while the notary who certified the proceedings was also warned not to certify such minutes.

It does not appear that Phlem ever took out a certificate to practise; but he certainly continued in his course, attending the sick and even receiving them into his private hospital; for in July, 1738, one Nicholas Marion died at his place; in 1738, Paul Desmarests died of dropsy under his care; and in 1742, Gabriel Desmaisons of the same disease.

Phlem died at St. Anne, and was buried there in September, 1749.

It is not to be wondered at that this empiric took cancer for his favorite field of labor; in all ages that has been the case, and in all ages there have been many marvelous cures of "cancer." Every benign tumor is liable to be denominated cancer and every cure of such a tumor heralded as a medical triumph. Accordingly, the percentage of cures by the cancer quack is very high, and it is no wonder that Phlem had a *réputation surtout pour les chancres ou il a fait des cures considérables connues dans tout l'étendue de la colonie.*

Good John Wesley used tar water for cancer. He tells us: "A cancer under the eye was cured by drinking a quart of tar water daily, washing the same with it, and then applying a plaster of tar and mutton suet melted together. It was well in two months, though of twenty years' standing." Or if there is a cancer in the mouth, he recommends the ash of scarlet cloth blown into the mouth and throat. That, he tells us, "seldom fails." Another tried cure of his for cancer is this: "Take horse spurs (a kind of wart that grows on the inside of a horse's forelegs), dry them by the fire till they will beat to powder. Sift and infuse two drachms in two quarts of ale; drink half a pint every six hours, new-milk-warm. It has cured many. Tried."

Samuel Thomson, the botanical physician, prescribes a poultice of boiled red clover heads. Some of his followers used blood root (*Sanguinaria canadensis*) made into a salve with beef's gall. All these are harmless, and if they did not cure they did no harm.

The notorious empiric, St. John Long, in the early part of the last century, used a "corrosive, inflammatory, and dangerous liquid" (apparently arsenous acid solution) as a wash; he cured many and killed some.

Less than fifty years ago a well known medical practitioner in this Province acquired fame by his arsenical plasters for cancer, and many others have advanced other remedies, equally efficacious or equally inefficacious. In a benign tumor, or where imagination can effect a cure, a cure is effected; elsewhere the effect is nil or worse.

It must be said that our quack Phlem displayed more judgment than the qualified surgeon Boispineau in opening up the tumor and removing the necrosed bone of Grenier's jaw rather than allow it to remain as Boispineau advised.

(OSGOOD) HALL.

## PITUITARY EXTRACT.

*A Note of Warning Regarding its Use.*

BY SAMUEL WYLLIS BANDLER, M.D.,

New York.

Adjunct Professor, Diseases of Women, Post-Graduate Medical School; Attending Gynecologist, Beth Israel Hospital.

It is timely that a warning note should be issued concerning the use or rather misuse of pituitary extract. Several cases of rupture of the uterus have been reported at medical society meetings; reports of others have come to my ears, although none directly under my notice. Hence I believe it is wise to give a word of advice concerning this valuable drug.

Nothing has been introduced into obstetrics in my time to approach the value of pituitary extract, if used in the proper manner and in proper doses. Pituitary extract increases the contractile power of the uterus. It is evanescent in its effect, the influence lasting, in proper doses, about half an hour. Various preparations are used, put up in ampoules.

I never use more than a third of an ampoule at the first hypodermic injection, occasionally, when necessity demands, going as high as one half an ampoule. *This is one of the important factors to be borne in mind;* otherwise, we get an extremely powerful contraction of the uterus which may do no harm, provided that all conditions are normal, but which may be productive of harm, and which certainly is bound to be dangerous if conditions are abnormal.

Inasmuch as we have in pituitary extract a drug which increases the contractile force of the uterus, it is clearly apparent that, if the uterus contracts upon a body within it which will not advance and cannot advance because of malposition, or a malproportion between it and the pelvic bones, if it contracts powerfully enough, it is bound to be injured, and a rupture may take place.

In some instances it has been reported that rupture was so complete that the cervix was almost completely amputated from the fundus. Now, some men may make the error of attempting to put on forceps when the head is above the pelvic brim, not engaged, not moulded, etc. A skillful man may do this, a very skillful man, to test the possibility of moulding, but in general this is a most unwise procedure. If attempted by men who do not realize the indication for forceps, the worst that may happen is that no progress is made and the fetus is destroyed.

Then a specialist or consultant is called in to extract the fetus by version, craniotomy, or otherwise.

With pituitrin it is different. A man may not recognize that the presentation is abnormal; that the head is not firmly engaged, fixed, and moulded in the pelvic brim; he may make no examination, and thinking that pituitary extract is a cure all, a drug that brings the fetus out within a relatively short time, without knowledge of the position and the presentation, he uses pituitary extract. Some men are so deficient in tactile sense, that they do not recognize even gross malproportions or transverse presentations.

Needless to say, if pituitrin is used even in small doses, harm may result, but if used in what is considered the average dose by many practitioners, serious injury is bound to result, and it is no wonder that we hear at the present time of rupture of the uterus.

Now the logical view is as follows, and my experience has shown me that these are essential preliminaries: First, we may be dealing with a primigravida, where the head is firmly fixed, moulded, and engaged in and through the pelvic brim. This assures us of a proper proportion and relationship between the vertex and the pelvic bones, and we know that with or without forceps, with or without pituitrin, this baby can be born through the normal channel, and ought to be born, barring unusual accident, alive.

Now, in a case of this sort, if the progress of labor is slow, whether in the first stage, or particularly in the second stage, it is the duty of the physician in charge to decide what to do. He may give the patient a hypodermic injection of morphine and atropine, and allow her to rest a while, expecting the uterus then to make more powerful contractions and deliver the fetus; or after trying this method, or without it, he may apply forceps; or he may do what I have done for the past three and a half years, i. e., in cases where, in spite of normal conditions, the uterus is not propelling the fetus rapidly enough, use pituitary extract in one third of an ampoule doses.

I can say that since I have adopted this method in this class of cases, I have not been compelled in a single one of my private patients to use the forceps. The effect of the extract is very transitory, lasting only half an hour. In some few cases it seems to start the pains so that they go on rhythmically from that time on, and only an occasional additional hypodermic injection is necessary.

In other instances, the effect wears off, and we must repeat the drug every half hour. I have given eight, ten, and even twenty such injections, and often more in a large number of cases (and thus have avoided the use of forceps), without injury to mother or fetus.

In fact, I fail to see how this method, if adopted and carefully followed, can result in harm, because—and this I wish to repeat with emphasis—the drug used in this manner, and with the indications properly understood, only develops a more progressive labor of the same type as we find in the average normal case, i. e., one which runs along to delivery within seven, eight, or ten hours without any delay in the first, second, or third stage.

In a slow, painful, nonprogressive first stage, if the head is moulded and fixed in and through the brim, pituitary extract is a splendid help.

134 WEST EIGHTY SEVENTH STREET

## FILARIASIS ASSOCIATED WITH SCHISTOSOMIASIS.

BY RANDLE C. ROSENBERGER, M. D.,  
Philadelphia,

Professor of Hygiene and Bacteriology, Jefferson Medical College.

CASE. A. M. E., aged thirty-one years, born in Cairo, Egypt, first came under observation, July 9, 1915. For ten years he had traveled through Syria, Germany, France, and the last three years had been a resident of the United States. When seven or eight years of age, he was said to have had bilharziasis (passage of blood in the urine). This lasted "until he was twenty-one years of age." At twelve years of age had chyluria, which lasted for five weeks. Both of these conditions apparently cleared up until ten weeks ago. During this period (ten weeks) he had passed milky urine which resembled chyluria. No symptoms were complained of, nor were any conditions noticed indicative of filariasis.

Examination of the urine and the blood were made on several occasions, with the following results:

Urine: Cloudy, almost milky in appearance; specific gravity, 1.025; acid reaction; albumin present; and upon microscopic examination presented the following: The sediment was almost entirely cellular, consisting of red blood cells, lymphocytes, and squamous epithelial cells. Very few bacteria were noticed. In addition to the cellular elements there were microfilaria in a motile state and possessing all the morphological characteristics of *Microfilaria bancrofti*. Beside the microfilaria ova of *Schistosoma hæmatobium* were seen. These ova possessed the terminal spine and a number of miracidia were observed.

Blood: At 11:30 a. m., no parasites were observed. The patient was then asked to make spreads every three hours during the twenty-four and to bring these in for examination. In dry preparations, stained with Leishman's stain, parasites were observed in specimens obtained at 6 p. m., 9 p. m., and 12 midnight. None were observed in the six films earlier than 6 p. m. Forty-eight hours later, three c. c. of blood were obtained from a vein, placed in one per cent. solution of citrate of sodium, and then treated with a 0.5 per cent. solution of acetic acid, shaken gently, and centrifugated according to the method recommended by Smith and Rivas (*Amer. Journ. Trop. Dis. and Prevent. Med.*, 11, 6, Dec., 1914).

In studying the sediment obtained in this manner, microfilaria were observed at 11:30 a. m. There was no anemia and the red blood cells appeared normal; no leucocytosis was evident and the differential blood count showed the following:

|                         |              |
|-------------------------|--------------|
| Polynuclears .....      | 50 per cent. |
| Small lymphocytes ..... | 26 per cent. |
| Large lymphocytes ..... | 9 per cent.  |
| Eosinophiles .....      | 15 per cent. |

Presuming that salvarsan might be of service, an injection of this drug was given. The case is extremely interesting in showing the combined infestation of filaria and schistosoma. According to the patient, the natives of Egypt are cured spontaneously at the age of twenty-one years of schistosoma infestation. Another exceedingly interesting feature is the presence of lymphocytes in the urine, constituting a lymphuria, and the absence of chyle.

In one of the many filaria noticed in the urine two hours after it was first observed, was the occurrence of two swellings or dilations in its body which lasted for at least ten minutes. After this time, one of the dilations disappeared, but the remaining one persisted for at least thirty minutes,



after which time it also disappeared, and the parasite assumed its normal morphology. After twenty-four hours at ordinary room temperature, upon a slide sealed with petrolatum, motility of this parasite was still evident.

The case also showed the apparently continued presence of the parasites (microfilaria) in the blood stream, both night and day. Another interesting factor is that the patient has been away from Egypt for the past thirteen years, and a resident of this country for the past three.

I wish to extend my thanks to Dr. John A. Roddy for the courtesy of permitting me to report this case, and I regret that a further study cannot be made on account of the patient's departing immediately for his home in Egypt. A letter, received two weeks after the salvarsan was injected, contained the information that he felt a great deal better and that the urine was "entirely normal" again. Whether the ova and microfilaria were still present in the urine after the medication, I am unable to say, as I was not fortunate enough to obtain another specimen.

## HYPOPITUITARISM.

### *A Report of Two Cases.*

BY L. NAPOLEON BOSTON, A. M., M. D.,  
Philadelphia,

Professor of Medicine, Jefferson Medical College;  
Attending Physician, Jefferson Hospital, Philadelphia.

During my service of 1914 and 1915 at the Philadelphia General Hospital, there appeared for treatment in the medical wards of this institution, two cases illustrative of Fröhlich's syndrome. Both of these cases gave evidence of luetic taint, as was shown by a positive Wassermann reaction.

In cases where hypopituitarism dates from a period as early as adolescence, there is to be seen, not only failure of full development of the long bones, but male subjects, in addition, assume a feminine type of skeleton, as well as feminine characteristics pertaining to associated adiposities. A notable fea-

tures of the finger nails, the actual shortness of the fingers, unusual width and thickness of the hands, and the apparent edema both of the fingers and hands were apparent to a less marked degree in the



FIG. 2.—Man, aged twenty-three years; diagnosis, hypopituitarism. Note width of face and height of frontal bone, also absence of beard and hair in axilla and pubic regions. The sexual development is about what is to be expected at twelve years of age.

male subject than in the female (Fig. 1). The surface of the hands did not pit upon pressure, and while the skin appeared to rest in unusually deep folds, to the feel it lacked the sensation of health. In the male subject the skin at every portion of the body appeared almost identical with that to be found in a child. In the case of the female included in this report hypopituitarism probably developed at or near the time of puberty.

CASE I. P. S., male, aged twenty-one years, of German parentage, born in British Columbia, came to Philadelphia when about ten years of age and since resided in this locality. Mother died of heart disease at the age of thirty-six years. Four older brothers living and well, also four older sisters, three of whom were reported to be healthy. One sister had suffered from a condition somewhat similar to that of her brother. She was five feet four and one half inches in height, and weighed 220 pounds at the age of twenty-six years.

Personal history: Had pneumonia at the age of eleven years after which he suffered from pronounced dyspnea, lasting for two or more years. He had been subject to repeated attacks of vertigo since a child. Periodical attacks of nose bleed had been among his most annoying symptoms during the past ten years; and these were usually antedated by a variable degree of vertigo. Upon the slightest exertion, he often experienced violent attacks of cardiac palpitation. A cousin of the patient informed the writer that during the first ten years of this man's life, he



FIG. 1.—Female subject aged fifty-one years; diagnosis, hypopituitarism.

ture in connection with males thus affected is the smoothness and delicacy of the extremities. In the case here reported this feature was well exemplified by the feminine type of hands. The longitudinal stri-

was unusually stout, weighing approximately one hundred pounds at the age of nine years. It was not until the age of fifteen years that there was noticed an appreciable decline in the patient's general vigor. Since this last named date, he had not at any time been able to do the usual amount of work expected from one of his size and age.

Upon admission to the hospital, he was found to be fairly well nourished and to display certain feminine characteristics of both the face, chest, trunk, and extremities (Fig. 2). The movements of the chest were apparently normal, except over the precordium where there was undue pulsation. There was also slight pulsation above the sternum, and at the fifth interspace, one and one half inch external to the left nipple, where a forcible apex beat was seen. There was a distinct wavelike pulsation in the epigastrium, visible down to a point half way distant between the ensiform and the umbilicus. Cyanosis of the fingers and of the face was present, and was intensified after moderate exercise. His teeth were fairly typical of the so called Hutchinson's type (Fig. 3). The eyelids appeared slightly thickened and gave the appearance of moderate edema. On exertion his respirations became rapid, labored, and were often accompanied by cough with slight expectoration.

The skin on the body and face resembled that of a child. None of the changes usually observed in the male at puberty were present. The mammary glands were considerably larger than normal, and there was an absence of hair in the axilla and pubic regions. Hypoplasia of the genitals was also present (Fig. 2). His mentality was far below that of normal. The lower extremities showed slight cyanosis, and there was some mottling of the skin on the inner surface of the thighs.

Palpation: The pulse was found to be slightly irregular, such irregularity being greatly intensified by exertion, when

the abdomen, its edge was readily palpable at a level, three and one half inches below the apex of the ensiform. There was also moderate increase in the abdominal tension over the right superior quadrant.

Percussion: The area of cardiac dullness was markedly increased downward and to the left. There was also slight increase in the transverse diameter of the heart on a level with the nipple. The area of liver dullness extended to about two and one half inches below the costal margin. Auscultatory percussion confirmed the size of the liver, and further in determining the transverse diameter of the heart to be six and one half inches; while the oblique diameter (apex to base) was seven and three quarter inches. The knee jerks were diminished, as were also the brachial and plantar reflexes. For a short time during the patient's stay in the hospital, he showed a fairly well marked Babinski's reflex.

Auscultation: A few fine rales were audible over the greater portion of both lungs. A rather clear murmur was heard at a point midway between the apex and the second right intercostal cartilage. Owing to the pronounced

arrhythmia, it was difficult to time this murmur. The character of the murmur with its area of distribution and the Corrigan pulse were often the only clinical evidences which served for its classification. When the patient was kept at rest for several hours and then permitted to rise suddenly in bed and to incline forward several times, a distinct diastolic murmur was always present. After such exercises, there were present other signs characteristic of aortic regurgitation, e. g., arterial pulsation.

About two weeks after admission to the hospital, the patient developed one of his rather common attacks of epistaxis. At this time, the bleeding was profuse, and it was deemed advisable to plug the left nostril. Similar attacks of epistaxis were experienced at intervals of ten days to two weeks during the patient's sojourn in the hospital.

On March 24, 1915, the patient complained of failing vision. He was then examined by Doctor Reber, who reported right eye 1/35, left 5/25. Owing to his degree of mentality, it was impossible to determine accurately his color fields.

Feeling that the case resembled so clearly one of Fröhlich's type of hypopituitarism, I directed the resident to aspirate the spinal canal, which was done, and about ten c. c. of clear fluid removed. This fluid was examined both chemically and cytologically by Doctor Rosenberger, whose report was negative.

The patient was then given 400 grams of glucose to determine his sugar tolerance; but at no time did the urine give a reaction for sugar; the chemical examinations were made at the university lab-



Fig. 3.—Hypopituitarism, showing Hutchinson's type of teeth, and enlargement of eyelids, apparent edema of the eyelids, and the unusual coarseness of the face.



Fig. 2.—Hypopituitarism, showing the characteristic features of the disease, such as the shape of the chest, the distribution of body hair, and the presence of adiposities.

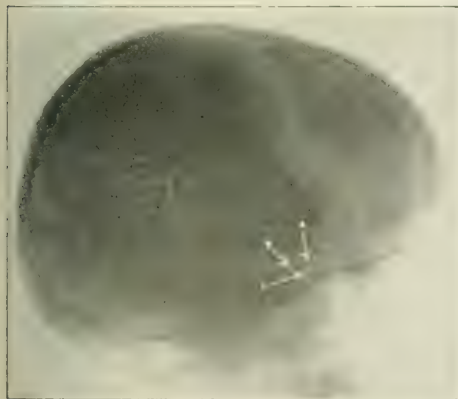


Fig. 1.—X ray of the skull, showing the sella turcica, the anterior clinoid process, and the posterior clinoid process.

the true Corrigan type was detected. At the apex, a slight thrill was perceptible during the first two days of the patient's stay in the hospital; but later examinations failed to detect this clinical feature. The liver could be felt distinctly below the costal margin, and in the median line of

ordinates, by kindness of Doctor Peete. Twelve hours after the feeding of glucose, the spinal canal was again aspirated, and the fluid examined for sugar with negative findings.

The following cranial measurements were made: Intraparietal sixteen cm.; frontal, left to right, thirteen cm.; oblique diameter left frontal to right occipital region nineteen cm.; height of frontal bone seven cm.; distance between chin and highest point of frontal region 18.5 cm.; greatest anteroposterior diameter frontal to occipital regions nineteen cm.

The x ray showed enlarged sella turcica, also hypertrophy of the clinoid processes (Fig. 4). The patient died, May 24, 1915, of cardiac embarrassment complicated by pulmonary edema. Autopsy was refused by his relatives.

CASE II. E. G., female, aged fifty-one years, born in Poland, came to America at the age of thirteen years.

Family history: Three brothers and four sisters all older than this patient were of fair stature and much taller than is the patient. She also stated that none of her brothers or sisters were unusually stout. This patient was the youngest of eight children.

Personal history: Reached the changes of puberty at thirteen years, and married at fourteen. Children were born at the ages of fifteen, eighteen, and until she reached the age of forty years. In all twelve children were born, three of them stillborn, and eight of the others died during the first year of life. There were also three miscarriages. The only child living was a daughter of eighteen years, who was born two years after a line of treatment given the patient while she was at Bellevue Hospital, New York. From her description of this treatment, I was inclined strongly to the belief that she was given inunctions of mercury.

The patient was always stout and stated that she grew until the birth of her first child, since which time she did not increase in height. Between the fifteenth and eighteenth year, her weight increased from ninety-two to 170 pounds, reaching 200 pounds at the age of twenty years. Present weight 220 pounds, height four feet, ten and one half inches (Fig. 5). It was at the age of eighteen, or just prior to the birth of her second child, that she noticed a marked falling of her hair. At this time the hair on the scalp was less affected than was that of the pubic and

axillary regions. The right knee jerk was practically normal, left slightly less marked.

When first examined by the writer, her features together with other cutaneous phenomena strongly suggested hypopituitarism (Figs. 1-5 and 6). As in the previous case, her spinal fluid was examined

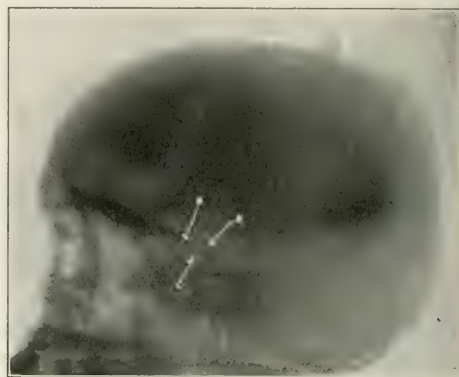


Fig. 7. X ray of the skull, showing marked enlargement of the anterior and posterior clinoid process. Case II, a, anterior clinoid process; b, posterior clinoid process; c, sella turcica.

for sugar with negative results. She then received 200 c. c. of glucose, and the urine was studied for the detection of sugar, with a negative finding. The spinal canal was again aspirated, and the spinal fluid showed but slight tendency to reduce the Fehling's solution. It did not give any reaction with the phenylhydrazin test.

Her skin, while having the appearance of being edematous, did not pit on pressure (Fig. 6). The characteristics of her hands are doubtless best shown in Fig. 1. An attempt to obtain her field of vision was unsuccessful.

The measurements of her head were as follows: Greatest points, frontal to occipital, eighteen cm.; narrowest point between the parietal regions fifteen cm.; greatest transverse distance of the frontal bone thirteen cm.; top of frontal bone to chin, seventeen cm.; oblique diameter (greatest distance) right occipital to left frontal seventeen cm.; height of frontal bone in median line eight cm. (Fig. 6).

From the accompanying figures it will be noticed that both these subjects have peculiarly shaped heads, and the measurements given serve to show that the alterations in the shape of the heads are practically the same in both cases. At no points over the body do these patients display any hard or painful nodules of fat. The accompanying x ray pictures (Figs. 4 and 7) will show the abnormal size of the sella turcica and clinoid processes.

1810 CHESTNUT STREET.

**Injection of Glucose Solution in the Treatment of Eczema Accompanied with Edema.**—C. Laurent, in *Semaine medicale* for July 1, 1914, it is stated, employed, in severe eczema of the legs with marked weeping and edema, intravenous injections of thirty per cent. glucose solution, with pronounced benefit. The injections given were of 250 c. c. (8 ounces) and 500 c. c. (one pint), respectively.



Fig. 5. Patient, Case II, showing characteristic features, undue roundness of the face, height of frontal

axillary regions. Following the birth of this child, she says that the hair of the scalp was partially restored, but there has never been any attempt at a restoration of the hair of the other regions (Fig. 5).

Upon her admission to the hospital, she was found to be suffering from exhaustion. Her tongue was heavily coated, and the neck displayed a large scar resulting from an old abscess. Nothing abnormal was detected by physical ex-



# STATUS THYMICUS ASSOCIATED PROBABLY WITH AN INFERIOR THYROID LOBE.

By HARRIS A. HOUGHTON, M. D.,

Bayside, N. Y.,

Visiting Physician, Flushing Hospital,

(From the Medical Service of the Flushing, Long Island, Hospital.)

The association of status thymicus with certain other endocrine disturbances is sufficiently constant to establish a presumable diagnosis. For instance, active Graves's disease is accompanied by status thymicus with a frequency which justifies x ray treatment directed to the thymus gland whether that organ can be demonstrated or not (Waters, 1). The same may be said of status thymicolymphaticus, which can usually be diagnosed (especially in males) by secondary heterosexual characteristics as indicated by von Neusser (2), Haven Emerson (3), and others. The contour of the body lines, the distribution of the subcutaneous fat, and especially the distribution and sparseness of the hair with sub-development of the sexual organs presuppose thymic overactivity in the formative period of life. At autopsy general involvement of the lymphoid tissue is found, especially the lymph nodes of the spleen, of the enteron and mesenteron, and usually accompanied by hypoplasia of the chromaffin system. There is elongation and narrowing of the aorta, cardiac ptosis, and often general myasthenia. Clinically, the arterial tension is low. This description applies only to true cases of status thymicolymphaticus which may be usually diagnosed by external examination, without recourse to x ray demonstration of the gland itself. These patients are to be regarded as preadolescent types.

A thymus gland enlarged beyond the limits of normality for age and weight, may occur without these manifestations. The case about to be reported, that of Frederick L. P., is one. The shadow of the gland on the x ray plate and by fluoroscope is conclusive and there should be none at his age. Whether it was hyperactive at the time of the ex-

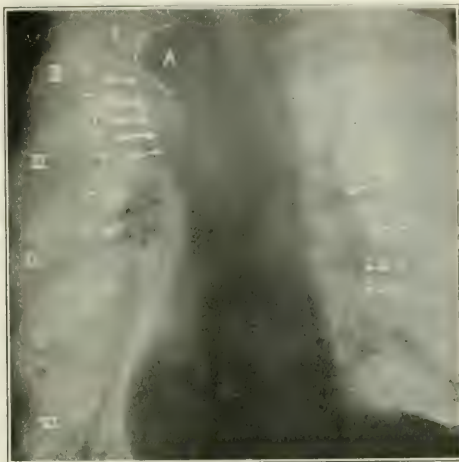


FIG. 2.—Same as Fig. 1, with heart in systole and before the aortic arch became visible from behind the sternum. The outline of the thymus gland is indicated by arrows marked T. Other markings the same as in Fig. 1. Thickened bronchial tubes are also evident.

amination is not a question which can be answered by inspection. During and shortly after puberty it is often possible to demonstrate a thymic shadow in presumably normal adolescents. In morbid conditions, it is often a question whether the symptoms are to be regarded as emanating from this gland.

Status thymicus in adults may therefore exist without obvious lymphatic involvement, stasis of the sex development, or hyperthyroidism. It is probable that these subjects should be regarded as possessing thymic glands which have undergone normal or partial involution as the period of puberty advances. Later it takes on proliferative changes with hyperactivity from unknown causes. This appears to account best for all the facts now known and for the appearance of active thymic tissue under the microscope (Pappenheimer, 5; Hammar, 6). Rejuvenation of thymic tissue is especially apparent in exophthalmic goitre.

The desirability of being able to demonstrate clinically status thymicus is evident from another aspect. Much has been written about thymic death in children. Occasionally we find in literature mention of thymic death in an adult, but the condition has been disclosed at autopsy rather than before (see Daukes, 7). Haven Emerson (8) states that in 288 cases of status thymicolymphaticus which came to autopsy, no other cause of death could be found in 26 cases (9.02 per cent.). This death incidence makes the whole subject of major importance from clinical and medicolegal standpoints. Deaths from "cramps" while swimming, or from



FIG. 1.—Skiagram of the chest, a case of status thymicus. The heart is in diastole, the shadow of the aorta at its maximum (area B, outlined slightly external to the actual shadow by interrupted line). The ptosis of the aortic arch is indicated by its position at the level of the fourth rib. The aberrant thyroid lobe is indicated by the area A, outlined by the dotted line. The arrows marked D point to calcified lymph nodes (tuberculous) which appear through the thymic fat or thoracic omentum (the outlines of which are sharply defined and marked by the arrows C). This fatty curtain is probably the residuum of thymic gland reversion.



tration but when asked to describe this feeling, he was unable to analyze it. He felt as if he had no reserve force. For the past five years had a stiff neck and back. No pain.

Family history: Father's family all living at advanced age and well with apparently no morbid tendencies. His father was seventy-four years old and especially active for his age. His maternal grandmother died of paralysis at seventy years. A maternal aunt was well at fifty-four years. Two maternal uncles were well. His mother had a deforming rheumatism, not severe, which had been called gouty. She had always had a tendency to tremble under excitement. Two brothers were well at forty-one and forty-four years of age respectively, and there was no tendency toward "nervousness." A sister lived but a few minutes. There had been no further deaths in the immediate family.

Previous history: There was no history from the mother of difficulty in starting respirations at birth or of tendency to cyanosis. He was breast fed. At one year of age, had typhoid fever. During infancy was troubled much with flatulent dyspepsia, and during the first year was backward in nutritional development. No history of respiratory or cardiac irregularities. He sustained a compound fracture of the right leg at seven years of age. As to early habits, he was generally allowed to eat freely of what he chose. For a year at the close of the first decade he was markedly constipated, but this wore off.

In the second decade he began to have a mild rose cold each year which persisted to date. He played football and baseball during his high school course, and apparently took a great deal of active interest in sports of various kinds. He was and always had been a tennis player, but since his present symptoms came on, he found he had to drive himself to play and such occasions were usually confined to the vacation period. He considered that he was well until his twentieth year, except for occasional frontal headaches now outgrown.

In the third decade, he began to exhibit a decided rheumatic tendency. This at first took the form of a sciatica sufficiently severe to oblige his being carried down stairs from his room for several months. Severe attack of pink eye at twenty-one years. At thirty years of age, his present symptoms began to assume form. The sciatica became a lumbago with decided limitation in motion. The neck became involved finally, and he was unable to flex, extend, or turn the head to any extent. He sometimes had an annoying giddiness which lasted from ten minutes to half an hour, and came on at least once a week. He also noticed that under excitement he passed a large amount of colored urine.

His general habits were in the main good. He ate abundantly of meat foods. His appetite was fair. Bowels were regular, but he took a cathartic once a month as a precautionary measure. At the sea shore level, his sleep was good. During the vacation periods he was usually at a 2,000 foot level, and sleep was poor. He was inclined to think that his sexual appetite was a little stronger than it should be, but admitted that this phase of his activities did not worry him much.

General examination: Well built man, of distinctly masculine appearance; heavy beard, close shaven; forehead high; dark, swarthy skin; muscular, little fat; "long waisted." The hair of the head was sparse with decided inclination toward baldness. The hair of the axillary space and of the pubic region was heavy, dark, and of a masculine distribution. There was an abundance of hair on the chest and legs. The voice was soft and of medium pitch. He sang a low tenor. The tonsils were scarred and atrophied. The sternocleidomastoid on the right side was prominent with two collections of cervical glands slightly enlarged on the same side. The right trapezius was manifestly atrophied. The right infra-axillary space was likewise partially atrophied. On auscultation over these areas there was a decided muscular crepitus. The thyroid gland was palpable and of normal size and consistence. There was a tumor just below the episternal notch, barely palpable when the patient extended the head. The reflexes generally were normal or inclined to react quickly. The contour of the hips and legs was decidedly masculine. The gluteal prominences were underdeveloped. The testicles and penis were normal, though the abdominal rings were large. (For the heart, see discussion.) The lungs showed evidences of slight emphysematous areas in sev-

eral places. The expiratory murmur in the spaces near the right auricle and the left ventricle was prolonged without change in pitch. There was an area in the left scapular region of relative dullness and atelectasis. The abdomen was negative, the abdominal muscles being apparently strong and with no tendency toward obvious ptosis. The measurement about the hips was 0.81 metre, and about the shoulders, 1.1 metre. The blood pressure was 160 to 190 mm. Hg.

Blood: Total erythrocytes, 4,190,000; hemoglobin, 95 per cent.; index, 0.84; total leucocytes, 9,400; polymorphonuclears, 57 per cent.; small lymphocytes, 32 per cent.; large lymphocytes, 8 per cent.; eosinophiles, 3 per cent.; otherwise, including Wassermann test, negative.

Urine: Total amount in twenty-four hours, 2,000 c. c. Specific gravity 1.010. Cloudy. No sediment. Slightly acid. Negative as to albumin by three tests. Sugar, negative. Indian, very moderate. By microscope, crystals of amorphous urates.

The gastric contents (test meal of bread and water withdrawn in one hour).<sup>1</sup> The consistence was thin or watery. Large amounts of ingested bread in lumps and unchanged. Distinctly pathological amount of mucus. No free acid. Combined, 24. Otherwise, negative.

Stools (portion marked off after ingestion of raw beef sandwich) yellow, soft, normal odor. The striations of the muscle fibres were lost or had faded. There were not many fibres present. A special effort was made to account for the eosinophilia, without success. Otherwise negative. The differential bacterial count, using Gram stain and after the manner advised by MacNeal, Latzer, and Kerr (12), was as follows:

Gram negative:

|                           | per cent. | Number |
|---------------------------|-----------|--------|
| Colon type .....          | 10        | 45.9   |
| Other negative rods ..... | 6.3       | 25.3   |
| Negative cocci .....      | 3.6       | 8.4    |

Gram positive:

|             |      |      |
|-------------|------|------|
| Rods .....  | 9.4  | 5.7  |
| Cocci ..... | 70.7 | 11.3 |

Approximate relation of living to dead bacteria, as shown by capacity for taking stain, one to six per cent.

*Diagnosis by x ray.* Two x ray pictures of the chest are given, one, as it so happened, with the heart in systole (Fig. 2) and the other with the heart in diastole (Fig. 1). The shadow of the thymic gland is well shown in the former. There is the characteristic pear shape, with base directed upward to the "critical space of Grawitz," and what is most important in differentiation, the increased density over that of the contiguous lung. This shadow was visible on fluoroscopic examination, moving outward and backward with each cardiac cycle, the movement apparently determined by the contiguous aorta. It did not move with respiration (Houghton, 13). It did not appear to have up and down movement with swallowing or extension of the head.<sup>2</sup>

*The inferior or aberrant lobe of the thyroid.* In the x ray picture of the chest, the thymus embraces at its upper left margin, a second more dense shadow, the outer border of which is continuous, for a space, with that of the thymus (Fig. 2). This is probably an aberrant or ectopic lobe of the thyroid, or possibly the remains of an hypertrophied isthmus. It is probably the body felt in the episternal notch. It moves upward into the notch as the head is extended and with swallowing. On fluoroscopic examination, it moves markedly under similar circumstances. It is differentiated from the thymic shadow

<sup>1</sup>Although the patient made an heroic attempt to retain the duodenal tube for the withdrawal of duodenal fluid, he was unable to

<sup>2</sup>I am indebted to Dr. F. L. Satterlee, Jr., roentgenologist of the Flushing Hospital, for the x ray plates and to Dr. A. F. A. Wiggers for the clinical pathology.



by difference in density and in its characteristic movements. Inferior or aberrant thyroid lobes are found and removed at infrequent intervals in large surgical clinics. There were no constitutional symptoms of hyperthyroidism.

*Heart and aortic arch.* On auscultation, the heart sounds were intensified, the systolic pause was shortened, and the second sound accentuated. There was marked respiratory arrhythmia. The association of shortened systolic pause and respiratory arrhythmia have been constant features of my cases to date, the latter of which probably indicates vagus involvement (Wilson, 14). These are characteristics, of course, not confined to status thymicus. The x ray also indicated a moderate bilateral hypertrophy and a normal ventricular excursion (fluoroscope). The cardiopneumostasis can best be appreciated in Fig. 5. The aortic arch is plainly indicated in the first figure of the chest (area B, Fig. 1). It is on a level and directly behind the fourth rib below the aberrant thyroid and in relationship with the thymus. This indicates a ptosis of the arch. On fluoroscopic examination, the excursion of the aortic arch was excessive, indicating a possible thinning of the wall. The shadow of the arch on the plate is somewhat enlarged.

These associations have been noted by previous observers at autopsy, but their demonstration by x ray has heretofore been neglected. Inasmuch as they are constant features of status cases, their presence is confirmatory of the diagnosis (Wiesel, 15; von Neusser, 16; Kolisko, 17). Cardiopneumostasis as revealed by percussion has been urged as a danger signal in the administration of ether, without reference to the possibility of its being associated with status thymicus (Humphry, 18). Wiesel is of the opinion that thinning of the aortic arch is the result of chromaffin deficiency (demonstrated at autopsy), the intermediate step being arterial hypotension. According to von Neusser (19), the lowered tension causes overactivity of the heart and a moderate hypertrophy, which is frequently if not always found in status cases, and which is in the nature of a compensatory reaction.

This theory appears to account for the facts in low blood pressure cases, but, as a matter of fact, premature high blood pressure has been a feature of most of my thymus cases. In one case, a young woman twenty years of age, the systolic pressure was 160 mm., obviously primary cardiovascular disease. Frederick L. P.'s is a high blood pressure case (160 mm.) at thirty-six years. Certainly high blood pressure may accompany an hypertrophic thymus gland as it did in the case of Agnes C., though it must not be presumed from this fact that its secretory power is augmented at the time the pressure occurs.

*The gastrointestinal tract.* As in Agnes C., there is a six and a half inch gastropneumosis, with appropriate ptosis of the colon and flexures. This is demonstrated by the gastrointestinal x ray series. From the constancy of the shadows at various time intervals in the region of the cecum, it is proper to conclude that adhesions are present, possibly a true Jackson's membrane. It is also evident from the character of the shadow that the cecum contains fecoliths, which are more or less permanent residents. The motility approximates the normal. The

bowel movements of the patient were said to have been regular.

From a clinical standpoint, there is no special reason why Frederick L. P. should have had Lane's colonic syndrome. For a period of five years in the second decade, he was an athlete. The muscles of the abdomen had good tone, notwithstanding the thymic state. No external signs suggested a diagnosis of splanchnic ptosis. It appears that Lane's explanation of the various lesions about the large intestine which have received his name, does not account for the condition in this case quite so well as a theory based on the thymic state. The aortic ptosis and the cardiac ptosis have been emphasized, and it appears that the gastropneumosis and the condition and position of the large intestine (especially the cecum) were part of the same general corporal lassitude. Similar gastrointestinal changes have been noted by others, though only at autopsy. Von Neusser (19) speaks of abnormal bowel length, and Shiota (20) of the abnormally long appendixes which these patients have, and the tendency exhibited to form enteroliths and fecoliths. The true status thymicolymphatic patients have enlargement of all the deep lymphoid tissue of the body, especially of the mesenteric, retroperitoneal glands, and of the lymphoid tissue of the intestinal wall. This includes the highly developed lymphoid tissue of the appendix. The appendix in this case is probably marked by the shadow indicated. The x ray shows a probable pathological appendix, though he has not had symptoms indicating it.

The examination of the gastric contents one hour after a meal of bread and water suggested hypochlorhydria and gastrosuccorhea. This is not to be wondered at in view of the ptosis. My experience is in accord with that of Sandrock (21), who recently reported anomalies of gastric secretion in ptosis. There are few exceptions to the rule that long standing ptosis is accompanied by deviations in secretion. There was nothing in the habits of life disclosed at examination which would account for these clinical discoveries.

*The blood.* The differential white blood cell count is normal. This is not the classical blood picture of active status thymicolymphaticus. There is usually a lymphocytosis of the mononuclear variety. So many cases of status thymicus are associated with pulmonary tuberculosis, that it appears that this infection may in some instances obscure or affect the differential count. On the other hand, there is good reason to believe that an active thymus would materially influence the blood picture. The small thymic cells are morphologically identical with the lymphocytes of the blood, and there are probably no morphological differences from the lymphocytes of the lymph nodes (Pappenheimer, 22). While my cases have not yet been sufficiently numerous to justify more than a suggestion, it has appeared quite possible that the activity of the thymus as to its possible internal secretion may be judged by the presence of moderate relative lymphocytosis.

*Percussion as an aid to diagnosis.* Blumenreich (22) has developed a special method of percussion whereby he believes that the thymus can be demonstrated in infants. After the sixth year of life, however, he found that the "frequency with which thymic dullness could be demonstrated increased."

In other words, after that period, as a method of examination it was not reliable. One of our problems has been to show the value of percussion as a method of examination in adults. To this end, there has been prepared a "percussion chart" of the chest of Frederick L. P., and this should be contrasted with the x ray pictures. Percussion was carried out in the following manner: Each interspace was percussed with a medium stroke from without inward, and the first change in note toward dullness, marked. The outer lines on both sides, therefore, indicate the area within which there is more or less decreased resonance and includes thymus, great vessels, and heart. The line of absolute cardiac dullness is evident. By comparison with the x ray plate it can be quickly seen that the areas of relative dullness in relation to the left ventricle and right auricle are broader than normal, and that thickened bronchial tubes in these positions have influenced the note. Skilled auscultation might have led to a better understanding of the conditions, but the final definite method of decision must be the fluoroscope, or x ray plate. In the first and second left interspaces, the thymic area corresponds very closely with the area of relative dullness. Without the x ray evidence, however, we should have hardly been justified in making a final diagnosis, especially in the presence of other chest conditions, such as tuberculosis, aortic aneurysm, and mediastinal tumor. The question naturally arises, What has produced the relative dullness in this case in the third, fourth, and fifth left interspaces? From autopsy findings and the characteristic appearance on the x ray plate, it is believed that the substernal fat is the cause. This is a curtain or sheet which lies directly under the sternum and is undoubtedly the normally persisting remnant of former thymic tissue. Boggs (24) has rightly stated that this cannot be distinguished on percussion from thymic tissue. It is only by major refinement in technic that it can be distinguished by x ray plate or fluoroscope, and not always with certainty. It is most apt to be confounded with that form of thymus gland which projects downward over the heart, which has been designated "bicornate," the fingers or projections of which are in immediate contact with the left ventricle and right auricle. There appears to be no way by which these finer differentiations can be made, except by combining all the knowledge gained from various methods of examination, especially that by means of the x ray.

*The metabolism of calcium in status thymicus.* The literature on this subject has been recently reviewed by Sajous (25), and there is no necessity for further consideration here, except to call attention to the evidences of premature calcification of the ribs as shown by the x ray plate and possibly the condition of the back and neck muscles.

*The relation of symptoms to the thymic state.* The symptomatology of status thymicus has never been correlated, so far as I know. Nearly all the patients whom I have studied thus far, including the patient under discussion, have complained of early and severe muscular tire. They awake in the morning, refreshed from sleep, but as soon as daily duties have begun, strength goes. Wiesel (26) has given this symptom as predominating in three cases which came to autopsy and Cheatle (27) one case. A few

others have mentioned this as a symptom in a casual way. It is quite probable that the results of treatment would indicate more in this case than usual, for Frederick L. P. was not the kind of a man to allow a blue light reflected toward the chest to influence his judgment. He is in the banking business. The first series of x ray treatments by Doctor Satterlee occupied four weeks and a total of twenty-two Holtzknicht units were given. After the second treatment the patient began to improve, especially as regards the symptoms of early fatigue and nervousness. He was able to do twice his normal amount of work, made necessary by departure of one of his fellow workers on a vacation. He did this with comparatively little fatigue at the close of the working day. The feeling as if "he were on the edge of nervous breakdown" also disappeared. How permanent these effects will be cannot now be stated. It is, of course, not expected that the torticollis will be affected by this procedure.

It should also be stated that the blood pressure after the second treatment returned to normal, where it had not been for some years, and has remained normal to date. It is possible that direct irradiation of the thymic region accomplished this result. Static currents which are pronounced about any x ray equipment, and which are known to reduce blood pressure temporarily, may have been responsible. If the latter hypothesis is correct, the pressure should assume its former level after a time.

#### REFERENCES.

1. WATERS: *Jour. A. M. A.*, lxiv, 1392, 1915.
2. VON NEUSSER: *Zur Diagnose des Status Thymicus*, 1907.
3. HAYEN-EMERSON: *Arch. Int. Med.*, xiii, 169, 1914.
4. *Ibid.*, xv, 881, 1915.
5. PAPPENHEIMER: *Arch. Intern. Med.*, l, 1916.
6. HAMMAR: *Arch. Intern. Med.*, l, 1916.
7. DAIKINS: *British Med. Jour.*, i, 17, 1909.
8. EMERSON: *loc. cit.*
9. WARTHIN: *Archives of Pediatrics*, August, 1909.
10. WIESEL: *International Clinics*, ii, 15, 288, 1905.
11. HUGHES: *Med. Rec.*, 1915.
12. MACNEAL, LATZER, and KERR: *Jour. of Infect. Dis.*, vi, 128, 1909.
13. HOUGHTON: *Jour. A. M. A.*, lxi, 1915.
14. WILSON: *Arch. Int. Med.*, xvi, 86, 1915.
15. WIESEL: *Intern. Schriften und Vorträge*, 1909, 29.
16. VON NEUSSER: *loc. cit.*
17. KOLISKO: *Ueber plötzlichen Tod aus natürlichen Ursachen, Handbuch der ärztlichen Sachverständigenkunde*, ii, 1906.
18. HUMPHRY: *Proc. Royal Soc. Med.*, iii, 1910, section on anesthesia, p. 51.
19. VON NEUSSER: *loc. cit.*
20. SHLOTZ: *Hier. Kun. H. G. G. G.*, 31, 1900.
21. SCHEIDT: *Johns Hopkins Hosp. Bull.*, xxvi, 262, 1915.
22. BLUMENREICH: *Vide Basch and Rohm, Amer. Jour. Dis. Children*, iii, 84, 1912.
23. PAPPENHEIMER: *Amer. Jour. Anat.*, xiv, 299, 1913.
24. BOGGS: *Trans. Assoc. Amer. Physic.*, xxvi, 353, 1911.
25. SAJOUS: *New York Medical Journal*, cl, 492, 1908.
26. WIESEL: *International Clinics*, ii, 15, 288, 1905.
27. CHEATLE: *British Med. Jour.*, i suppl. 157, 1910.

## THE EFFECT OF SMOKING ON THE CIRCULATION.\*

By JOHN AIKMAN, M. D.,

Rochester, N. Y.

#### HISTORICAL.

The civilized world first learned of tobacco in 1492 when Columbus discovered America and observed that the native Indians had the novel and peculiar habit of smoking tobacco leaves in oddly shaped pipes. Later the explorers of the new continent found it an almost universal custom and that smoking was wrought into the religious and ceremonial rites of the savages. This custom among the Indians seems to have been immemorial. In 1558, Philip II of Spain delegated Francisco Fernandez, a physician, to investigate the natural resources of Mexico, and among the products

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brought to Europe by Fernandus was the new plant, tobacco. The credit for this introduction is often given to Jean Nicot, French ambassador to Portugal, who in 1559 sent tobacco to Queen Catharine de Medici as a cure for headache. It is stated that the queen in time became an inveterate smoker. The word nicotine is derived from the name Nicot.

In the same year, 1559, tobacco was introduced by the Portuguese into India and the habit soon

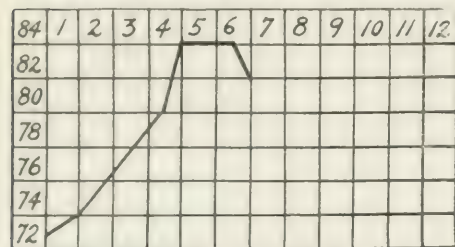


FIG. 1. Effect of smoking on blood pressure. While smoking the systolic pressure increased 8 mm., pressure increased 2 mm. The charts show the effects rate. The column to the left shows the rate a minute.

spread over the far east. Sir Francis Drake and Sir Walter Raleigh obtained tobacco from Governor Lane of Virginia, and in 1586 Ralph Lane was credited with being the first English smoker. Raleigh cultivated tobacco on his Irish estates, and through his great influence the use of tobacco quickly became the fashionable habit at the court of Queen Elizabeth.

During the seventeenth century the use of tobacco increased to a great extent, in spite of all laws and most severe punishments. Even capital punishment and excommunication were resorted to in some instances without checking the habit.

There are fifty native species of *Nicotiana* in America, but few are of value. All foreign tobacco was introduced from America, and the effects of soil and climate so change the nature of the plant that the varieties of tobacco are most numerous. The cultivation was begun in Virginia early in the seventeenth century, and tobacco soon became one of the most important agricultural products of several countries. In fact the governments of several countries have a monopoly over its production: 953,734,000 pounds were raised in the United States in 1913, and over 578,000,000 pounds were consumed. It is estimated that the world product in 1912 was 2,835,000,000 pounds.

The value of the product in the United States was over \$416,000,000. The value added by manufacture was over \$239,000,000, an increase of fifty-eight per cent. in ten years. This puts tobacco production ahead of the production of bakeries; iron, steel and blast furnaces; automobiles; canning and preserving; butter, cheese, and milk; gas, illuminating and heating; and numerous other big industries.

#### THE TOXIC ELEMENTS.

Tobacco contains a large number of chemicals which are poisonous to animals if taken in sufficient quantities; chief of these is nicotine, which is said to be nearly as poisonous as hydrocyanic acid. Of

nicotine Hare (1) says: "One thirty-second of a drop will kill cats and dogs." But when we see men chewing tobacco in its strongest forms, from which they must certainly extract much of the soluble content, it is evident that such figures cannot apply to tobacco as it is used by man.

The laboratory of the *Lancet* (2) reports that by a new process of separating, a smaller proportion of nicotine is found, and also points to the fact that an analysis of tobacco is not an analysis of its smoke. These figures are very instructive and show facts far different from the opinions generally held in regard to cigars, pipes, and cigarettes.

THE LANCET'S DATA.

| Form.                      | Nicotine in Tobacco. | In Smoke of Pipe. | In Smoke of Cigarette. |
|----------------------------|----------------------|-------------------|------------------------|
| Cigarette, Virginian No. 1 | 1.60 per cent.       | .74 per cent.     | .12 per cent.          |
| Cigarette, Virginian No. 2 | 1.60 per cent.       | .60 per cent.     | .06 per cent.          |
| Caporal tobacco            | 2.60 per cent.       | 2.20 per cent.    | .95 per cent.          |
| Cigarette, Turkish         | 1.38 per cent.       |                   | .51 per cent.          |
| Cigarette, Egyptian        | 1.74 per cent.       |                   | .21 per cent.          |
| Smoking mixture, No. 1     | 2.85 per cent.       | 2.20 per cent.    | 2.25 per cent.         |
| Smoking mixture, No. 2     | 2.81 per cent.       | 1.53 per cent.    |                        |
| Cigar, Havana              | .64 per cent.        |                   | .20 per cent.          |
| Cigar, British             | 1.24 per cent.       |                   | .03 per cent.          |

This analysis demonstrates that, while a cigarette made of caporal tobacco contains 2.6 per cent. of nicotine, the smoke contains but 0.95 per cent. nicotine, and that other varieties show less nicotine in smoke than in the original tobacco. The *Lancet* also states that furfural, fifty times as strong as alcohol, is one of the most harmful constituents of tobacco.

Cushny (3) avers that tobacco smoke, whether from a cigar or pipe, contains certain amounts of nicotine as well as pyridine and many of its compounds. Lehmann (4) also asserts that nicotine is practically the only toxic substance of importance

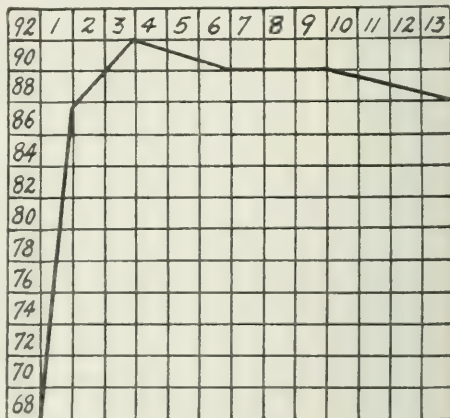


FIG. 2. Case 151. Aged twenty years. Twin brother of patient in Case 150. Smoked pipe and cigar frequently, cigarettes occasionally. Heart and pulse normal. Inhaled. Smoking was stopped after seven minutes; ten minutes after the stop, the pulse rate rose to 70. While smoking the systolic pressure fell 2 mm., and the pulse dropped to 68. In Case 150, a similar effect on the twin brother, showing a greater effect on the heavy smoker.

in tobacco smoke, adding that the other poisons are not important in the amounts present and as tobacco is usually smoked. Zulinski and Zebrowski, (5) also find nicotine in tobacco smoke. M. Le Bon (6) found that nicotine was broken up in



tobacco smoke, but that it was converted into other pyridine products just as poisonous. This latter report helps to explain the percentages of nicotine found in the *Lancet* chart. In fact Turney (7), in the *Medical Magazine*, insists that the original

terious effects. The figures also seem to show that the more nicotine is broken up in tobacco smoke, the more harmful it becomes.

#### EFFECTS OF TOBACCO SMOKE.

While much has been written about the effects of nicotine and tobacco on the human body, most of the investigations have been with nicotine itself or with extracts of tobacco, and there are comparatively few accurate reports on the effect of tobacco smoke. In reading the literature on the use of tobacco, we are impressed by the fact that much of it is written by persons greatly opposed to the use of the plant and naturally prejudiced.

There are many reports of acute poisoning, and no doubt they are correct; but certainly the cases in which smoking has caused serious acute or chronic poisoning are rare. While it is interesting to know how poisonous nicotine and tobacco may be if given hypodermically or by mouth, such reports have little influence on the millions of smokers using tons of tobacco daily without marked effects. In the study that follows, I will endeavor to treat only the effects of tobacco as it is used in ordinary smoking.

In 1885, Hare (14), in a remarkable essay on the use of tobacco, gave the results of many experiments, but nearly all were with nicotine. He decided that tobacco smoking increases the pulse rate and decreases arterial pressure. In a tracing of the radial pulse taken before and after smoking, he demonstrated an average increase of 8.75 beats a minute after the use of one cigarette.

In 1908, Lee (15) reported the results of similar experiments in seven cases. The latter writer found a continuous rise in blood pressure during smoking

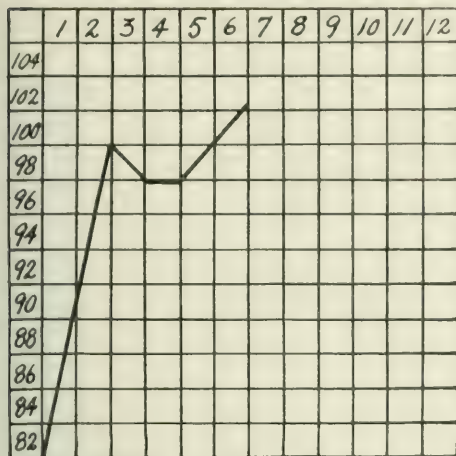


FIG. 3 (Case XIV).—Aged sixteen years. Had smoked four years; four to five cigarettes daily. Included. Heart normal. Smoking was stopped after seven minutes. The pulse became irregular. There was no change in systolic pressure. The pulse pressure fell to mm.

nicotine in tobacco has little to do with the toxicity of the smoke.

Crothers (8) blames furfural and nicotine. Bush (9), of Vermont, reports: "Nicotine is not found in the smoke of any tobacco except that of cigarettes, and then only in traces." On the other hand, he did find pyridine in all smoke and believes it to be the chief toxic agent.

That tobacco smoke is poisonous is proved by Fleig (10), and he reports that the same results are obtained with subcutaneous injections of an aqueous extract of smoke, nicotine, or the salts of nicotine. Whichever he used with animals caused them to abort or produce weakly viable young.

Altogether the mass of evidence seems to show that nicotine is the poisonous agent and that either as nicotine or some product of its decomposition it is present in tobacco smoke in sufficient quantities to cause injurious effects on animals. This is also proved by the fact that denicotinized tobacco is without toxic effects on animals, as shown by Lesieur (11), Lehmann (12), and Hoshwarth (13).

The figures from the *Lancet* show that pipe smoke contains more nicotine than cigarette smoke, and it also seems to show that cigarette smoking is the least harmful. This is contrary to popular belief. Strong beliefs usually have some basis of fact, and our opinion is that heavy pipe smoking does not cause the injurious effects of cigarette smoking to the same degree, that is, from the effect of the smoke alone.

It is shown that much of the nicotine in cigarettes is destroyed, and it is most likely that the products of this combustion, together with the amount of nicotine actually present, cause most of the dele-

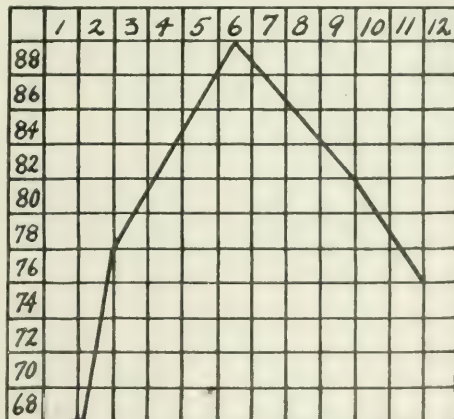


FIG. 4 (Case XX).—Aged twenty years. Pulse irregular; normal. Had smoked ten years; twelve cigarettes daily. Included. Heart normal except for irregularity. Smoking was stopped after six minutes; the pulse fell to a subnormal rate of 64 bpm. The pulse pressure increased 8 mm.

with a fall to normal when smoking had ceased. This was more marked in novices, with a rise of from ten to twenty mm.; in moderate smokers, ten mm., and with excessive smokers the rise was but two mm.

In 1907, Hesse (16) reported twenty-five cases in which the maximum and minimum blood pressure and pulse were recorded before and after smoking. He used a Riva Rocci instrument and the palpation method. He found that, although the results varied, the blood pressure tended to rise and the pulse rate to increase. It is interesting to note that in two cases he used denicotinized tobacco with practically the same results. Here, again, we find the difficulty of making these results coincide with the statements made by others.

In 1908, Bruce, Miller, and Hooker (17) reported a series of experiments on the effect of smoking on the blood pressure and the volume of the heart. They report the results with five subjects. One gave an increase in pulse of twelve beats; two gave an increase of eight; one four, while the fifth showed practically no change. There was an increase in blood pressure ranging from one to eleven, with an average of 5.2 mm. They conclude that

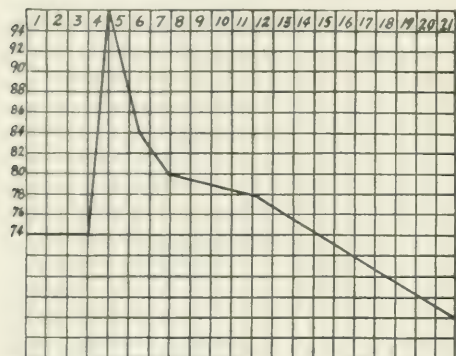


FIG. 1. — AGE, 30 YEARS. Age 1 thirteen years. Moderate smoker. Heart sound, normal. Pulse measured only after inhaling smoke. The pulse was irregular after four minutes, when the patient inhaled smoke and coughed. Twenty-two minutes later, the pulse became regular and the rate was 66 per minute. During the test, systolic pressure was unchanged; pulse pressure increased 4 mm.

the results show a change in the cardiovascular system immediately after smoking, also an occurrence of vasoconstriction.

Crothers (18) holds that the pressure first increases and then decreases. Marvin (19) found an increase of pulse and blood pressure in all cases, the effects being quicker and more pronounced with rapid smoking.

Turney (20) asserts a higher average pulse in smokers, quoting Troitzki, Nicolai, Stachelin, and others. In fact, the latter two experimenters found that smoking six or eight strong cigars daily for several months gave an average pulse rate of 81.8, and when smoking was given up the pulse returned to an average of 74.5. Turney also speaks of the irregularities due to extrasystoles. Cushny (21) attributes the effects on the pulse, heart, and circulation to changes in the inhibitory mechanism.

#### THE EFFECT OF CIGARETTE SMOKE.

The investigations now to be reported were first started in 1912, after the writer had noticed that in at least two cases tobacco had a marked and immediate effect on the heart. The first motive was that

of curiosity. The experiments were started along the line to be described, without knowledge of what others had found or what might be expected.

When a number of cases had been collected, the literature on the subject was investigated and, as was somewhat expected, results of similar experiments were found. The present methods were different in some ways, and because the results might be of value as statistics or records, the experiments were continued. As will be shown, the figures do not agree entirely with previous experiments, but it must be remembered that we have not all used uniform methods of conducting experiments, taking results, or recording findings. In this investigation it seemed advisable to limit the experiment to one form of tobacco and to examine every case in as nearly the same way as possible.

In the series here presented the figures were thus obtained: First, a uniform history and physical examination outline was followed in the examination of each case. In the history a record was made of age, occupation, previous diseases, symptoms of cardiac disease or throat troubles; habits as to tea, coffee, alcohol, drugs; and then a series of questions in regard to tobacco and cigarettes. These brought out when the use was started, forms of tobacco used; whether or not tobacco smoke was inhaled and if ill effects had ever been noticed. Very interesting answers were obtained on the reason for smoking and if the habit could be discontinued. The physical examination included a general inspection and then a careful examination of the throat, heart, and pulse. Then the blood pressure was recorded, both systolic and diastolic pressures being taken by the auscultatory method. The pulse was counted for one half minute for each count recorded.

Nearly all the examinations were made with only the subject and the examiner in the room, and anything that would tend to excite the patient was, as far as possible, eliminated. No suggestions of the expected result were given. In fact, the history, physical examination, and blood pressure, which would tend to excite the patient, were all taken before the final pulse was recorded previous to smoking. Ordinary conversation was continued throughout the experiment to offset excitement. In some of the most remarkable examples, the subjects were well known to the examiner and the element of excitement seemed to be absolutely eliminated.

The examiner has tried to be open minded and uninfluenced by what he soon had reason to expect the cases might show. In each case the same brand of Turkish cigarettes was used. This was a cigarette widely used and is quite like all the better brands of cigarettes which have become so popular in the last few years.

The subject sat quietly in a chair, in a quiet room with the examiner, and smoked the cigarette as had always been his custom. Whenever possible, a record was made of the pulse, several minutes after smoking had stopped as well as frequently during the smoking period. It was found that little result was to be obtained if the patient had smoked but a short time (one or two hours) before, or if he was unduly excited. In fact, the subjects who were excited showed the least result because of the pulse being abnormally high at the start.

The subjects were all young men, the youngest sixteen, the oldest thirty-one years old. Twelve were of the blonde type, four were brunettes, and eleven were classed as intermediate. Nine were found to have slightly inflamed throats. All the hearts were normal, except one, which did not show the typical results. Two cases showed an irregular pulse.

The large chart gives some idea of the results obtained; but it is more informative to examine the figures under different heads.

#### EFFECT ON THE PULSE.

The effect on the pulse of smoking but one cigarette was marked; sixteen out of twenty-seven subjects showing an increase of over eight beats a minute. In some cases the rise was spectacular and came on in one or two minutes or almost as soon as the pulse was taken. Of the twenty-seven cases, all gave an increase, except four, and two of the four had an abnormally high pulse at the start.

| Number of Cases. | No Increase. | Slight Increase, Less Than 8 Beats. |    | Increase of 8 to 15 Beats. | Increase of 15 to 24 Beats. |
|------------------|--------------|-------------------------------------|----|----------------------------|-----------------------------|
|                  |              | 4                                   | 5  |                            |                             |
| 27               | 4            | 1                                   | 1  | 1                          | 1                           |
| ..               | ..           | 7                                   | 7  | 7                          | ..                          |
| ..               | ..           | ..                                  | 7  | ..                         | ..                          |
| ..               | ..           | ..                                  | .. | ..                         | 9                           |

Seven gave an increase of less than 8 beats, seven increased from 8 to 15 beats, and 9 gained from 15 to 24 beats. The greatest increase was 24 beats in two and one half minutes, and the average increase 14. Three gave an initial decrease of 4, 6, and 4, respectively, and then all returned to normal or slightly above. Two of the subjects showing little change had smoked less than an hour before, and two gave a pulse of 100 at the start. More effect was noticed in those who had not smoked for several hours previous to the experiment. Of the three who had smoked just before, only one gave an increase.

In 10 cases, the pulse which had been regular became irregular, in several markedly so. The rate varied even in the short counts made.

The charts give some idea of the quick change in pulse rate. It was impossible to record the pulse in every case more than a few minutes after smoking had ceased, but in several the effect was present for fifteen minutes at least.

#### BLOOD PRESSURE.

Other investigators have reported a rise in blood pressure, but in this series the effects on the pressure were not at all uniform. Out of twenty-five cases, the systolic pressure fell in twelve, in five there was an increase, and eight gave no change. The average gain was 5.8 mm. and the average fall 6.16 mm. The greatest increase was ten mm. and the greatest decrease twelve mm. Changes of less than four mm. would mean very little and if these were omitted four show an increase and eight a decrease.

The pulse pressure was recorded in twenty-four cases; fifteen show an average fall of 6.86 mm.; the greatest being fourteen mm.; the least one mm. Seven show an increase and two remain the same.

Only five with marked increase of pulse gave a real change in blood pressure; of these three fell and two increased.

#### EFFECT OF TOBACCO HABIT.

| Degree of Smoking.     | Below 4. | Below 8. | Increase in Pulse. |        | Made Irregular. |
|------------------------|----------|----------|--------------------|--------|-----------------|
|                        |          |          | 8-15.              | 15-24. |                 |
| 9 heavy smokers....    | 1        | 1        | 3                  | 4      | 4               |
| 8 moderate smokers.... | 1        | 2        | 1                  | 4      | 4               |
| 9 light smokers....    | 2        | 4        | 3                  | 1      | 2               |

This chart would tend to show that a continued cigarette habit does not give a tolerance for cigarette smoking as far as the circulation is concerned. It is surprising to note that four heavy smokers, aged 20, 16, 18, 20 years respectively, show an increase of over 20 beats a minute after one cigarette.

#### EFFECT OF INHALING SMOKE

Whether or not the subject inhaled, was recorded in twenty-six cases; of the six who did not inhale, four gave little or no effect and several others exhibited no effect before they inhaled. This shows that there is much more effect if tobacco smoke is taken into the lungs. We must remember that practically all heavy cigarette smokers do inhale, which would partly explain the figures shown above.

I am inclined to believe the older men, who have smoked for many years and in whom we should find more stable nervous systems, would show less effect; but this I have been unable to work out.

The results show that cigarettes often do cause a marked rise in pulse, make the pulse irregular, and cause a change in blood pressure, the effects being more marked if the smoke is inhaled.

Although these figures are of a limited number of cases, and although the effects may be but transitory, they do show that there is an effect on the circulation from tobacco smoke and we are led to the effects of long continued smoking.

Favarger (22) reports twenty-one cases of cardiac disturbance due to tobacco. He says that they start as palpitation and, if the use is continued, give arrhythmia, intermittent slow or fast pulse, dyspnea, cardiac asthma, and even paralysis of the heart, reporting six cases of fatal cardiac paralysis from this cause. The myocardial changes were found to correspond to fatty degeneration. An editorial article in the *Journal A. M. A.* (23) discusses the effect of tobacco and cites experiments by Doctor John. The conclusion reached is that tobacco does not have an effect on the bloodvessels.

There have been other attempts to prove that tobacco smoke will produce arteriosclerosis, and while the results on the lower animals are neither uniform nor conclusive, many cases are reported clinically.

Pawinski (24) found excessive smoking in 29.8 per cent. of 3,156 cases of arteriosclerosis. Of 1,075 cases of sclerosis of the coronary arteries, in 41.9 per cent. tobacco was the first etiological factor. One half of the patients suffering from angina pectoris had been inveterate smokers, whereas in the cases of arteriosclerosis without angina, but one fourth had the habit. In regard to angina, it must be remembered that men are the heaviest smokers and that Huchard's statistics show but forty-two women in 237 patients with angina pectoris.

Otto (26), Adler, and Hensel have also found arterial changes from this cause. Osler (27) gives tobacco as a cause of palpitation. He also divides tobacco hearts into three groups: 1. Irritable hearts of smokers, especially of boys, palpitation with a rapid pulse that may be irregular; 2, those with sharp shooting pains; and, 3, those with attacks so severe as to deserve the name of angina.

The intermittent claudication of arteriosclerosis, which might be termed a peripheral form of angina, is attributed by Osler (25,28), Erb, Schlesinger (29), and others to the excessive use of tobacco. Fiesinger (30) does not believe that tobacco is as frequent a cause of angina as is reported, and gives three cases which improved under treatment for syphilis. G. Mouriquand and L. Bouchert (31) reported another case in which angina had been at-



tributed to tobacco. This case on autopsy was found to be syphilitic. They believe that there is no evidence that tobacco will cause angina. In a recent article Harlow Brooks (32) states that "the angina of tobacco poisoning is entirely relieved and commonly does not recur if tobacco is given up. . . . So far as can be determined, this symptom is due to coronary claudication and it is entirely or almost free from vagus effect." He also states that "there is neither clinical nor anatomical evidence sufficient to indicate that true coronary sclerosis may be caused by tobacco, though it is highly probable that when this condition exists, the symptoms are accen-

and vascular system have increased at an alarming rate in the last few years, and that angina pectoris, a disease which was very rare 100 years ago, is now quite a common cause of death. Of course, the stress of modern life is chiefly blamed, but it seems that there must be some other great etiological factor that works in such a slow and insidious fashion that it is not easily recognized. Is it not possible that the disturbances of the circulation, which we have seen produced by a very small amount of tobacco, frequently repeated daily for years, may play a greater part in the general increase of circulatory diseases than we realize? Certainly we should hesi-

## SUMMARY OF RESULTS.

| Case No. | History  | Heart.        | Pulse. | Effect on Pulse.                               | Respiratory.               | Systolic Blood Pressure, Before. | Pulse Pressure, Before. | Last Smoked.  | In- hnd. |
|----------|--|---------------|--------|--|----------------------------|----------------------------------|-------------------------|---------------|----------|
| 1        | Tob. 6 yrs.; cigars 6 yrs.; moderate               | Normal        | 80     | Inc. 10 in 4 min.                              | Regular                    | Fell 10 mm.                      | No record               | .....         | No       |
| 2        | 3 yrs.; 4 cigarettes daily, 4 yrs.                 | Normal        | 70     | No change; smoked short time                   | Regular                    | Practically no change            | 18 40 mm.               | Several hours | No       |
| 3        | 10 yrs.; 20 cigarettes daily                       | Normal        | 65     | Inc. 6 in 10 min.                              | Irregular                  | Fell 4                           | 44 34                   | 1 hour        | Yes      |
| 4        | Does not smoke                                     | Normal        | 75     | Inc. 11 in 4 min.                              | Regular                    | Increased 8                      | 38 40                   | Days          | Yes      |
| 5        | 8 yrs.; uses all forms; 10 cig. daily              | Normal        | 84     | Inc. 10 in 1 min., 14 in 5 min.                | Regular                    | No change                        | 44 44                   | .....         | Yes      |
| 6        | 4 yrs.; pipe often, cig. and cigarettes frequently | Normal        | 68     | Inc. 20 in 1 min., 24 in 4 min.                | Regular                    | Fell 2                           | 56 54                   | Day           | Yes      |
| 7        | 10 yrs.; 10-15 cigarettes daily                    | Normal        | 88     | Practically no change                          | Regular                    | No record                        | .. ..                   | 20 min.       | Yes      |
| 8        | 6 mos.; one cigarette daily                        | Normal        | 100    | Inc. 4 in 12 min.                              | Regular                    | Fell 8                           | 58 50                   | 2 hrs.        | ....     |
| 9        | 10 yrs.; cigars, 2 cigarette daily                 | Normal        | 80     | Slight inc. 4 in 6 min.                        | Became irreg.; rate varied | Increase 7                       | 53 52                   | 6 hrs.        | Yes      |
| 10       | 5 yrs.; 1 cigarette daily                          | Normal        | 80     | Inc. 4 in 4 min.                               | Regular                    | Fell 10                          | 60 50                   | .....         | No       |
| 11       | 5 yrs.; 1 cigarette daily                          | Normal        | 82     | Inc. 20 in 6 min.                              | Irregular                  | No change                        | 60 50                   | 1 hr.         | No       |
| 12       | 7 yrs.; 1 cigarette daily                          | Normal        | 94     | Inc. 12 in 3 min., 18 in 11 min.               | Regular                    | Fell 10                          | 30 40                   | 1½ hr.        | Yes      |
| 13       | 6 yrs.; 11 daily                                   | Normal        | 82     | Inc. 10 in 2 min.                              | Irregular                  | No change                        | .. ..                   | 1 hr.         | Yes      |
| 14       | 11 yrs.; heavy smoker; pipe; 3 cigarettes daily    | Normal        | 94     | Inc. 16 in 4 min.                              | Irregular                  | Fell 4                           | 60 52                   | ¾ hr.         | Yes      |
| 15       | 13 yrs.; heavy smoker; 10 daily                    | Normal        | 66     | Inc. 14 in 2 min., then fell to 70 in 4 min.   | Regular                    | Fell 8                           | 44 34                   | 1 hr.         | Yes      |
| 16       | 8 yrs.; all forms; 4-5 cigarettes daily            | Normal        | 78     | Inc. 6 in 7 min.                               | Regular                    | No change                        | 40 36                   | 1 hr.         | Yes      |
| 17       | Never smoked cigarettes                            | Normal        | 74     | Dec. 4 in 3 min. to 70 in 8 min.               | Slightly irregular         | Fell 12                          | 50 48                   | .....         | No       |
| 18       | 10 yrs.; 12 cigarettes daily                       | Normal        | 68     | Inc. 12 in 1 min., 20 in 5 min.                | Slightly irregular         | Increased 8                      | 32 34                   | ½ hr.         | Yes      |
| 19       | 10 yrs.; moderate; cigarettes rarely               | Normal        | 84     | Inc. 6 in 5½ min.                              | Regular                    | Increased 4                      | 28 38                   | 6 hrs.        | Yes      |
| 20       | 4 yrs.; 5 cigarettes daily                         | Normal        | 100    | Inc. 16 in 5 min.                              | Very irregular             | No change                        | 48 40                   | 2 hrs.        | Yes      |
| 21       | 1 yr.; moderate; 1 or 2 cigarettes                 | Myo- carditis | 100    | Fell to 96, then inc. to 102                   | Very irregular             | Fell 2                           | 46 48                   | 10 min.       | No       |
| 22       | Moderate; 1 cigarette; once heavy smoker           | Normal        | 70     | Inc. 18 in 3 min.                              | Irregular                  | No record                        | .. ..                   | 1 day         | Yes      |
| 23       | 1 yr.; moderate; cigarettes rarely                 | Normal        | 70     | Inc. 23 in 3 min.                              | Regular                    | No change                        | 38 42                   | Day           | Yes      |
| 24       | 12 cigarettes daily; 6 yrs.                        | Normal        | 80     | Inc. 24 in 2½ min.                             | Regular                    | Fell 2                           | 42 42                   | 4 hrs.        | Yes      |
| 25       | Very moderate                                      | Normal        | 84     | Inc. 6 in 4½ min.                              | Irregular                  | No change                        | 38 40                   | 4 days        | Yes      |
| 26       | 6 yrs.; moderate                                   | Normal        | 70     | Inc. 2 in 3 min.; when inhaled inc. 12 at once | Irregular                  | Fell 2                           | 48 36                   | Day           | Yes      |
| 27       | 7 yrs.; moderate                                   | Normal        | 80     | Inc. 12 in 3½ min.                             | Irregular                  | Increased 2                      | 46 32                   | Day           | Yes      |

tuated by it." Brooks also thinks that with other determining factors tobacco angina may predispose to true coronary arteriofibrosis.

From the foregoing widely conflicting opinions we can see how far we are from definite conclusions as to the true effects of tobacco. We must remember that a large proportion of our population is exposed to tobacco smoke from early childhood, even if they never become smokers themselves. Much of the air we breathe in homes and public buildings is charged with smoke, and in an editorial article in the *Journal A. M. A.* (33), also in a communication by Hoshwarth (34) to the *Lancet*, it is pointed out that people who are susceptible will have symptoms of poisoning from being in rooms filled with tobacco smoke. Perkanovitis (35) has called attention to the harmful results of tobacco saturated air.

It is a well known fact that diseases of the heart

tate to administer any drug having as marked an effect over such periods of time.

Can there be any relation between the percentage increase of tobacco produced and the increase in circulatory disease?

## REFERENCES.

1. HOBART AMORY HARE: *Effects of the Use of Tobacco*, Fisk Fund Prize Dissertation, xxiv, p. 1885.
2. Laboratory Report, *Lancet*, April 1, 1912.
3. CUSHING: *Text-book of Pharmacology and Therapeutics*, 1906, p. 274.
4. LEHMANN: *München. med. Wchnschr.*, lv, 723, 1908.
5. Editorial article, *Medical Record*, lxxxvi, 3, July 18, 1914.
6. Rudin's letter, *Journal A. M. A.*, June 13, 1914, p. 1907.
7. TURNER: *Med. Mag.*, October, 1913, xxii, 10, p. 549.
8. CROTHERS: *Lancet-Clinic*, October 10, 1914.
9. BUSH: *Tobacco Smoking and Mental Efficiency*, New York Medical Journal, xxv, 10, March, 1914.
10. FLUJIT: *Comptes rendus de la société de biologie*, lxiv, 1908, p. 683.
11. LESIEUR: *Ibidem*, lxiv, 1908, p. 9.
12. LEITMANN: *München. med. Wchnschr.*, lv, 723, 1908.
13. HOSHARTH: *Lancet*, August 23, 1913, p. 593.
14. HOBART AMORY HARE: *Effects of the Use of Tobacco*.
15. LEE: *Quarterly Journal of Experimental Physiology*, i, 1908, p. 335.
16. HERSE: *Deutsch. Arch. f. klin. Med.*, lxxxix, 1907, p. 11.
17. HILL: *E. MILLER and HOOKER*, The Effect of Smoking upon the Blood Pressure and upon the Volume of the Heart, *Amer. Jour. of Physiol.*, xxiv, 1, April 1, 1909, p. 104.
18. CROTHERS: *Lancet-Clinic*, October 10, 1914.
19. MARVIN: *Tobacco*,

Its Use and Its Abuse, *Forum of Med. Medicine*, July 1, 1912, p. 171.  
 20. TURNER, The Medical Aspects of Smoking, *Medical Magazine*, October 25, 1914, p. 1445.  
 21. TURNER, The Medical Aspects of Smoking, *Medical Magazine*, November 22, 1914, p. 1445.  
 22. FAVARGER, Chronic Tobacco Poisoning, *Medical Magazine*, April 23, 1910, p. 197.  
 23. JOHN, Tobacco Smoking and the Circulation, *Medical Magazine*, July 5, 1913, p. 414.  
 24. Editorial article, *Medical Record*, July 18, 1914, p. 116.  
 25. OSLER, *Practice of Medicine*, p. 393, 26. *Medical Record*, List, 18, 1914, p. 116.  
 27. OSLER, *Practice of Medicine*, pp. 81, 104 and 812.  
 28. IDEM, *Praxis*, p. 812.  
 29. *Medical Magazine*, October, 1914, p. 1445.  
 30. MOUTRIAND and le BOUCHIER, Angina Pectoris and Tobacco, *Archives des maladies du cœur*, October, 5, 1912.  
 31. HARLOW BROOKS: Tobacco Habit, New York Medical Journal, April 24, 1915, p. 830.  
 32. *Journal A. M.*, May 8, 1915, p. 127.  
 33. *Lancet*, August 23, 1913, p. 593.  
 34. Badgley Letter, *Journal A. M.*, June 13, 1914, p. 1997.

## OTHER LITERATURE.

Therapeutics, *Journal A. M.*, March 15, 1913, p. 828.  
 Tobacco, a Race Poison, *ibidem*, February 21, 1914, p. 642.  
 E. E. CORNWALL: Chronic Tobacco Poisoning and the Circulation, *American Medicine*, February, 1914.  
 J. N. LANGLEY: Stimulation and Paralysis of Nerve Cells and Nerve Endings, *Journal of Physiology*, October 16, 1901, p. 237.  
 A. S. SARRETT: The Tobacco Habit, *Texas State Jour. of Med.*, September, 1914, p. 190.  
 Symposium on Smoking, *Medical Times*, June, 1914, pp. 167-173.  
 List of References on Smoking, *Journal A. M.*, March 14, 1914, p. 808.

880 MONROE AVENUE.

## THE EYE IN DIAGNOSIS.\*

By WILLIAM F. C. STEINBUGLER, M. D.,  
 New York.

From the standpoint of diagnosis the eye is the most important organ of special sense. Some part of its structure is affected in so many general conditions that an examination of it often leads to a diagnosis which otherwise would not have been made. A striking example of this is seen in early arteriosclerosis, where the ophthalmoscopic picture often makes the clinical diagnosis. The eyes should be examined both objectively and subjectively. In making the objective examination, the position of the eyes in the head, the parts in the immediate neighborhood of the eyes, and their relative position to each other should be noticed. In this manner, the presence of a unilateral or bilateral exophthalmos is detected. The most important cause of bilateral exophthalmos is Graves's or Basedow's disease, or, as it is more often called, exophthalmic goitre. In this disease the exophthalmos is associated with other eye symptoms, such as Graefe's symptom—a failure of the upper lid to follow the eye when the gaze is directed downward; Stellwag's symptom—infrequency of winking; Moebius's symptom—a weakness of convergence which shows itself in a tendency of the axes of the eyes to diverge; and Gifford's symptom—a difficulty in everting the upper lid. Other causes of bilateral exophthalmos are high degrees of myopia, bilateral affections of the orbit and the accessory sinuses, lymphomata, tumors of the brain and those springing from the median line, especially from the sphenoid bone, and sinus thrombosis. Unilateral exophthalmos is most often due to an orbital or to an accessory sinus affection. It may also be caused by the presence of a tumor. The tumors most often found are cysts, especially dermoid cysts, and vascular tumors—aneurysms and angiomas. The latter are met with in two forms—telangiectasis and cavernous tumor. The former is congenital and is originally situated in the lids. Cavernous tumor usually develops within the orbit. Malignant tumors are rarely encountered. Sarcomata are the

most common; carcinomata are extremely rare and when they do occur, spring from the lacrimal gland. The interference with the movements of the eyeball and the disturbance of vision depend upon the position of the tumor in the orbit; the deeper the location, the greater the disturbance. Unilateral exophthalmos is occasionally caused by a tenonitis, an inflammation of the fibroelastic membrane surrounding the eyeball, having as its etiological factor gout, rheumatism, or influenza, orbital hemorrhages, thrombophlebitis, sinus thrombosis, or Graves's disease. Pulsating exophthalmos is caused either by an encephalocele or by a communication existing between the internal carotid artery and the cavernous sinus. Intermittent exophthalmos is observed in cases showing increased irritability of the nervous system.

In examining the surrounding parts of the eye, scars may be observed on the orbital margins. These usually indicate that a tuberculous of the bone has existed, or they may be occasioned by trauma. Scars situated above the internal canthal ligament point to an old frontal sinus affection; below the internal canthal ligament, to a lacrimal gland affection. Emphysema of the orbit and lids develops after an injury, usually a fracture, and means that one or more of the ethmoid cells is in communication with the orbital cellular tissue and that air has been driven into the latter in the act of blowing the nose. In making a visual examination it may also be noticed that the head is tilted to one side and a diagnosis of torticollis has often been made when the real cause of the tilting has been the presence of uncorrected astigmatism or a paralysis of one or more of the extraocular muscles.

Narrowing of the palpebral aperture and of the pupil on the same side, known as Horner's symptom complex, is due to paresis of the sympathetic nerve. When of recent origin the corresponding side of the face is red; when of longer duration, it is pale. The most common cause of this condition is an enlarged thyroid gland, although it is also seen in affections of the apices of the lungs, in cases of enlarged cervical glands, aneurysm of the carotid, tumors of the esophagus, syringomyelia, hematomyelia, and myelitis. Bilateral sympathetic paralysis is rare and the cause for it is usually found in a lesion of the vertebræ in the neighborhood of the junction of the cervical and dorsal portions of the spinal column.

Facial nerve irritation shows itself in the form of convulsive tic, blepharospasm, winking, and fibrillary twitchings of the lids. It is usually unilateral and is brought about reflexly through an irritation of the trigeminitis, an erosion of the cornea, a scrofulous ophthalmia, a supraorbital or infraorbital neuralgia, an affection of the accessory sinuses, or a toothache. In tetany the mechanical irritation of the facial branches of the seventh nerve is greatly enhanced and this is known as Chvostek's sign. Drooping of the lower lid, faulty closure of the lids, lacrymation, and, finally, keratitis caused by lagophthalmos, are due to facial paralysis, the underlying cause of which may be rheumatism, syphilis, tabes, or otitis. Diplegia facialis, or paralysis of both facial nerves, is usually nuclear and is seen in cases of bulbar paralysis.

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Ptosis, or a drooping of the upper lid, may be unilateral or bilateral. When limited to one side, it is often due to a paralysis of the oculomotor nerve. It frequently accompanies inflammations of the bulb and of the accessory sinuses—spastic ptosis. It may also be congenital, in which form the drooping lid is raised when the mouth is opened, as in the act of chewing. When bilateral and not congenital, it is usually due to a syphilitic affection of the base of the brain. Peripheral causes of ptosis are progressive muscular atrophy and orbital periostitis. In making the diagnosis of ptosis, chronic inflammations of the conjunctiva, especially trachoma, and hysteria should be ruled out.

Epiphora, or excessive lacrymation, is seen as an initial symptom in nervous diseases, especially Graves's disease. There may be an absence of tears in facial paralysis and trigeminal affections. One or both lacrymal glands may be diseased at the same time. Unilateral inflammation is of interest only to the specialist, but bilateral inflammation is often seen associated with orchitis in mumps. An enlargement of the lacrymal and the parotid glands on both sides is known as Mikulicz's disease.

Edema of the lids, when confined to one side, is usually due to the presence of a sty; bilateral edema is seen in nephritic or anemic conditions, in trichinosis, and in the condition known as angioneurotic edema. The latter occurs most often in women, especially at the time of menstruation. The lids are swollen without being reddened, the swelling persisting for a few hours and also being present in other parts of the body, such as the elbows, trunk, or extremities.

In testing the movements of the eyes, the existence of a squint can be determined. It is of great importance to know whether the squint is of a concomitant or a paralytic nature, the former being of little diagnostic importance. To differentiate a paralytic squint from a concomitant squint, the patient is directed to follow the examiner's index finger moved to and fro before him. In paralytic squint the squinting eye fails to follow the direction of the finger as soon as the paralyzed area is reached. For instance, in a convergent squint due to paralysis of the external rectus of the left side, the left eye will stop at the middle line or slightly beyond it when the patient is directed to look at a finger held to his left side. In concomitant squint, on the other hand, the eye would reach the external angle. Paralysis of single muscles in childhood are usually post-diphtheritic. Other causes are solitary tubercles, tumors, softening and hemorrhages of the brain, tumors of the pons and of the cerebellum. In adults, syphilis accounts for about twenty-five per cent. of all paralyzes; tabes for ten per cent., progressive paralysis for five per cent., traumatism for five per cent., and intracranial causes for five per cent. Complete paralysis is seen more frequently as an accompaniment of tabes and general paralysis; paresis, on the contrary, is seen more often in syphilis. Ophthalmoplegia interna, due to a paralysis of the sphincter of the iris and of the ciliary muscle, and showing itself in a dilatation of the pupil and a loss of accommodation, is almost proof positive of the existence of syphilis.

Nystagmus, or short jerky movements of the eye

which are repeated rapidly and always in the same direction, may be horizontal, vertical, or rotary. It is most often bilateral and congenital. When bilateral, it is always associated with poor vision, and if bilateral and congenital, color blindness is always an accompaniment. It is seen as a symptom of multiple sclerosis, cerebral tumor, and in the labyrinthine affection known as Menière's disease. It is seen very frequently in miners and it is thought to be due to the fact that in their work their gaze is directed upward most of the time.

Patients will, at times, complain of painful eyes for which no definite cause seems apparent. This pain is very frequently due to an infraorbital or supraorbital neuralgia or to an affection of the accessory sinuses. This complaint is also frequently made by hysterical patients, by neurasthenics, and by hypochondriacs.

The conjunctiva is frequently used as an index to the amount of hemoglobin present and a clue to the existence of an anemic condition is often obtained by the simple procedure of having the patient look up while the lower lid is rolled out. The conjunctiva shows a discoloration in jaundice, Addison's disease, and argyrosis. The latter is seen only after prolonged application of silver and is most marked in the fornices. Occasionally large red patches are seen beneath the conjunctiva, between it and the sclera. These are subconjunctival hemorrhages and are seen most frequently in elderly people whose bloodvessels are more or less brittle, and are usually occasioned by such acts as vomiting, coughing, or sneezing. In children they are observed in whooping cough. In the newborn, fatal hemorrhages from the conjunctiva may take place as the result of trauma during delivery.

Inflammation of the conjunctiva is observed bilaterally in measles, scarlet fever, and German measles, and in affections of the upper air passages, especially hay fever. Diphtheria and gonorrhea, the latter especially in the newborn, usually give rise to a very violent inflammation. Unilateral conjunctivitis is either caused by the presence of a foreign body in the cornea or conjunctival sac or is phlyctenular in nature.

In the cornea and conjunctiva the condition variously described as eczematous or phlyctenular conjunctivitis or keratitis, depending upon its principal location, and seen most often in children, is usually evidence of tuberculosis in some form. Very frequently scrofulous lesions of the glands and bones are observed in these cases; more rarely, tuberculosis of the lungs. In the cases where no visible signs of tuberculosis are present, a latent form of the disease can usually be demonstrated by the positive reaction obtained when the tuberculin test is employed. Parenchymatous keratitis, which shows itself by the presence of deep seated vessels pursuing a straight course in crossing the limbus over into the cornea, and also by a haziness of the cornea itself, is an important symptom of hereditary syphilis. It is one of Hutchinson's trilogy, the other symptoms being the peculiar formation of the teeth of the second dentition, the peculiarity consisting in a notching of the incisors, and a certain degree of deafness. A rare form of keratitis, known as dendritic keratitis, in which the branchings in the



cornea resemble those of a tree, is due to interference with the trigeminal nerve supply.

In an examination of the iris the color is of importance. A difference in the color, known as heterochromia, may be congenital or it may be due to the presence of iron in the eye—siderosis. When congenital, the lighter eye very often shows the presence of a cataract. In siderosis the iris assumes a rusty brown color owing to the formation of the oxide of iron. In the condition known as albinism, the iris is light gray and appears reddish by transmitted light while the pupil has a vivid red lustre. These patients usually have yellow white flaxen hair, white eyebrows and white lashes.

Nodules in the iris are either tuberculous or syphilitic. The former lie midway between the pupillary and ciliary borders; the latter at one of the margins, usually the ciliary margin when gummatous and the pupillary margin when papular. Scars and atrophic spots in the iris are usually of specific origin.

Normally, the pupils are of equal size. A slight difference in the size of the pupil, anisocoria, with normal accommodation and reflexes, should not be considered pathological. Dilatation of the pupil is known as mydriasis. It may be due to a paralysis of the oculomotor nerve, in which case it is known as paralytic mydriasis, or to an irritation of the sympathetic nerve—spastic mydriasis. The two forms of mydriasis are differentiated by the fact that in the spastic form the pupillary reactions are present, while in the paralytic form they are absent. The paralytic form is seen in syphilis, diseases of the central nervous system, most frequently tabes and progressive paralysis, and after diphtheria. It is also seen in poisoning by meat or fish and as the result of the action of poisonous drugs. The alkaloids known as mydriatics, when instilled into the eye, will also cause paralytic dilatation. Spastic mydriasis occurs in conditions of cerebral irritation and irritation of the cervical sympathetic system. It can also be brought about by the instillation of cocaine into the eyes. In complete blindness there is a dilatation of the pupil which is not due to a disorder of motility of the iris, but is simply a physiological cessation of the pupillary reflex when the perception of light is absent. Contraction of the pupil is known as miosis and may be due to a paralysis of the sympathetic, in which case it is known as paralytic miosis, or to an irritation of the oculomotor nerve—spastic miosis. The differentiation is made by the instillation of a drop of cocaine into the eye. This causes dilatation of the pupil in the spastic, but not in the paralytic form. A narrow pupil is observed in beginning meningitis. It is also brought about by the action of certain drugs when taken internally, such as morphine, opium, and chloral, and by the local action of the group of drugs known as miotics. Paralytic miosis is one of the most important symptoms of paralysis of the cervical sympathetic. It is also seen as a spinal symptom in progressive paralysis, and, under the name of the Argyll Robertson pupil, is one of the most important symptoms of tabes. The characteristics of the Argyll Robertson pupil are that it does not react to light, while the reaction to accommodation and to convergence is preserved. In cerebral conditions the pupils are frequently changed in size. As

a general rule, bilateral mydriasis is associated with anemia of the brain; bilateral miosis with hyperemia. At times there may be only a slight difference in the size of the pupils and it is difficult to say whether one pupil is slightly dilated or the other slightly contracted. To determine this, both eyes are covered at the same time. The pupil which shows the less marked reaction when the eyes are uncovered is the diseased one. A condition known as hippus, in which the size of the pupil changes rapidly, is seen bilaterally very often in multiple sclerosis and, occasionally, in functional nervous diseases.

The shape of the normal pupil is round, but it may be irregular in shape in cases of old iritis with posterior synechia, or in cases of traumatic rupture of the iris. An oval pupil is seen in syphilis, tabes, paralysis, glaucoma, and after traumatism.

The reaction of the pupil to light and when accommodation and convergence take place, consists in a contraction. The reaction of the pupil to light is either direct, when the light is thrown into the eye examined, or indirect or consensual, when contraction of the pupil takes place as the result of light being thrown into the other eye. Failure of the pupil to react to direct stimulation in the presence of a normal indirect reaction indicates a disturbance in the path of conduction and is seen in retrobulbar neuritis and lesions of the bony canal. When mydriasis is associated with absence of the reaction to light, the reaction to accommodation being present, the diagnosis is more often syphilis than tabes. In postdiphtheritic paralysis of accommodation, there is a convergence miosis. In paralysis of convergence, on the other hand, there is usually no miosis. This would indicate that in pathological conditions miosis accompanies cases in which convergence is retained more often than those in which accommodation is retained.

Inflammation of the iris, iritis, the diagnosis of which is based on the ciliary injection, the discoloration of the iris, the presence of exudate, and of a pupil, usually contracted, which reacts either sluggishly or not at all, is, as a rule, due to some underlying constitutional disturbance. The chief etiological factors are syphilis, tuberculosis, gout, rheumatism, gonorrhea, scrofula, infectious diseases, and disorders of metabolism, particularly diabetes. Tuberculosis of the iris occurs in two forms—either small miliary tubercles are scattered throughout the iris or a solitary tubercle is present. The iris may, at times, be the seat of a primary sarcoma.

Inflammations of the choroid are also seen in constitutional diseases, such as syphilis, tuberculosis, anemia, chlorosis, and scrofula. The choroid is occasionally the primary seat of a pigmented malignant tumor, a melanosarcoma, which very often has metastases in the internal organs, the liver being a very common site.

In the lens, opacities are of general interest only in cases of diabetes. They are seen only when the amount of sugar in the urine is high; are usually bilateral and develop quickly. Diabetic cataract is the only form which shows improvement under medical treatment, and cases benefited by treatment are exceptionally rare. Opacities in the lens are also observed in cases of ergot and naphthalin pois-

oning, in tetany, and among glass blowers. A form of cataract known as lamellar, perinuclear, or zonular, in which a particular zone of the lens is the only part affected, is often associated with rickets and with a peculiar condition of the teeth. The teeth are yellow and present a rough surface. Around the crown are two furrows separated by a protuberance. The protuberance represents the normal thickness of the enamel, while over the remaining surface the enamel is thinned. There may be pits above or below the protuberance.

Opacities in the vitreous, which are described by the patients as spots floating before the eyes, are usually due to local causes and are not of general interest.

Inflammation of the optic nerve—optic neuritis—which causes disturbance of vision and sudden and momentary obscuration of sight which may be repeated many times during the course of the day, is seen bilaterally in typhoid, malaria, myelitis, pneumonia, variola, scarlet fever, diphtheria, and recurrent fever; also in secondary contracted kidney, anemia, and chlorosis. It is rarely unilateral, and, if so, an affection of the accessory sinuses, an otitic process, or an extension from a basilar meningitis must be suspected; also a retrobulbar affection having rheumatism or syphilis as its cause. When, in addition to the inflammation of the optic nerve, there is increased tension in the brain, the diagnosis of choked disc is made. Unilateral choked disc is seen locally in orbital processes such as tumors, abscesses, gun-mata, and diseases of the accessory sinuses. Intracranially it may be due to tumors and abscesses of the middle fossa of the skull. It is rarely observed in multiple sclerosis, secondary contracted kidney, and in intoxications and infections. The most common cause of bilateral choked disc is a tumor of the brain, especially of the cerebellum. It is absent in from only five to ten per cent. of all brain tumors. Other causes are syphilis, tuberculosis and other diseases of the brain, hydrocephalus, meningitis, hemorrhage at the base of the brain, cysticercus, sinus thrombosis, aneurysm, nephritis, lead intoxication, anemia, multiple sclerosis, and pachymeningitis.

Atrophy of the optic nerve is either total or partial, primary or secondary. Total atrophy may be simple, neuritic, arteriosclerotic, yellow, or due to glaucoma. Primary optic atrophy is due to tabes in fifty per cent. of all the cases. It is very often the first symptom to make its appearance, existing before the various crises and the ataxia. At this time the pupil should be tested for the presence of the Argyll Robertson pupil and the presence or absence of the knee jerks—Westphal's symptom—should be determined. The so called cases of tabes superior show only eye symptoms, atrophy of the optic nerve, the Argyll Robertson pupil, and paralysis of the muscles. Paleness of the temporal side of the disc, partial atrophy of the optic nerve, may be due to alcohol or nicotine poisoning or to diabetes. In addition to the temporal atrophy there is usually a defect in the centre of the field of vision—a central scotoma. Other causes of partial atrophy and central scotoma are poisoning by lead, carbon bisulphide, and methyl alcohol. Temporal atrophy alone is rarely seen as the result of hemorrhage during

pregnancy, during the puerperium and the period of lactation, in chlorosis and in the cachexia of carcinoma, and when it occurs in both eyes it is generally due to multiple sclerosis or syphilis. Secondary optic nerve atrophy develops as the result of a preexisting neuritis or retinitis. It is known as inflammatory atrophy. The other forms are not of general interest.

Inflammation of the retina causing impairment of vision, and, at times, changes in the size and shape of objects, is seen in many constitutional diseases. It may be due to a disturbance of the function of the kidney, albuminuric retinitis, in which case it is usually bilateral, to diabetes, leucemia, septicemia, and syphilis. In leucemia it accompanies the splenic and myelogenous forms. A rare condition known as lipæmia retinalis is observed in cases where the percentage of fat in the blood reaches from four to five per cent. The retinal vessels in this condition appear as though filled with milk.

In the subjective examination of the eye the most important factor is the vision. In considering the various causes of disturbance of vision, it should be remembered that tabetic processes begin gradually and lead slowly to complete blindness. Disturbances due to multiple sclerosis are changeable, are independent of the general findings, and rarely lead to total blindness. Choked disc usually has a rapid onset and leads to complete blindness of short duration. Headache is a prominent symptom in cases of choked disc. In retrobulbar neuritis the patient complains of gradual fogging. Decided changes in the vision are seen in syphilitic basilar conditions. Sudden and complete blindness is as a rule due to embolism of the central artery of the retina, which may be caused by endarteritis, perivasculitis, arteriosclerosis, chronic nephritis, diabetes, syphilis, gout, and cardiac disturbances. When preceded by a period of darkness, it is usually due to a thrombosis of the central vein. Blindness setting in within a few days may be due to quinine poisoning, filix mas intoxication, poisoning by methyl alcohol, and to severe hemorrhages from the stomach and intestines. Rarely these causes give rise to sudden blindness. A more chronic form of blindness is seen in poisoning by tobacco or alcohol. A particularly characteristic symptom of these two forms of poisoning is nyctalopia, the patients stating that they see better at night. In reality this is not so, but the annoying sense of dazzling present during the day is absent at night and the patients imagine that their vision is improved. The pathological lesion in these cases affects the maculopapular bundle, and a defect in the centre of the field of vision, a central scotoma, is produced. At first this scotoma is for colors only. Later it becomes absolute and this represents the limit reached by the disease. The outer limits of the visual field always remain normal, and complete blindness is not to be feared, although direct vision and the ability to carry on fine work is destroyed.

Scotomata, or defects in the field of vision, may be subjective or objective, positive or negative. When subjective they are seen by the patient as dark shadows. When objective they are not seen as shadows, but there is an isolated spot in the field of vision in which the patient has faulty perception of

external objects. The latter may be absolute or relative, depending upon whether the object becomes invisible or indistinct within the confines of the scotoma. If the scotoma has its origin in some retinal disturbance, there is usually a change in the size and the shape of objects; if retrobulbar in origin, this is not the case. The most common causes of central scotomata are alcohol and tobacco intoxication, lead and carbon bisulphide poisoning, multiple sclerosis, syphilis, rheumatism, gout, myelitis, and the cachexia of carcinoma. Unilateral central scotoma is usually due to an intraocular affection such as retinitis or choroiditis.

Another subjective examination of importance is the determination of the field of vision. This is done either by means of a perimeter, or, in a rough way, by holding the hands above, below, and to the sides of the patient's face. The field is narrowed either concentrically or irregularly. The former is seen in cases of choked disc and in perineuritis gummosa. A high degree of narrowing is typical of quinine amblyopia. Retinitis pigmentosa is an intraocular cause. A variety of visual disturbance often seen is an absence of one half of the field—hemianopsia. It is either uncrossed—homonymous—or crossed—heteronymous. In the former variety the corresponding halves of both visual fields are absent; in the latter, the opposite halves. Homonymous hemianopsia is caused by a lesion in the optic tract situated above the optic chiasm. Heteronymous hemianopsia is caused by a lesion at the chiasm affecting the crossing fibres. The latter is frequently seen as the result of an enlargement of the hypophysis cerebri and often accompanies acromegaly. If, in addition to the defect in the field of vision, there is a loss of the pupillary reflex when light is thrown upon the blinded portion of the retina, the break in conduction must lie below the spot at which the fibres to the oculomotor nucleus are given off. If the pupillary reflex is intact, the lesion is situated higher up. In the latter event the lesion lies most often in the back part of the internal capsule or in the optic fibres running from the capsule to the occipital cortex or in the cortex itself. This reaction is known as Wernicke's hemiopic pupillary reaction. It is possible for central vision to be retained, although both halves of both visual fields are destroyed. This is due to the fact that in some cases the macula is spared. These patients, while possessing excellent central vision, are helpless because their peripheral vision is lacking and they have lost the power of orientation. When hemianopsia exists in only one eye, the cause is below the chiasm or in the eye itself.

Color blindness is either a congenital or an acquired affection accompanying disease of the retina or optic nerve. It may be total, in which case no color is recognized, or partial, a failure to recognize certain groups of colors. The most common variety is the red-green blindness which is almost always congenital and is known as Daltonism. Like hemophilia, the defect is most often transmitted through healthy daughters to male grandchildren, so that color blindness is ten times as frequent in men as in women. Gerhardt has maintained that nephritis is the cause of blue blindness, but evidence is lacking to corroborate this statement.

Night blindness or nyctalopia, beside being observed in some conditions of the retina and optic nerve, is seen in farmers in the spring and summer and is supposed to be due to the disturbance of nutrition arising from the fact that their diet contains very little meat, consisting almost entirely of carbohydrates. It is also present in drinkers who have chronic gastritis, in the cachexia of carcinomatous patients, and in cirrhosis of the liver. The opposite condition, hemeralopia, in which the patient sees better at night, is usually due to some local cause, central opacities in the lens or cornea. When the pupil dilates, light is admitted at the periphery and the vision is improved. It is an important symptom of tobacco and alcohol intoxication.

Many other eye conditions closely allied to general disturbances may be recognized by means of the ophthalmoscope, but an enumeration of them would not be of general interest and for this reason they have been omitted.

1409 EAST EIGHTIETH STREET, BROOKLYN.

## THE TREATMENT OF HORSE ASTHMA BY REPEATED INJECTIONS OF NORMAL HORSE SERUM.

By LOUIS A. LEVISON, M. D.,

Toledo,

Attending Physician, St. Vincent's Hospital and Lucas County Hospital.

The clinical picture of the condition sometimes known as horse asthma is distinct and striking. Individuals exposed to the emanations from horses may react in a very characteristic manner, if they are susceptible. Contact with horses by riding or driving, working in a field, entering a stable, or even passing them on the street, may bring on a seizure characterized by difficulty in breathing, sometimes sneezing, a pressure or weight on the chest, or choking spells. The attack may be long or short lived and vary in severity, even from the same exposure. The attack is almost invariably the result of exposure in well developed instances of this condition. It is not difficult as a rule to elicit the causal relationship in a carefully taken history. Some patients are aware of their susceptibility from their own observations, while others are not until their attention is drawn to the condition.

It is my belief that there are instances of this type of asthma in which a direct exposure to the emanations of horses is not necessary. It is entirely probable that the dusty air of cities particularly, and in a lesser degree of country districts, contains the minute particles originating from the horse's skin, the breath, and perhaps the excreta. Susceptible individuals may have attacks brought on by breathing this air without being conscious that they have been unduly exposed by direct contact with horses.

An attempt to immunize patients by means of repeated injections of horse serum seemed entirely rational to the writer and was begun about one year ago and has been continued since that time.

CASE I. Farmer, aged thirty-two years, had complained of sneezing and watering of the eyes for about twelve years. During the past six years had a sensation of get-



the "choked up" in the presence of horses. The patient was not aware of this condition from his own observation, but did not think that his sneezing and the watering of the eyes which preceded the choking spells were aggravated by horses. These latter symptoms had not been so much in evidence since he had had his asthmatic attacks of difficult breathing. The choking attacks might be of very short duration as when he was in a stable, or there might be a period of asthmatic breathing lasting for several days. This patient was free from attacks while on boats. His trouble was distinctly worse from May to October, and better during the winter. A period of rainy weather for a day or two which washed the air from its contained dust particles, gave considerable relief. This patient did not show other abnormal conditions of the nose, throat, or respiratory passages. He had been able to get partial relief only from sedatives. On account of his occupation, he had not been able to remain away from the exciting cause entirely, although he tried to do so as far as possible.

Tentative immunization of this patient was begun by injecting five drops of normal horse serum into the subcutaneous tissue of his arm. Within six hours the site of injection was surrounded by a large area of reddened, tender skin, which condition did not subside for forty-eight hours. Within an hour after the injection he felt a tightness in his chest, but did not have a distinct attack of asthma. The second injection was given in four days, and was followed by a condition similar to his complaint when in the presence of horses. The patient complained very much from this injection and asked to have it reduced in amount. The reddening of the arm again appeared. The injections were continued every four, five, or six days for a period of about four months. The amount of serum injected was varied somewhat in individual injections, but in the main was gradually increased from five drops to 1.8 c. c. of pure serum. At the end of this time the patient was not having asthmatic attacks while working on his farm, and considered himself well. No other therapeutic measure was instituted during the period of treatment.

CASE II. Farmer, aged thirty-four years, had been having difficulty in breathing for seven years. He stated that these attacks of difficult breathing were much aggravated in the presence of horses. Attacks might occur even in the absence of horses and dust might bring on his trouble. The difficult breathing might be associated with sneezing in some of the attacks. Cough, sputum, and pain in the right side of the chest might be present at times. Examination of the patient showed a deflected nasal septum, but not anything else which could be considered important in connection with his attacks of dyspnea.

The patient was given a subcutaneous injection of one c. c. normal horse serum and reacted by a marked asthmatic attack with cough, and the arm showed a large, reddened area surrounding the site of injection. He was put on injections of normal horse serum in amounts running from 0.25 c. c. to 2.2 c. c. The injections were given, at first, at weekly intervals, and there was always some reaction. These reactions tended to decrease when the injections were given every third day. The immunization in this case was continued over a period of eighteen weeks, with one interruption of two weeks. The attacks lessened in severity to a considerable degree, but never disappeared entirely. A number of the injections in this case were given intravenously in order to determine its effect. Following these, there was an absence of the

reddening of the skin at the site of injection, and there was a more prompt appearance of the asthmatic attack, but the attack did not appear to be otherwise unusual. Seven months after the cessation of the treatment, this patient considered himself still much improved and thought that the treatment benefited him. He still gets an attack of horse asthma in a much milder degree if he goes into a dusty stable.

CASE III. Housewife, aged twenty-nine years, had lived in the city since the age of twelve years, and before that in a small town, but never on a farm. This patient had had for the last four or five years a peculiar sensation of oppression or choking which did not at all correspond to the typical picture of asthma. This patient was neurotic, but was otherwise well. Her attacks of oppression, fullness, or choking might come at any time during the day, but the nights were free from disturbance. There was no direct relationship which could be traced to horses, but the entire absence of result from every therapeutic measure tried by the writer and others to relieve this condition suggested an attempt to determine the patient's tolerance to horse serum. A subcutaneous injection of one c. c. horse serum was given in the arm and was followed by an attack of difficult breathing somewhat comparable to the sensation of oppression which the patient had been having before. This could possibly have been a neurotic manifestation, but there was a large area of redness around the site of injection which seemed to point definitely to an intolerance to horse serum. Upon the strength of this clinical experiment, an attempt was made to immunize the patient against normal horse serum. Injections were given at intervals of three, four, and five days over a period of three months, and the amount injected was gradually increased from one c. c. to 2.8 c. c. The larger injections were given in the interscapular region, while the arm was used for the earlier and smaller ones. All injections were subcutaneous. The patient ceased to react to the injections when the amount reached 0.8 c. c., although a short lived reddening at the site of injection persisted to the end.

This patient is now free from her attacks of oppression and choking and has been for a period of three months.

The first two cases of this series are undoubtedly cases of genuine horse asthma. The diagnosis of horse asthma in the last case is not clear from the clinical evidence, and has for its support only the initial intolerance toward normal horse serum. It is entirely possible that patients who are sensitized against foreign proteins may have their particular proteid *bête noire* determined by a series of injections of different proteins. This opens up a new field of differential diagnosis in medicine, which may attain definite value. The result attained in Case I seems definite and striking. The result in Case II is not so good as in Case I, but the patient considers himself better. In Case III objection may be taken to the diagnosis and the neurotic element cannot be entirely eliminated. As far as the patient is concerned, relief is complete. It is not desired to draw any conclusions from these few case reports. They are presented to encourage others to try the method in refractory horse asthma.

It is understood that every effort should be made to elicit local foci which may be at fault in cases of asthma, but if these are absent, the attempt should be made to work out a causal relationship to the specific foreign protein substance. Typical cases of horse asthma are relatively uncommon, but it is possible that some of the cases of ordinary bronchial asthma may be brought into this group by better

methods of differential diagnosis, as suggested above.

The exact interval between injections and the amount to be injected at each time will have to be determined by further experience, as well as the time during which they should be continued. Daily injections of smaller amounts may be found to act better than at intervals of three or four days. It is not always practical to get these patients to come to the office daily, especially as they are generally farmers and gardeners and live in the country. The complaint is also apt to be more troublesome during the seasons in which they are most busy.

It is somewhat difficult to prevent contamination of the horse serum in the form in which it is now on the market, when small amounts are frequently used from the same package. This difficulty could be easily overcome, if the demand for it becomes greater.

421 MICHIGAN STREET.

## THE ANESTHETIC RISK IN SURGERY.\*

BY T. L. DAGG, M. D.,

Chicago,

Anesthetist, St. Luke's Hospital.

That there is a mortality rate in surgical cases due to anesthesia is so obvious that I should not state it here were it not for the purpose of connecting the title of my paper with the very pertinent subject, so as to add thereto, if possible, a greater importance, and to stimulate thereby an effort to discover beforehand what conditions might be present in a given case which would make the case an anesthetic risk, so that the anesthetist may be prepared to anticipate the danger before it is too late.

When a patient dies upon the table before operation has begun, or before anything surgical could have contributed to the cause, it is evident that some factor connected with the anesthetic, whether of the drug itself or of the technic in the administration, has produced a fatality which might have been avoided, or at any rate delayed.

What can we do preliminary to the operation to minimize the anesthetic risk? We know that deaths occur on the operating table. The surgeon must accept the responsibility of these deaths in the absence of a professional anesthetist; and not only the surgeon but the medical man who refers the case will be expected to share that responsibility by the patient's family. Therefore, we are all concerned in ascertaining beforehand, if possible, the degree of surgical risk any given case will be subjected to that comes into our hands. And I wish to repeat here what I have stated elsewhere in advocating safety first principles in anesthesia, viz., the sick patient who places himself in the hands of his physician for counsel and advice is entitled to the best that his physician can offer. The physician or surgeon is not doing his full duty to that patient unless he appreciates the importance of the safest possible kind of anesthesia, as well as all other factors of safety at his command to insure the comfort of the patient and success in the operation.

These principles of safety first cannot be carried out unless we acquaint ourselves beforehand with the risk our patient is likely to encounter in the administration of the anesthetic by reason of his present abnormal physical state. What are some of the anesthetic risks?

1. *On the part of the patient.* In my opinion, there are far more anesthetic risks than surgical risks among patients coming for operation. In other words, I mean to say that the risk from the operation *per se* is not present in as large a percentage of cases as the anesthetic risk. The fact that most patients survive the anesthetic does not disprove this statement. The psychic factor of fright, for instance, is present in a large majority of cases, and when excessive it becomes solely an anesthetic risk and not a surgical one.

High blood pressures are becoming more frequent in middle aged people otherwise healthy, and this is largely, although not exclusively, an anesthetic risk when an operation must be done. Likewise, the heart load when excessive is always an anesthetic risk, and that fact should be determined before a patient undergoes prolonged anesthesia. What is known as the heart load is determined by finding, first, the systolic pressure, then the diastolic pressure, the difference between the two being known as the pulse pressure. The pulse pressure representing the numerator and the diastolic pressure the denominator, this fraction represents what is known as the heart load. This may be reduced to percentages by taking the fractional part of 100. For example, if the systolic shows 120 mm. Hg. and the diastolic eighty mm., the pulse pressure would be forty mm.; 40/80 equals fifty per cent. heart load, which is considered the work of a normal heart, with a reserve capacity of fifty per cent. Now if a patient shows that the heart is working up toward full capacity, say eighty, ninety, or even 100 per cent., as some of them will do, it indicates that the heart is carrying a full load constantly with no reserve, and of course such a heart would be a very dangerous anesthetic risk.

Not only should we study the heart carefully, but the anesthetist should become acquainted with the functioning capacity of the kidneys, liver, and lungs. The presence of acetone and general acidosis should be known beforehand, for it becomes a serious anesthetic risk in many cases. This is true in starvation cases, rectal feeding cases and, of course, in diabetes. The urine of every patient before operation should be examined not only for sugar, albumin, and casts, but for acetone and diacetic acid.

A simple and practical method for determining the presence of acidosis is to have the patient sit perfectly quiet for five minutes; then draw a full but not abnormally deep inspiration, and to hold it with the mouth closed and the nostrils compressed with the fingers while the observer notes the time. The normal period which the breath can be held in this manner is thirty to forty seconds, and according to Stange (1) any period under twenty seconds contraindicates general anesthesia. Henderson explains this inability to hold the breath by the fact that acidosis occurs from a lowering of the carbon dioxide content in the blood due to excessive pul-

\*Read before the Jackson Park Branch of the Chicago Medical Society.

monary ventilation, and a consequent increase of other acids (or deficiency of alkali).

Any condition of the lung which interferes with the proper oxygenation of the blood, such as emphysema, edema, consolidation, bronchiolectasis or congestion, all add to the anesthetic risk and should be anticipated. This is particularly true of a large number of goitre cases, where pressure upon the trachea produces labored breathing. The labored breathing may not only be a decided risk before anything is done, but the danger increases as the operation proceeds. A trachea which has been under prolonged pressure from tumor growth undergoes a softening of the cartilages which, according to Fütterer, is a mucoid degeneration; and this softening of the trachea wall contributes to the dyspnea of the patient, and in many cases upon removal of the thyroid the softened walls collapse, preventing the entrance of air to the lungs, and the patient dies suddenly of asphyxia unless intubation or tracheotomy is done.

*Risks due to conditions apart from the patient.* Under this heading I include the risks which manifest themselves during the operation and due to factors other than the patient's physical condition.

a. *Shock.* After reading the theories of several investigators who have arrived at different conclusions as to how shock is produced, we are led to believe that the word, shock, is used in a broader sense than formerly. According to Crile (2), the kinetic theory of shock was demonstrated by a large amount of experimental work, in which he showed that shock is the result of overstimulation and consequent exhaustion of nerve and brain cells by the change of potential energy to kinetic energy in response to various adapted stimuli, whether these be traumatic, psychic, or toxic. At the same time Henderson (3), of Yale, also by an exhaustive experimental research, concludes, first, that carbon dioxide is the natural respiratory stimulant; and, second, that shock is produced by acapnia, or loss of carbon dioxide in the tissues and fluids of the body, from excessive respiration and exposure of abdominal viscera. Gatch, then of Johns Hopkins, applied Henderson's theory in a practical way by introducing the rebreathing method in anesthesia in order to prevent the loss of carbon dioxide, thus preventing shock by conserving the natural stimulus of the respiratory centre. This rebreathing method is now largely used in gas-oxygen anesthesia and proves of great practical benefit in maintaining a good respiratory rhythm.

More recently Gatch (4) himself declares that neither Crile's kinetic theory nor Henderson's acapnic theory fully explains the occurrence of shock. He cites Dolley as saying that the changes in the central nervous system produced by shock and by hemorrhage are identical; and that experimental surgical shock is caused practically always by the accumulation of blood in the abdominal viscera. It has been shown that the splanchnic vessels are capable of holding several times the total amount of blood in the body. But the abdominal veins are never filled to more than a part of their capacity, being maintained in a condition of partial collapse by the intraabdominal pressure, by muscle tone and by the *vis a tergo* of the heart.

It would seem from a study of the various theories held as to how shock occurs, that there are a number of factors which are not yet fully understood; so that no matter what the cause, when shock manifests itself, it immediately becomes an anesthetic risk as well as a surgical one, and should be met promptly and intelligently so as to minimize its injurious effects upon the patient. This can be done by bearing in mind the theoretical causes of shock, viz., trauma, producing its effects upon the nerve ganglia of the central nervous system; acapnia, producing paralysis of the respiratory centre; and the peripheral theory of Gatch, producing an accumulation of blood on the venous side of the circulation, particularly in the abdominal viscera and the consequent lowering of blood pressure in the arterial system.

Crile's method of anociassociation is of great value in the prevention of shock. Other means to this end may be carried out by the anesthetist in preventing a lowering of the carbon dioxide content by the rebreathing method, or by the administration of oxygen containing carbon dioxide if occasion demands. Another very important means of preventing shock is accuracy in the administration of anesthesia, maintaining a proper depth of narcosis with as little variation as possible, controlling struggling, resistance, and excitement on the part of the patient, and thus preventing excessive pulmonary ventilation which, according to Henderson, causes the lowering of carbon dioxide and consequent respiratory paralysis.

According to Gatch, three factors should be considered as contributing to shock, viz., the anesthesia, the posture of the patient, and the operative procedure. Gatch considers deep anesthesia a fallacy because it promotes stagnation of the blood in the veins, and advocates that muscle tone should be maintained at all times rather than muscle paralysis.

The ideal position of a patient in operation, from the anesthetic standpoint, is the horizontal. In case of impending shock the position may be changed to the Trendelenburg with benefit, unless there is cyanosis or struggling or heart lesion. Fat, thick necked, full blooded people do not stand the Trendelenburg position well, and they should immediately be placed in the horizontal position if danger threatens. Maintaining the intraabdominal pressure as far as possible, with a minimum amount of trauma, and the avoidance of evisceration, all contribute to the safety of the patient. The upright posture, or positions approaching it, should be avoided in long operations.

Other factors bearing upon the anesthetic risk I will only mention briefly in conclusion: Temperature of the patient, temperature of the anesthetic agent, temperature of the operating room. A patient with a subnormal temperature due to disease is practically always an anesthetic risk. The same can be said of the other extreme where fever has continued for any length of time.

A cold anesthetic is always more harmful than a warm one, because of increased irritation to mucous membranes and reflexes, and the difference may amount to a positive danger risk in handicap cases such as laryngeal or lung involvement. While I consider the anesthetic agent also an important factor



in the management of anesthetic risks, I have expressed my views on this subject elsewhere, and only wish to add that I am not an advocate of any one anesthetic agent as a routine for all cases. Different cases demand different anesthetics. I believe the patient's welfare should be considered in all cases by using the least harmful anesthetic where it can be used successfully.

I use nitrous oxide gas and oxygen for this reason. And if we can induce a safe, pleasant, nontoxic anesthesia and maintain it for seventy-five to 100 per cent. of the operating time, I believe we are considering the best interests of our patients by so doing. Then for the twenty-five per cent. of operating time where we cannot get satisfactory results from gas-oxygen alone, I use ether in addition until I obtain the relaxation desired, when I switch out the ether vapor and continue with gas-oxygen again, thus saving my patient at least seventy-five per cent. of toxemia by avoiding ether to that extent and using a nontoxic substance instead, believing firmly in the principle that in conserving the patients' vitality and enabling them to enter upon their convalescence with the least possible handicap, we are contributing toward the ideal in surgery.

#### REFERENCES.

1. STANGER, Sam. *J. M. A.*, April 4, 1914, p. 1112 (abstract).
2. CRILE, Fredm. December 6, 1913. 3. HENDERSON, John. *Hopkins Hospital Bulletin*, No. 23, p. 507, *J. M. A.*, 1913.
4. GATCH, B. *Trans. Amer. Gynecol. Soc.*, 1914.

25 EAST WASHINGTON STREET.

### INFANT DRUG ADDICTS.

By PERRY M. LICHTENSTEIN, M. D.,

New York,

Physician, City Prison.

Textbooks teach us that the opiates are excreted through mother's milk. This is a fact long known, and in reading or studying this fact we have never stopped to give the matter much thought, but have retained it in our memory as a matter of course, just as we have done with many other facts that we have studied or read about. The excretion of opiates in mother's milk is now of more than passing interest, owing to the well known fact that narcotic addiction is on the increase. We do not come in contact with many cases of infantile addiction for the reason that few children are born to habitues. The action of opiates on the generative system has been previously described.<sup>1</sup>

The infant born of addicted parents is an unfortunate victim. Conception in these cases usually occurs when the parents have been deprived of the drug. The effect upon the child *in utero*, when both parents are addicts, is obvious. One of three things occur: 1, Miscarriage; 2, the birth of a dead child; 3, the birth of a child showing narcotic poisoning and with an inherited tendency toward taking narcotics. The case I am about to report is one which recently came to my notice and treatment in my service at the City Prison, Manhattan. The history is as follows:

CASE. Baby. Mother twenty-one years of age, born in Russia, married two years. Mother and father living and well. Had four brothers and two sisters. None of these

were addicted to the use of a habit-forming drug. Child's history of mother negative. Same true of adult history. No history of venereal disease, epilepsy, or alcoholic addiction. The husband had been addicted to the use of heroine and morphine for more than one year. The woman was not addicted to drugs, previous to the birth of the child. The child was born in a hospital. When the mother returned to her home, she suffered severe abdominal pains. A woman neighbor offered to help her and suggested that she take a sniff of a white powder which she had in her possession. The mother took a sniff and was relieved. She fell asleep and did not awake until morning. Upon awakening she suffered severe cramps and vomited often. In order that she might feel better, the neighbor advised another sniff. This process continued for a period long enough to make a confirmed addict of the mother. In the meantime the child took the breast. The mother noticed that the baby slept much and when awake would curl up in cramps and cry continuously, until nursed. It wanted to be nursed about every hour. When the mother was in need of the drug (*yen yen*), the child would yawn and sneeze and perspire freely, cry much, and suffer cramps. It usually suffered from diarrhea.

The strange thing about the case was that the mother always had enough milk while taking heroine. Our textbooks teach us that opium and its derivatives decrease the amount of milk. The mother took heroine for seven months and then, unable to obtain heroine, she began to use morphine hypodermically. She noticed when she used morphine the milk decreased until she found it difficult to give the baby all it required and had therefore to nurse the baby more frequently. At the time of the mother's arrest she had small breasts with little milk. During the eight months that the mother took the drugs she had no menses. Upon withdrawal of the drug, under treatment, she menstruated on the second day of said treatment.

Another case of infantile addiction was treated at the Wills Mountain Sanatorium in Maryland. This child was sixteen months of age and had also become addicted through the mother's milk. In my case the child was not emaciated, but was pale and flabby looking. Its lips were almost colorless. The pupils upon the day of admission were pin point in size, and did not react to light. The child slept all afternoon and night. The next day it was doubled up in cramps and sweated profusely. It cried often and had to be laid on its abdomen to quiet it. I was forced to give it paregoric. The treatment was begun by allowing the mother to nurse the child but once a day, preferably at night. During the day the child was given the bottle. A mixture containing one minim of tincture of nux vomica and five minims of camphorated tincture of opium to the dram was administered to the baby three times a day. The child was under my treatment for four days. At the end of that time the child seemed more cheerful and suffered no more cramps. Castor oil, drams two, was also administered on the first and third nights.

These cases should sound a severe warning to mothers and to female addicts. The occurrence of such cases emphasizes the fact that the public must be taught the evil effects of drug addiction. It is the duty of every physician to warn all addicts coming under his care of the serious effects that addiction may have upon their future and upon future generations.

789 LEWIS STREET.

<sup>1</sup>Lichtenstein, Narcotic Addiction, New York Medical Journal, Nov. 14, 1914.

## AN UNUSUAL COMPLICATION OF ACUTE APPENDICITIS.

By McW. B. E. SUTTON, B. Sc., M. D.,  
New York.

CASE. Miss S., unmarried woman, aged eighteen years, appetite good, bowels constipated, slept well, was not nervous; family history negative; previous history: First period at fourteen years, bright red flow, three to four days, two to three napkins daily; right ovarian pain since first period; dysmenorrhea day before and first day of period. Called at 5 a. m., and found patient suffering from intermittent colicky abdominal pain; abdomen tympanitic; temperature and pulse normal. No abdominal tenderness. Gave soapuds, enema, liquid diet, castor oil, one ounce.

Diagnosis: Acute intestinal indigestion. At 4 p. m., temperature, 100; pulse, 90 and of good quality; pain, as before; slight localization of pain over McBurney's point. Abdomen slightly tympanitic. Return of enema good, constipated mass. Treatment: Ice bag to right iliac fossa, liquid diet. Diagnosis: Acute appendicitis.

Called 5 a. m. next day; patient suffering with sharp shooting pains in vulva, in addition to abdominal pains, still same character as before. Catheterized and obtained four ounces clear straw colored urine. Temperature, 102; pulse, 110, weak and compressible; marked tenderness over McBurney's point; slight rigidity of right rectus. On consultation immediate operation advised.

On operation, we found at the distal end of the appendix a ruptured abscess, firmly adherent to the posterior wall of the bladder, and a beginning peritonitis.

As the vulva and bladder are supplied in part by the sacral plexus, it is easy to understand why such a complicating symptom should arise. The diagnosis was also complicated by the ovarian pain. A bimanual examination was not advisable as the patient was a virgin; I believe the symptom of a sharp shooting pain in the vulva to be diagnostic of an adhesion of the posterior wall of the bladder.

After searching the literature and finding no reference to such a symptom as the foregoing complication, and after discussing this case with a number of physicians and surgeons and finding only one with any idea as to the cause, I feel that it should be reported as a help in similar cases. The patient recovered after six weeks of drainage.

1979 BEDFORD AVENUE, BROOKLYN.

### Abstracts and Reviews.

#### RECENT STUDIES ON SCHOOL CHILDREN, WITH SPECIAL REFERENCE TO HOOK- WORM DISEASE AND SANITATION.\*

By CHARLES W. STILES,  
Hygienic Laboratory, Washington, D. C.

The watch words of the present day are, "efficiency" and "conservation," but when we stop to consider just what is meant by these expressions that are on everyone's lips, we find that they may be included in the single word, "economy." To most, however, the word economy has an unpleasant ring, for it is associated with the thought of some degree of privation. Perhaps the best definition entirely rules out this aspect of its common meaning, namely, that economy consists in spending the most to accomplish the greatest good. It is just this which

is now being constantly urged upon communities by the majority of sanitarians, but to impress the voter one must be able to bring forward convincing evidence of the value of the desired expenditures. The present study was undertaken with this end in view—to gather the facts upon which to urge the need of increased expenditures as a matter of mere economy in certain of the southern communities.

The sudden outbreak of a case of yellow fever, or the appearance of even a small epidemic of scarlet fever, measles, or other communicable disease strikes terror into a community or calls for immediate drastic measures to check its course. But such epidemics are as nothing when compared to the constant drain upon our resources of money and human lives which constantly goes on from diseases which are ever with us, such as tuberculosis, cancer, hookworm disease, etc.; but these make relatively slight impression on the general citizen who is ultimately responsible for the provision of means to combat their effects. The old expression, "if you take care of the pennies, the dollars will take care of themselves," can be applied directly to the problem of community sanitation. If we care for the little things the larger ones will take care of themselves. The general sanitation of any community is truly an index to the general efficiency of that community, for the little drains such as uncared for tonsillar and adenoid hypertrophy, etc., are reflected in the general educational and commercial development of the community.

A study was undertaken, therefore, to disclose the extent of the influence of sanitation on certain rural and urban districts in the South where hookworm disease is prevalent. The sanitation of the homes from which the children came was taken as the basis of classification. On this basis the material was divided into three groups; one in which the homes were provided with proper sewer connections, another in which privies were used, and the third in which the exact sanitation was unknown. The comparison was made between the first two groups. Over 3,500 children were submitted to examination for intestinal parasites such as were known to be derived solely from the excreta of man. Such parasites were the endameba, *Lambia*, *Trichomonas*, *Ascaris*, *Oxyuris*, and *Trichuris*. Infection with any one or more of these is absolute evidence of some degree of coprophagia, and in the same group of children one would expect to find also a relative increase in the prevalence of diarrheal diseases, dysentery, and typhoid fever. In the entire group of children thirty-seven per cent. of the whites showed infection of this nature and forty-nine per cent. of the negroes. When the children were grouped with regard to home sanitation it was found that among those living under good sanitary conditions, that is with sewers, thirty-four per cent. of the whites and forty-one per cent. of the blacks were infected. Among those having only privies, fifty per cent. of each were infected. It is evident from these figures that, regardless of race, the infections due to coprophagia are always more prevalent among the unsanitary than among the sanitary groups.

The influence of these infections, especially of that by the hookworm, was next studied with reference to physical and mental retardation. The phys-

\*Published by the American Society of Hygiene, New York, 1915.

ical characteristics chosen as criteria were the height, weight, lung capacity, red cell count, hemoglobin, and degree of leucocytosis. In each of these respects it was found that the group with good sanitation excelled that with poor sanitary surroundings. For mental classification the test of memory span for figures and the Knox cube test were applied and the results were about the same as were obtained from the study of physical retardation, namely, that the sanitary group showed less retardation than the unsanitary. The sanitary group showed, in addition, both fewer children with parasites, and less heavy infection per child. This indicated less coprophagia among this group.

The question, How much of these differences were due to differences in sanitation, and how much to differences in home environment in general? is a logical and proper one. It can be answered without reserve that, while some slight difference was probably due to the difference in home environment, the retardation ran nearly parallel with the sanitary conditions and with the prevalence and degree of infections referable to coprophagia. It must be borne in mind that hookworm disease is due *solely* to bad sanitation, and its prevalence is, of itself, an index to the sanitation of a community. We must also recognize that the house fly is a part and parcel of the general sanitary status of a community and is an actual and potential means of spreading the infections due to parasites and organisms which occur in human excreta.

Least exception should be taken to the statistical methods employed in reaching the previous conclusions, another method of approach was undertaken in the hope of giving a relative value to the influence of sanitation on physical retardation. In this only hookworm infection was considered. A large group of children of the same age was chosen and they were examined on 186 physical characters. Each character was given its value and a hypothetical money prize was awarded for the score of each child on each point, following the method of prize distribution in athletic contests. Five classes were created, according to the degree of hookworm infection present. In the first class the children were free from infection and these made the highest score. The second class contained those children living under good hygienic conditions, but who had some degree of infection. Their score was next highest. Class three contained those living under poor conditions, but in whom the infection was mild, as shown by the average numbers of parasites expelled under treatment. The score of this group was next below the first two. The two remaining classes were the same as the third class except for the average numbers of parasites expelled, and their scores were proportional to the degrees of infection present. These same classes were reexamined after the last three groups had been treated to expel the hookworm, the second having been reserved untreated for control. Upon reexamination it was found that the last three groups showed great improvement and the scores were in a measure reversed when the proportional improvements were used for classification. The last two groups were never quite freed from infection, eggs being found in small numbers in the stools, but it was the fourth group in which

the greatest proportional gain was made by treatment. This method of evaluation, then, confirmed the statistical studies previously undertaken in showing the influence of sanitation on physical and mental advancement in the community.

Finally, from the economic point of view, it was found by an analysis of school expenditures that it cost more per capita for public school education among the poorer classes than among the classes which were more affluent and lived under better sanitary conditions. It seems to be the logical corollary to these observations that a greater expenditure of money upon sanitation would be reflected in a material reduction in the cost of education and a simultaneous material reduction in the frequency and extent of both physical and mental retardation of the population. The influence in the home extends to the community and money expended in correcting the conditions in the homes would yield its returns to the community at large.

### Therapeutic Notes.

**Magnesium Sulphate in the Treatment of Tetanus.**—Weintraud and Unger, in *Berliner klinische Wochenschrift* for October 19, 1914, report a case of tetanus in which a new method of administering antitetanic serum was employed with successful results. A urethral catheter was inserted in the ulnar or radial artery and pushed in until its extremity reached the aortic arch. Serum was then injected through the catheter, thus passing promptly to the brain through the carotid vessels and into the spinal cord through the descending aorta.

Regarding the magnesium sulphate treatment, the authors state that they consider it an important symptomatic measure. So far the measure has been applied in about fifty cases, with the result that the mortality has been lowered to thirty-five per cent., with prospects of further diminution as the technic of administration is improved. It is to be noted that the individual susceptibility to magnesium sulphate varies, and that the dose must be regulated by actual trial in each case. The subcutaneous method of administration, alone available to the general practitioner, requires a most careful supervision of the patient, in order that he may be kept in a prolonged anesthetic state without danger of paralysis of the respiratory centres in the medulla. The patient's superficial appearance is no criterion; a slight tendency to paralysis of the respiration must be constantly watched for as the initial sign of possible serious trouble. To antagonize the excessive action of the magnesium salt, one dram (5 c. c.) of a five per cent. solution of calcium chloride may be injected repeatedly into the muscles, as required. The most important measure, however, is artificial respiration, which may prove sufficient alone, particularly if 1/65 grain (one mg.) of physostigmine salicylate has previously been injected. Intratracheal insufflation is advantageous; either oxygen may be run in from a tank or air pumped in with bellows. Intraspinal injection of magnesium sulphate solution is commended as a better procedure than the subcutaneous use of the same drug, but it is a method difficult to apply except in hospitals, as



a single physician cannot carry it through. By this method the spinal canal can be washed out if the action of the magnesium sulphate becomes too profound. Three cases of recovery under magnesium sulphate treatment are referred to by Wentraud and Langer. The rigidity subsided after the first injection, cyanosis and sweating were relieved, and respiration was rendered easier. Renewed pain and convulsions were combated with additional injections, as required. The patients paid no attention to the local pain of the injections, owing to the extent of relief brought about by the magnesium sulphate.

**Treatment of Laryngitis.**—Harold Barwell, in his work on *Diseases of the Larynx*, recommends the following combinations for inhalation from hot water in laryngitis:

|                                     |                      |
|-------------------------------------|----------------------|
| I.                                  |                      |
| R. Acidi benzoici, .....            | gr. iii (0.2 gram);  |
| Kaolini, .....                      | gr. xii (0.8 gram);  |
| Triturate and add                   |                      |
| Aquæ, .....                         | ℥ss (15 c. c.);      |
| Tincturæ iohannæ, .....             | ℥xviii (1.15 c. c.); |
| Shake and add                       |                      |
| Aquæ, q. s. ad.....                 | ℥i (30 c. c.).       |
| Sig.: To be inhaled from hot water. |                      |

|  |                      |
|--|----------------------|
| II.                                    |                      |
| R. Mentholi, .....                     | gr. xvi (1 gram);    |
| Mentholi, .....                        | ℥ii (8 c. c.);       |
| Magnesi carbonatis, .....              | gr. viii (0.5 gram); |
| Aquæ, q. s. ad.....                    | ℥i (30 c. c.).       |
| M. Sig.: To be inhaled from hot water. |                      |

In each case one dram (4 c. c.) of the preparation should be added to a pint of water at 130° to 140° F., and inhaled for five to ten minutes. The patient must remain in a warm room for half an hour afterward.

**Treatment of Paroxysmal Edema.**—W. W. Palmer, in the *Archives of Internal Medicine* for February, 1915, lays stress on salt retention as an important factor in the causation of paroxysmal edema. An inability of the kidneys sufficient to excrete chlorides appears to be the underlying condition in these cases. Moreover, although the kidneys are able to take care of two to three grams of salt daily, any increase in the demand for salt excretion actually reduces, at least temporarily, their capacity even below the limited amount referred to. The marked therapeutic value of a diet of little salt and free catharsis in these cases is pointed out. The diet employed in one of the author's cases was as follows: Milk, 1,500 c. c.; salt free bread, 100 grams; butter, 60 grams; one boiled egg, and one orange. For the first four days from 500 to 800 c. c. of milk was alone given. Under this treatment the patient's weight rapidly fell from 161 to 118 pounds, and remained at the latter figure. Special attention is called to the efficacy of catharsis as a means of excessive salt in a certain proportion of cases.

**Epinephrine in the Treatment of Typhoid Fever.**—Lyde Sargent, in *Presse médicale* for December 31, 1914, lays stress on insufficient activity of the adrenals as a factor of certain conditions, such as prostration and low blood pressure, in the severe adynamic and anuric forms of typhoid fever. Results obtained with epinephrine in this disease, moreover, lead him to recommend its systematic use.

Even if the role of adrenal insufficiency in the majority of typhoid cases is not recognized, the occurrence of cardiovascular disturbances leading frequently to collapse and sudden death in this affection cannot be denied, and against these disturbances epinephrine is a remedial agent of the first order. The author administers daily 1.130 to 1.65 grain (0.005 to one mg.) of epinephrine in two doses subcutaneously, either from sixteen minim (one c. c.) ampoules or added to half a pint (250 c. c.) of normal saline solution. The blood pressure is watched and the drug continued or intermitted according to the general effect produced and the changes in pressure noted. Used in combination with the customary measures in typhoid fever, epinephrine has yielded excellent results in Sergeant's hands. He urges, however, that the drug be given from the outset, serious disturbances not being waited for before the remedy is ordered. He recommends epinephrine also in cases of severe wounds and infections other than typhoid.

**Prevention of Deterioration in Emulsions.**—E. Apolant, in *Zentralblatt für innere Medizin* for August 28, 1915, is credited with the observation that deterioration of emulsions can be avoided through the addition of three grains (0.2 gram) of salicylic acid in every five ounces (150 c. c.) of the preparation prescribed. With this harmless addition all emulsions will keep at least a week even in the summer time.

**Treatment of Alopecia pityroides.**—Jackson and McMurtry, in their work on *Diseases of the Hair*, state that sealing of the scalp may be so marked as to give rise to thick, greasy scales; cure of the seborrheal condition should first be sought. Olive oil or oil of sweet almond in which salicylic acid has been dissolved should be well rubbed into the scalp at night.

|                             |                     |
|-----------------------------|---------------------|
| R. Acidi salicylici, .....  | gr. xx (1.25 gram); |
| Olei amygdalæ dulcis, ..... | ℥ii (60 c. c.).     |
| Solve.                      |                     |

After the preparation has been rubbed in a cap of oiled silk or rubber should be put on. Next morning the scalp should be washed with soap and water. This should be repeated for several nights until the scalp is clean. Sulphur cream may be substituted for the preparation above mentioned.

**Treatment of Pneumonia.**—E. Lévy-Du Pan, in *Revue médicale de la Suisse romande* for January, 1915, recommends in pneumonia colloidal silver, which he has been employing for many years, sometimes with striking results. He has treated nearly a hundred cases with the electrically prepared colloidal silver, which he injects subcutaneously in doses of eighty minims (5 c. c.). None of these cases terminated fatally; and the only two deaths from pneumonia he has seen in the last five years, occurred in patients who had not received the remedy. The crisis was brought on in forty-eight hours, at the latest. Only occasionally were two injections required in a single case. The drop in temperature induced by the drug is usually permanent. In one instance, a case of bronchopneumonia in a boy of five years, three injections were given at intervals of forty-eight and twenty-four hours; recovery promptly followed.

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CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.  
CLAUDE L. WHEELER, A.B., M.D.Address all communications to  
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## PITUITRIN IN THE TROPICS.

Dr. Reginald Johnson, in an original communication to the *Dublin Journal of Medical Science* for October, 1915, discusses pituitrin and its action on women in the tropics. He summarizes his conclusions somewhat as follows:

1. The child must lie in the long axis of the uterus and present preferably by the head.
2. There must be no pelvic contraction beyond a very slight amount, and no obstruction of any kind to labor. Rectum and bladder *must* be empty.
3. The os must be soft and easily dilatable.
4. The dose should be one c. c., not more, except in cases of inertia of multiparæ. It should not be given more frequently than once an hour, and never more than five c. c. in any one case.
5. Injection into the buttocks is the best way of introducing the drug.
6. The best time to get the full effect is at the end of the first stage and with the membranes ruptured.
7. The drug has more effect at full term than at any other period of pregnancy.
8. It is well to give a routine dose of one c. c. in every case that fulfills the conditions necessary for the use of the drug because of the great help it affords in causing detachment of the placenta.
9. The perineum must be especially guarded, as the pains caused by the pituitrin are of great expulsive force. Chloroform diminishes the intensity of the pains, and if pushed causes their disappearance.
10. The milk increas-

ing power of pituitrin and its use as a peristaltic and diuretic, alleged by some authorities, do not seem to apply to Europeans in the tropics. 11. Large doses frequently repeated seem to have a slight toxic effect on mother and child.

Where it was possible Doctor Johnson always instructed his patients to have a hot Sitz bath every evening for about a quarter of an hour for the last three months of pregnancy, then to use pure olive oil as an inunction for the perineum and surroundings. He removed all meat from the diet for the last four months. These details, with the usual care for general hygiene, seemed to aid pituitrin in its effect.

Doctor Johnson urges care in the selection of a preparation of pituitrin. He had what he calls "startling" results from one well known proprietary preparation, while another—American—gave him uniformly good results in 100 cases.

## A USEFUL MATERIAL FOR SPLINTS.

E. Muirhead Little, in a communication to the *Lancet* for October 9, 1915, speaking of the present scarcity of skilled labor, lays stress on the value of three ply wood as a material for splints, a material easily handled by unskilled persons. The substance consists of three very thin layers of tough wood which are superimposed, so that the grain of the middle layer runs at right angles to that of the two outer ones. The three layers are then cemented together under pressure. The resulting material is very strong for its weight, has no tendency to warp, and can be split only with great difficulty. It is made of various thicknesses, the most useful of which are one tenth, one eighth, and one fifth of an inch. Owing to the absence of any tendency to split, windows may safely be cut in the splints in order to allow access to wounds. After softening the wood by soaking it in hot water, it can be bent into any moderate curve, but it is easier to mould the thinner varieties than the thicker. It must be held in the desired shape during drying by bandaging or other means, after which the curve becomes fixed and there is no tendency to spring back.

For many of the smaller splints, such as those for the forearm, even when windows are cut, no reinforcement is necessary if they are made of the one fifth inch stuff, but when using the more easily bent thinner material, or making longer splints, it is wiser to strengthen them by nailing a strip of wood one half by three eighths or three eighths by one quarter inch along either edge, or wherever it may seem to be needed. Small half inch brass tacks, which do not rust and can be easily clinched, are suitable for this purpose. A number of these splints have been

and are in use at the Royal National Orthopædic Hospital in the treatment of wounded soldiers, and have given satisfaction on account of their strength and lightness. This latter quality makes them acceptable to patients and also less likely to shift their position. The cost of a square yard of three ply wood is about half a dollar. Out of this twenty-four forearm splints can be cut, each costing for materials, including nails and strengthening strips, not more than three cents. Adjustable jointed splints are made of the same material with the addition of metallic hinges of various kinds, such as will readily occur to anyone of a mechanical turn of mind. These splints cannot be sterilized by boiling, but if they are given a coat of shellac varnish they will not absorb discharges and are easily cleaned with cold water and soap.

The editor of the *Lancet*, in a short note, draws attention to the fact that three ply wood has been known to others, but he congratulates Mr. Little on his timely advocacy of the material, which should be as widely known as possible.

#### NEOPLASMS OF THE MAMMARY GLAND IN THE MALE.

In a recent excellent work (*Thèse de Paris*, 1914), Duquesne has given much valuable information, based on original research, on neoplasms encountered in the male mammary gland, which may be the seat of all the types of growth met with in the female.

Adenomata are always small, this being partly due to the intense fibrous reaction around the proliferated epithelial cells. The canalicular origin of the adenoma is evident, the glandular culs-de-sac being usually absent. The connective tissue framework contains few bloodvessels. The fixed cells may be few, at other times numerous, and they may enter between the connective tissue fibres to such an extent as to resemble a fibrosarcoma, and on account of this intense cell reaction, malignant transformation is to be feared.

Adenosarcoma is, in fact, a relatively frequent type of sarcoma of the male breast. The growth may not show any canalicular proliferation, but simply a diffuse fibrous tissue reaction around the poorly developed galactophorous ducts, whose epithelium is often atypical—polymorphous. To these cases, when nothing denotes an inflammatory process, it is logical to apply the name of fibroma.

Malignant growths of the male mammary gland are, like the nonmalignant types, remarkable for the tendency to the fibrous forms. Scirrhus growths are the commonest and microscopically reveal thin lines of cancer cells in the fibrous tissue. The so

called intracanalicular epithelioma, in which the neoplastic cells form granulation masses distending the galactophorous ducts, is quite a common type of onset in mammary cancer in the male. After this stage of intracanalicular vegetation, the neoplasm generally evolves like a scirrhus growth.

Encephaloid cancer, much less frequent than the former, is characterized, as in the female, by the soft consistence of the tumor, the tendency to hemorrhage, and the presence of polymorphous epithelial cells of very unequal size forming relatively large masses. Colloid cancer is rare and the recorded cases show that the colloid transformation involved only certain portions of the growth.

Clinically, mammary cancer in the male does not essentially differ from that in the female and its great infrequency is the only cause of diagnostic errors. The growth may develop slowly, or, on the other hand, it may cease in growth and later on suddenly take on a rapid increase in size. In the latter instance it is either a sarcoma or a nonmalignant tumor which has undergone malignant transformation. The remarkable indolence of the growth during its earlier stage is an almost constant sign, and even after full development or after the appearance of ulceration, pain is usually not intense.

In the male breast cancer appears to have a less intense power of invasion than in the female, as is evident from the infrequency of palpable lymph nodes and adhesion to the pectoralis and the longer survival of the patient.

But this benignity is, perhaps, more apparent than real and is undoubtedly due to the fact that the case is recognized in its early stages. However, recurrence is frequent and generalization far from uncommon.

The most frequent nonmalignant manifestations in the male breast are fibroadenomata, fibromata, and chronic mastitis. Mammary tuberculomata have been met with in the male, the diagnosis being readily made by the characters of the enlarged lymph nodes and the rapid ulceration of the neoplasm.

#### MOTOR CARS AND ACCIDENTS.

No one who has watched the motor tragedies of the last few months can have any hope that the speed mania will turn favorably. The long list of motor accidents, the complicated causes, even the advance in automobile shares attest this. The best that medical and trade authorities have been able to promise the public is that the dangers of the sport will disappear when certain improvements have taken place in the manufacture of motor cars. They point to improvements that have lessened the



danger of motoring—the absence of nasty fumes from the exhaust pipe, of noise, of the crank, while better tires and springs have diminished vibration. The latest improvement is thought by some to be the greatest of all. This device consists in lessening the vibration of the steering gear, of which even the most hardened chauffeur must by this time have been made aware by the strain on his fingers and arm muscles. Small is the attention which the amateur usually gives to affairs of mechanism before he has bought the machine, and he generally learns too late the effects of vibration, of the strain of holding and guiding the steering wheel.

The subject may seem small and insignificant, but it is neither small nor insignificant if the amount of human happiness which is at stake is duly considered. A neuritis, as Oppenheim has recently laid before the medical world, occurs after prolonged holding of a vibrating steering wheel. For example, he says: "That a repeated but not so intense a pressure on the nerves may cause a neuritis is quite established. In this way the so called tool paralysis and the professional neuritis occur, by which the constant pressure of a tool, a metal wheel, a drill, on the nerves of the hand may produce in them a state of inflammation." (*Lehrbuch der Nervenkrankheiten*, page 547.) In another place (page 717) he classifies the pareses of workmen (*Arbeitsparesen*). Similarly, in Gilman Thompson's *The Occupational Diseases*, page 548: "Motor bus drivers who are constantly pressing with the right foot to start the machine may suffer from sciatica and lumbago. Burroughs has described a case in which there was severe pain after each day's work in the right leg and lumbar region. There was also hyperesthesia, so that the patient could not tolerate the weight of the bed clothing or lie on the back." He adds that others suffer in this way from the effects of vibrating tools. "Those whose work comprises the firm grasp of tools in the hand, especially to make pressure or pound, frequently suffer from neuroses. Neuroses of the hand and arm usually begin with the symptoms of increasing fatigue after prolonged use, which is soon accompanied by neuralgic pain." (See also pages 546 and 561, where he deals at greater length with the effects of vibration.)

Yet as we live more familiarly with the motor car, we cease to think of these matters with unnecessary anxiety. We suspect that these things are not properly grasped. Works like Oppenheim's and Thompson's might be studied with profit. They are chiefly concerned, however, with the working class. The case is opposite with other citizens. Of a hundred persons killed in automobile accidents, more than half perish in an attempt to

drive a machine which is beyond their powers. The accident record of this city is high; the motor car seems by the figures to be more than three times as dangerous as the trolley car, and it has been suggested that this difference in the figures is due to trolley cars being provided with rails. The question is not so simple. Motor cars are more dangerous, not because they are not guarded by rails, but because they ply at greater speed in the busiest streets, and take the edge of the road, because they are driven by a rich and nervous class, whereas the motor truck and the motor bus, as well as the trolley car, are managed by a cooler, more disciplined, less nervous class. This class is accustomed to handling tools, and a vibration caused by the steering gear affects their muscles and nerves less. The remedy, of course, is to examine motorists and reduce the vibration of the steering wheel and its metal.

#### AN INTENSIVE TREATMENT OF SYPHILIS.

André Bernheim, according to *Presse médicale* for September 23, 1915, addressed the Société de médecine de Paris, on August 27th, on a special treatment of syphilis now in vogue in the French army. Every day there is an injection of mercury benzoate, one in 100, or of three cgm. of mercury biniodide. To increase absorption and elimination of the mercury, the patient drinks daily a glassful of the *eau sulfureuse* of the Codex (water containing about three times its bulk of hydrogen bisulphide), and takes a sulphur bath. He is allowed a quart of milk daily in addition to his ration. During each meal a pill is swallowed, containing one mgm. each of arsenous acid and strychnine sulphate. The patient uses a dentifrice of mentholated chalk and receives also a daily painting of the gums with a solution of chromic acid, one in fifty. During this treatment the patient is closely watched and the urine is examined every six days.

The local lesions are by no means neglected; chancres are treated with the thermocautery and powdered with calomel. Mucous patches are painted successively with silver nitrate, one in ten, and silver chromate representing chromic acid, one in fifteen. Papulosquamous syphilides are covered with Vigo's plaster, a complex mixture of mercury, turpentine, saffron, myrrh, wax, styrax, etc.

Under these intensive measures, Bernheim states that chancres heal in from five to sixteen days, mucous patches and secondary symptoms generally in about two weeks. He makes usually twenty injections and with the rarest exceptions the patient is ready on the twenty-first day to return to the ranks, whither he carries a carefully written code of instructions as to his future conduct.

## PEPPER AND FILARIA.

J. A. Robertson, of Georgetown, Demerara, states in a letter to the *British Medical Journal* for October 9, 1915, that he desires to get on record his opinion that pepper has great prophylactic value against filaria. He has found that when pepper is much used in the diet, filariasis is rare and that the reverse is true. Mr. Robertson has had good results from the administration of tincture of capsicum in filarial fever and lymphangitis and he believes that piperine would act equally well.

## ERRATA.

In an editorial article, Arctic Colds, published in our issue for October 23, 1915, two temperatures are mentioned, 35° and 50° F. respectively. In each case the minus sign should have preceded these figures, as they were intended to record temperatures below zero.

## News Items.

**The American Association for the Study and Prevention of Infant Mortality** will hold its sixth annual meeting in Philadelphia, November 10th, 11th, and 12th, with headquarters at the Bellevue-Stratford Hotel.

**Harvey Society Lectures.**—The second lecture in the eleventh course will be given on Saturday, November 6th, by Professor A. J. Carlson, of the University of Chicago, his subject being Recent Contributions to the Physiology of the Stomach.

**Prevalence of Disease in Mississippi.**—During the month of August, 1915, there were reported to the State department of health 25,998 cases of malaria, 1,787 cases of pellagra, 78 cases of smallpox, 1,106 cases of typhoid fever, 74 cases of diptheria, 48 cases of measles, and 22 cases of scarlet fever.

**Typhus Fever in the United States.**—According to official reports of the United States Public Health Service, three cases of typhus fever occurred in New York State during the month of August, and during the week ending September 18th, one case was reported in the city of New York and one case in Baltimore.

**Har Moriah Clinical Society.**—A regular meeting of the Clinical Society of Har Moriah Hospital, New York, will be held on Monday, November 1st, at the hospital, at 8:30 p. m. An interesting program has been prepared consisting of the presentation of patients and the reports of cases, followed by a general discussion. All who are interested are invited to attend. Dr. Hyman Goldstein is secretary and Dr. Selian Neuhoff is president of the society.

**Tri-State Medical Society of Iowa, Illinois, and Missouri.**—At the Chicago meeting of this society, held recently, Dr. A. B. Middleton, of Pontiac, Ill., was elected president and other officers were elected as follows: Dr. Granville Ryan, of Des Moines, vice-president for Iowa; Dr. E. P. Sloan, of Bloomington, vice-president for Illinois; Dr. G. Wilse Robinson, of Kansas City, vice-president for Missouri; Dr. Charles H. Parkes, of Chicago, secretary and treasurer. Next year's meeting will be held in Kansas City.

**A School of Orthodontia Opened in Boston.**—The Forsyth Dental Infirmary for Children, of Boston, has opened a postgraduate school of orthodontia, which is said to be the first of this kind to adopt a full academic year of instruction. The curriculum is comprehensive and includes not only the technical dental subjects but also allied medical branches that have a bearing on the development of the child. The excellent clinical facilities of the institution will provide the student ample opportunity to acquire the practical experience necessary. Emphasis will be laid

**The Alvarenga Prize.**—The College of Physicians of Philadelphia announces that this prize for 1915 has been awarded to Dr. J. E. Sweet, of Philadelphia, for his essay entitled Surgery of the Pancreas. The next award will be made on July 14, 1916, provided that an essay deemed by the committee of award to be worthy of the prize has been offered. For information regarding conditions of the competition, address Dr. Francis R. Packard, 19 South Twenty-second Street, Philadelphia.

**National Committee for the Prevention of Blindness.**—The annual meeting of this committee will be held at the Academy of Medicine, 17 West Forty-third Street, New York (not at the Russell Sage Foundation Building, as announced), on Thursday afternoon, November 4, 1915, at 4:30 o'clock. The Honorable Joseph H. Choate will preside, and the Honorable William H. Taft and Dr. George E. de Schweinitz, professor of ophthalmology, University of Pennsylvania, Philadelphia, will address the meeting.

**Missouri Valley Medical Association.**—The annual meeting of this association was held in Des Moines, September 21 to 23, 1915, under the presidency of Dr. Granville Ryan, of Des Moines. Officers were elected as follows: President, Dr. John P. Lord, of Omaha; first vice-president, Dr. Charles G. Geiger, of St. Joseph, Mo.; second vice-president, Dr. Hobart A. Weston, of Des Moines; secretary, Dr. Charles Wood Fassett, of St. Joseph, Mo. (re-elected); treasurer, Dr. Oliver C. Gebhardt, of St. Joseph.

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Monday, November 1st, Academy of Surgery, Philadelphia Clinical Association; Tuesday, November 2d, Wills Hospital Ophthalmic Society, Philadelphia Laryngological Society, Medical Examiners' Association; Wednesday, November 3d, Physicians' Motor Club, College of Physicians, Lebanon Hospital Clinical Society; Thursday, November 4th, Obstetrical Society; Friday, November 5th, Kensington and Southeast Branches of the County Medical Society.

**American Social Hygiene Association.**—At the annual meeting of this association, held in Boston on October 6th in conjunction with the Massachusetts Society for Social Hygiene, Abram W. Harris, president of Northwestern University, Chicago, was elected president, and Dr. Charles W. Eliot, president emeritus of Harvard University, honorary president. Other officers were elected as follows: Dr. David Starr Jordan, Dr. William T. Foster, Dr. Felix M. Warburg, and Dr. Walter T. Sumner, vice-presidents; Henry L. Higginson, of Boston, treasurer; Donald R. Hooker, M.D., of Baltimore, secretary; Dr. William F. Snow, of New York, is general secretary.

**The Southern Medical Association** will meet in annual session in Dallas, Texas, November 8th to 11th, under the presidency of Dr. Oscar Dowling, of Shreveport, La. An interesting program has been prepared, and elaborate plans have been made by the local committee of arrangements for the entertainment of visitors. In addition, the surgeons of Nashville and Memphis are arranging a series of clinics for those who are en route to the Dallas meeting, the Nashville clinic to be held Friday, November 5th, and the Memphis clinic Saturday, November 6th. The Georgia Surgeons' Club, of which Dr. E. C. Davis, of Atlanta, is president, and Dr. R. M. Harbin, of Rome, secretary, is aiding the Tennessee surgeons in arranging these clinics. Dr. Seale Harris, of Birmingham, Ala., is secretary and treasurer of the association.

**A Tuberculosis Conference.**—The second annual meeting of the North Atlantic Tuberculosis Conference and the annual tuberculosis conference of the State Charities Aid Association will be held in Albany, N. Y., November 4th and 5th, under the auspices of the National Association for the Study and Prevention of Tuberculosis, the State Charities Aid Association, and the State Department of Health. All the meetings will be held in the State Education Building. Governor Whitman will address a mass meeting on Thursday evening, and other speakers at this meeting will be Dr. Hermann M. Biggs, State Commissioner of Health, and Mr. Homer Folks, secretary of the State Charities Aid Association. There will be demonstrations showing how to detect pulmonary tuberculosis, sections for visiting nurses, Red Cross Seal agents, dispensary physicians, tuberculosis hospital superintendents and managers, and open air school workers.

**The Death Rate of New York City.**—During the week ending October 23d, there were in New York city 1,290 deaths, with a rate of 11.04, compared with 1,210 deaths and a rate of 11.30 for the corresponding week of 1913. Health department officials pointed out that while there were eighty more deaths reported during the past week than during the corresponding week of last year, forty-nine of these are to be accounted for by the increase in population. Considering the boroughs separately, Manhattan, Bronx, and Queens showed a decrease in their death rate, Brooklyn and Richmond each an increase. Measles, scarlet fever, diphtheria, croup and cerebrospinal meningitis showed noteworthy decreases in the number of deaths reported from these causes; heart disease and chronic Bright's disease both showed an increase. The mortality in the age group under one and under five years showed an increase. The rate for the first forty-three weeks in 1915 was 13.23, compared with 13.65 for the corresponding period of 1914.

**Free Health Talks in Boston.**—The program has been issued for the fourth series of free public health talks, given under the auspices of the Massachusetts Homeopathic Hospital, at the department of clinical research and preventive medicine, Evans Memorial Building, on Tuesday evenings at eight o'clock. The first lecture will be given on November 2d by Dr. Selskar M. Gunn, director of the division of hygiene, Massachusetts State Department of Health, his subject being State and Municipal Health Precautions, and other lectures for the month of November are as follows: November 9th, Some Laws of Reproduction, by Dr. A. W. Weyse, professor of physiology, Boston University; November 16th, How to Secure Better Medical Service for Less Money, by Dr. Richard C. Cabot, professor of medicine, Harvard University; November 23d, The Immigrant and Public Health, by George W. Tupper, Ph.D., immigration secretary, U. S. C. A.; November 30th, Mouth Hygiene; Its Relation to General Health, by Dr. LeRoy M. S. Miner.

**Philadelphia Medical Club Nominations.**—Eight hundred members and guests attended the reception given in honor of Surgeon General Rupert Blue, United States Public Health Service, and Rear Admiral W. C. Braisted, surgeon general of the United States Navy, by the Medical Club of Philadelphia on the evening of October 15th in the Bellevue-Stratford Hotel. At the business meeting which preceded the reception, the following nominations were made for officers to serve during the year 1916: For president, Dr. Judson Daland; first vice-president, Dr. William Duffield Robinson; second vice-president, Dr. W. Edgar Darnell, Dr. Franklin Brady, and Dr. J. Torrance Rugh; secretary, Dr. William S. Wray; treasurer, Dr. Lewis H. Adler, Jr., Dr. Swithin Chandler, Dr. H. H. Whitcomb, and Dr. Paul J. Sartain were nominated for governor, and directors, five to be elected, were nominated as follows: Dr. G. Oram Ring, Dr. Charles S. Barnes, Dr. L. J. Burns, Dr. Alexander McAlister, Dr. George C. Yeager, Dr. Howard A. Sutton, and Dr. Harbey E. Schock. The election will be held in January.

**Personal.**—Dr. William G. Spiller has been appointed professor of neurology in the medical department of the University of Pennsylvania, to fill the vacancy caused by the recent resignation of Dr. Charles K. Mills. Doctor Mills, who has been connected with the institution for forty-two years, was appointed emeritus professor of neurology.

Dr. George Chaffee, of Brooklyn, founder of the New York and New England Association of Railway Surgeons, was presented with a silver loving cup at the twenty-fifth annual meeting of the organization held in New York last week.

Dr. Gwylim G. Davis has resigned as orthopedic surgeon at the Philadelphia General Hospital, after fourteen years of service in that institution; Dr. Melvin M. Franklin has been appointed his successor.

Dr. George H. Sexsmith, of Bayonne, was unanimously elected president of the Hudson County, N. J., Medical Association, at the annual meeting held on October 5th.

Dr. J. B. Frame, of Philadelphia, has gone to Persia to take charge of a hospital.

Dr. William C. Hollopeter, of Philadelphia, has resigned as professor of pediatrics at the Medico-Chirurgical College, a position he has held for fifteen years. Dr. James H. McKee has been appointed to succeed him.

**Gifts and Bequests to Hospitals.**—Guy's Hospital, London, has received \$125,000 from the trustees of the will of the late Sir William Dunn for the endowment of a lectureship in pathology in Guy's Hospital Medical School, to be known as the Sir William Dunn Lectureship in Pathology.

**The Proprietary Medicine Ordinance of the New York Board of Health.**—On December 31st the Board of Health of the City of New York adopted an ordinance known as Section 117 of the Sanitary Code, prohibiting the sale in New York City of all proprietary medicines except those which bore on the label the name of the active ingredients, or which had been registered with the Board of Health. Some patent medicine manufacturers assert that they will not comply with the ordinance, but will take it into court to determine its legality. On the other hand, eleven of the leading wholesale druggists of New York city issued a notice on October 14th requesting the manufacturers of proprietary medicines to comply with the requirements of the ordinance. It is understood that the local authorities on December 31st will stamp all stocks of proprietary medicines on hand, both in the wholesale and retail stores, and that no prosecution will be brought against the sale of such goods as bear this stamp. On October 26th the ordinance in question was amended so as to require the names of the active ingredients only.

**Clinical Congress of Surgeons of North America.**—More than fifteen hundred surgeons from the United States and Canada attended the sixth annual session of this congress, held in Boston during the past week, with headquarters at the Copley-Plaza Hotel. Following the precedent established at the London session of the congress in July, 1914, a limit of attendance was fixed, based upon the capacity of the various operating amphitheatres, lecture rooms, and laboratories of the principal hospitals and medical schools of Boston, and this limit was 1,500. According to the plan successfully carried out at previous meetings, the mornings and afternoons were devoted to clinics, demonstrations, and lectures in the hospitals and medical schools, and in the evenings scientific papers were read and discussed. On Monday evening the presidential meeting was held. Dr. Fred Bates Lund, of Boston, chairman of the committee on arrangements, delivered the address of welcome, and addresses were also delivered by Dr. John B. Murphy, of Chicago, the retiring president, and Dr. Charles H. Mayo, of Rochester, Minn., the incoming president. An interesting feature of Wednesday evening's program was a demonstration of plastic bone surgery, illustrated by lantern slides. Thursday evening was devoted to discussions of cancer and of military surgery. The visiting surgeons were much interested in an exhibition of specimens illustrating war surgery which had been presented to Harvard Medical School by the American Ambulance Hospital in Paris.

**Public Health Work in Dutchess County.**—An interesting experiment in health work extension is shortly to be attempted in Dutchess County, N. Y. The lines along which it is to be conducted are new, inasmuch as the health problems involved are to be approached from an unusual angle, and handled on a more comprehensive and scientific basis than has ever been undertaken before.

The agency which will carry on this work, following a carefully planned program of activities, will be specially created for the purpose, and the prototype, it is hoped by its sponsors, of similar organizations later to be established throughout the country. It is to be called the Dutchess County Health Association and the actual process of organizing it is now under way. A committee of influential and wealthy citizens of the county, cooperating with a special committee from the Dutchess County Medical Society, are raising funds to carry on the work, and perfecting the necessary local organization details. Permanent headquarters will be established in Poughkeepsie, and branches opened in other parts of the county as the demand for or the need of them arises.

The beneficial results sought and the methods to be applied to secure them are the direct outcome of an intensive study into the extent, care, and prevention of sickness, jointly undertaken by the Committee on Hospitals of the New York State Charities Aid Association and the Thomas Thompson Trust of Rhinebeck, N. Y., a philanthropic foundation. A full report of this investigation has just been made public.



## HEMADENOLOGY:\* A NEW SPECIALTY

## THE INTERNAL SECRETIONS—THEIR FUNCTIONS AND BEARING ON DISEASE AND THERAPEUTICS

By CHARLES E. DE M. SAJOUS, M. D., LL. D., Sc. D.,  
Philadelphia.

(Nineteenth Communication.)

## THE DUCTLESS GLANDS IN INSANITY.

(Continued.)

In tracing, in our preceding communication, the stigmata of hyperthymia, *i. e.*, overactivity of the thymus with enlargement of the organ, stress was laid, sustained by illustrations, upon the pathogenic influence of pressure exerted upon the underlying organs by the thymus, in diseases now attributed to this organ. This does not mean that the purely mechanical theory of Grawitz should be adopted *in toto*, nor does it involve the necessity of accepting Paltauf's view that the mechanical factor should be disregarded. The truth here, as is the case with many controversies, lies midway between the two extreme opinions, each contributing its share to the elucidation of the problem. Indeed, the mechanical factor cannot be denied in the presence of the considerable evidence accumulated in recent years. The asphyxia of thymic asthma was completely relieved by Chevalier Jackson, for example, when he exposed the gland and lifted it away from the trachea, while thymectomy is known to cure the disease. Various surgeons have also noted in the course of operations that compression or kinking of the latter could be produced by the thymus, immediate relief following restoration of its normal diameter. In a case of Clessin's a pin could be introduced only with difficulty through the constriction in the trachea caused by the pressure of the gland. Flügge found marked compression of the lower portion of the canal in seven cases of thymic death in infants. Tracheoscopy by Chevalier Jackson and x ray examination by several observers have also demonstrated that death as a result of tracheal stenosis is not only possible, but relatively frequent.

Pressure on the vessels is quite as undeniable, having been observed at autopsies and in the course of operations. The venous engorgement shown in Figure 1 of the illustrations published in our preceding issue, and which is sometimes witnessed in cases of thymic enlargement, exemplified another result of pressure. As regards pressure on the nerves, positive opinions have not, so far, been possible. But the invaluable observations of William Browning (1), of Brooklyn, have definitely shown an etiological connection between stammering and thymic hypertrophy, and, moreover, the beneficial influence of x ray therapy, which, as is well known, causes contraction and functional inhibition of the gland and, therefore, diminution of the pressure on the underlying nerves. That pressure upon the lymphatic vessels is quite possible is well shown by Figure 4 in our preceding article. It entails as nor-

mal consequence, engorgement of lymph nodes and other lymphoid tissues, so frequently observed in thymic disorders, though, as we shall see, a toxic factor plays an important part in the process.

It is evident, therefore, that we cannot with Paltauf overthrow the mechanical theory, although it does not account by any means for all the morbid phenomena witnessed. Yet we should not lose sight of the fact that an enlarged thymus is virtually jammed between two resistant surfaces, the spinal column and the sternum, and that the soft tissues—vessels, air and lymph channels, etc.—serve as pillows which are compressed when such a gland from any cause becomes temporarily enlarged. Another important feature in this connection—one to which attention was first called in these articles—is that *the size of the thymus fluctuates, becoming larger when the diet is liberal and the blood pressure is high, and, conversely, smaller under the opposite conditions.* Hence the fluctuations of attacks of thymic stridor or asthma which sometimes, after a period of cyanosis, end in death from asphyxia. The autopsy may show no evidence of pressure under these conditions, since, as stated by d'Oelsnitz, the thymus becomes decongested after death and resumes its normal shape.

The foregoing data are of secondary interest so far as the pathogenesis of insanity is concerned, but, as we shall see, they will prove of value when the diagnosis and therapeutics of mental disorders are considered. More closely bound up with their pathogenesis are those effects which pressure does not explain. What are these nonpressure effects?

Bartel (2) in one hundred autopsies in subjects who had died of status thymicolymphaticus, observed phenomena which are not wholly accounted for by compression of the thoracic organs, viz., very noticeable smallness of the heart, aorta, and the peripheral vessels, colloid degeneration of the thyroid gland, enlargement with hyperplasia of the lymphoid tissue of the nasal, pharyngeal, and buccal cavities (conditions known in laryngology as adenoid vegetations, hypertrophy of the tonsils, hypertrophy of the lingual tonsil, etc.), also of the lymph nodes in general, including those of the stomach and intestines and the follicles of the spleen, all occurring in adolescents or young adults showing considerable enlargement of the thymus. All these phenomena had already been observed by Paltauf, who had also noted a tendency to pallor, adiposis, deficient hair growth, deficient development of the genital organs, and, suggestive in the present connection, lymphocytosis.

Paltauf attributed these phenomena to a toxemia or to some sort of infection. The latter etiological factor has not gained support; but such is not the case with the former. Many clinicians and investi-

\*Hemadeno, from the Greek *haima*, blood, *adēnē*, gland, *Adōnos*, to cut, to divide, to separate, to divide, to separate, to divide, and other terms applied to specialties) the aggregate of our knowledge on the ductless or blood glands.

gators, including Hart, Rachford, Pinde, etc., now regard the morbid effects as the result of an accumulation of *toxic waste products*, due in turn, to excessive secretory activity of the gland and the resulting abnormal activity in all cellular interchanges. It is to the action of these poisonous wastes that they attribute the swelling of the lymphatic nodes and tissues. Klose and Vogt, on the other hand, attribute the morbid phenomena, even thymic death, to an acid intoxication.

It is perhaps unnecessary to emphasize the fact that the functions I have attributed to the thymus harmonize all these views. Briefly, *the presence of an overactive thymus in a child, or of a persistent thymus after puberty when its active participation in the development of the body should virtually have ceased, means a corresponding production of thymic lymphocytes and nucleins over and above the needs of the body. Metabolism being unduly activated, toxic wastes accumulate in the blood which provoke the toxic symptoms observed in status thymicolymphaticus.*

The genesis of the symptoms now finds a logical explanation. The nucleins, we have seen, play an active part in tissue metabolism. The excess produced by the thymus increases correspondingly that of all tissues, including that of the thyroid and adrenals (both of which show signs of degeneration, sufficient in some cases, as to the adrenals, to produce Addisonian symptoms), the excess of adrenal secretion producing the contracted heart, aorta, and peripheral vessels noted in all cases by Bartel. Suggestive in this connection is the abnormal appetite so often observed in these cases. Excessive metabolism entailing a correspondingly active catabolism, waste products, including nucleic acid, are elaborated, causing swelling of the lymphatic tissues and nodes, in accord with the prevailing view. This morbid process is favored by the sluggish circulation through them, due to the narrowing of the peripheral bloodvessels. To this circulatory torpor are due also the pallor, adiposis, deficient hair growth, and inadequate development of the sexual organs, and in a small proportion of cases, mental backwardness.

#### STIGMATA OF HYPERTHYMIA.

The foregoing data, which, as we shall see, have an important bearing in some mental disorders, require a different arrangement from that followed in the case of hypothyemia, the distinction between the symptoms due to pressure and those due to the toxemia having now been ascertained. *An interesting feature of this toxemia is that it occurs in both hypothyemia and hyperthyemia, that of hypothyemia being due to an accumulation of toxic wastes because these wastes are inadequately broken down preparatory to elimination, while hyperthyemia causes it by exaggerating metabolism, causing an excessive formation of wastes, i. e., more than can be broken down.* Hence the similarity between the symptoms of both opposite conditions and the need of carefully establishing the presence of persistent thymus to identify the actual disorder present in order to institute appropriate treatment. We shall, in this connection, introduce a third division, one on the physical diagnosis of persistent or enlarged thymus.

*Toxic symptoms.* Enlarged lymph glands, sometimes limited to the tonsils, pharyngeal vault (adenoid vegetations), and lingual tonsil, causing defective breathing, due partly to pressure but mainly to the excess of wastes excreted into the lymphatics by the tissue cells. *Contracted cardiovascular system*, due to excessive metabolism in its muscular elements, also in the adrenals, causing overactivity of these organs. *Enlarged superficial veins*, partly due to compression of the upper thoracic venous trunks, partly to the back pressure in the veins, incident upon the contraction of the cardioarterial channels. *Muscular spasticity, tremors, twitches*, etc., due to sluggish circulation in the skeletal muscles and spinal and peripheral nerve paths and the resulting toxemia due to defective hydrolysis of intermediate toxic wastes. *Muscular relaxation and atony* with projecting scapulæ, stooping, enteroptosis, etc., due to sluggish circulation in the skeletal muscles and their resulting hypotonia. *Osseous deformities*, pigeon breast, contracted thorax, vaulted palate, retrognathism, etc., due, in some, to antecedent hypothyemia; in others to sluggish circulation in, and defective nutrition of, osseous elements. *Adiposis, panniculus abdominis* due to torpidity of the peripheral circulation and fat accumulation. *Excessive appetite, slight rise of the temperature and blood pressure, and tendency to sweating* due to overactive metabolism and to the resulting overproduction of adrenal secretion and overactive oxidation. A tendency to *eczematous eruption* due to the formation of uric acid—a symptom also provoked by the administration of thymus in gouty individuals, as shown by the urine.

It is perhaps unnecessary to state that all these symptoms are seldom observed together in a given case, the completeness of the syndrome depending in a measure upon the degree of toxemia present. The latter, however, is an index of the degree of activity with which the thymus supplies the excess of nucleins.

*Pressure symptoms.* We have seen that some of the phenomena described may be attributed to the joint action of pressure and intoxication. *Enlarged lymph glands* which include adenoid vegetations, enlarged tonsils, etc., belong to this category. Yet, either cause may prevail independently. Thus it is probable that most cases of adenoid vegetations and enlarged tonsils occurring irrespective of any enlargement of the cervical lymphatic glands are purely toxic, the hypertrophic process being due mainly to a local defensive reaction. *Enlarged superficial veins* may also be due solely to pressure in some cases, according to the site of the area compressed, especially where the enlarged veins occur in the upper part of the thorax. I have seen them over the abdomen and also immediately above the mons veneris.

Belonging strictly to the domain of compression are the *thymic stridor* occurring at or soon after birth and in the course of acute infections, particularly diphtheria, pertussis, and pneumonia, and due to congestive enlargement of the gland; with inspiratory retraction of the thorax; *thymic asthma*, an aggravated more or less periodical stridor with cyanosis, laryngeal spasm, more or less dysphagia in severe cases and sometimes ending in death, also

due to periodical congestion of the gland and pressure upon the trachea, esophagus, and recurrent laryngeal. *Thymic death* during trivial operations, anesthesia, bathing, swimming, coitus, etc., due to sudden congestion of the gland occurring as a result either of reflex passive dilatation of the arterioles, or of high vascular tension. *Pulmonary edema*, due to pressure upon the pulmonary arteries or veins.

#### PHYSICAL SIGNS OF ENLARGEMENT OF THE THYMUS.

Dullness over a triangular or heartshaped space extending from the upper edge of the sternum above to the level of the third rib below, and more clearly defined on the left side of the sternum (one to two cm.), gives the most usual boundary of an enlarged thymus. The dullness moves upward when the head is thrown far back (Jacobi) and is best elicited by gentle percussion. The phonendoscope is of marked confirmatory aid in this connection. The enlarged gland may sometimes be felt as a soft cushion over the sternal notch, especially when the head is extended, and a thickening or cushion is sometimes visible on the neck in this location. There may also be bulging or vaulting of the manubrium sterni and even swelling of the whole sternal region. Careful palpation will usually reveal enlargement of the cervical lymph nodes and also of the spleen on deep inspiration, the organ then projecting below the lower costal edge. The x ray shadow of the large vascular trunks may be considerably broadened. The fluoroscope may also be used with advantage. Auscultation over the sternum where the latter is sufficiently marked will elicit a harsh or wheezing respiratory sound, most marked toward the end of inspiration, but vibratory or *saccadé* during expiration.

This closes the study of the functions of the thymus and the morbid processes it may provoke. So much space has been devoted to this organ because its role in the body has remained obscure. Falta (3) in his recently (1915) published excellent work on the diseases of the ductless glands says, in this connection: "It cannot be denied that in spite of the enormous labor that up to the present has been spent on the subject, the physiological significance of the thymus is still unclear." Had we not worked out this problem and tried at least to bring the mass of evidence referred to to fruition, *hematopoiesis* would have been deprived of a working foundation, and have remained in the confused state in which the prevailing views, totally devoid of correlation, are driving the whole subject.

The fact that, as Falta (3) states, "enormous" labor has been bestowed upon the gland, has imposed the necessity, in order to make the articles at all readable, of omitting experimental details. But the data submitted represent the gist of all the experimental and clinical work on record, including my own, and the arrangement has been such as to lead to practical conclusions, *i. e.*, conclusions which the physician can utilize in practice, as we shall see in subsequent articles.

#### REFERENCES.

WILLIAM BROWN, M.D., New York.  
R. S. FULTON, M.D., New York.  
J. H. FULTON, M.D., New York.  
J. H. FULTON, M.D., New York.

(To be continued.)

## Pith of Current Literature.

### MEDIZINISCHE KLINIK.

September 12, 1915.

#### Gas Gangrene in Wounded Soldiers, by Sackur.

—Cases of gas gangrene can be divided into two groups with relation to diagnosis, treatment and prognosis. The first group includes infections of a superficial nature, the second, those which involve the deeper structures and which spread along the fascial sheaths between muscle groups. The diagnosis of the former group should offer little or no difficulty, for the symptoms of a rapidly progressing, severe systemic intoxication plus a local wound from which a foul serosanguinolent fluid issues and which is greenish brown in color and has subcutaneous edema and emphysema are absolutely typical. When the infection lies in the deeper structures, diagnosis may at first be difficult owing to an absence of the typical discoloration, the odor, the discharge and the absence of edema and crepitation. In the course of x ray investigation of wounds in the search for fragments of missiles it was discovered that gas gangrene gave a perfectly typical picture. In the superficial form there were dark areas visible on the plate which corresponded to the collections of gas in the tissues. These areas were rounded or more or less flattened and could not be mistaken for anything else. Where the infection was in the deep tissues similar areas due to collections of gas were evident, but their shape usually depended upon the shape of the several muscles as the gas lay between the muscle and its fascial sheath. In the pathology of the disease too little attention seems to have been given to the role of direct trauma and interference with the circulation of the part by thrombosis. The present study seemed to show that these factors had much to do with both the severity and the rapidity of the spread of the infection. This was a natural expectation, for it is known that the organism is an obligatory anaerobe and one would expect it to flourish better where the blood supply, and hence the oxygen supply, was largely cut off.

**Prophylactic and Therapeutic Use of Dysentery Serum,** by Odo Bujwid.—Extensive experience in regions in which dysentery was endemic and epidemic led the author to the conclusion that the serum was of very great therapeutic value, especially when it was given in doses of thirty to fifty c. c. and when its administration was started in the early days of the disease. In fact, when so used, it proved itself quite on a par with diptheria antitoxin in value. As a prophylactic its action was manifest in the fact that within the first twenty-four hours following the first dose the number of stools fell from forty to six or less, thereby reducing the danger of the spread of infection proportionately. The serum employed was obtained from horses which were immunized against several Shiga-Kruse strains and some strains of the Flexner organism. The immunization was carried to a very high point as measured by the agglutinin titre of the serum. It was found that, although there was a gradual loss in the titre of the serum on standing, this was so slight as to be negligible within a period of two or three months.



## PRESSE MÉDICALE.

August 25, 1915.

**Therapeutic Utility of Injections of Blood Serum.** by P. Lariel.—Injections of twenty c.c. of human blood serum were administered beneath the abdominal skin in twenty-four patients, with gratifying results. The blood was collected under aseptic precautions, proved negative to the Wassermann test, filtered through a porcelain filter, and sealed in ampoules until required. Eighteen of the cases treated with the serum were of advanced chronic lung tuberculosis or acute tuberculosis. In twelve of these cases the injections caused a lowering of the temperature, a return of appetite, and improvement in the general condition. In three cases of early pulmonary tuberculosis, serum injections were followed by cessation of hemoptysis and by persistent general improvement. Three cases of typhoid fever and one of infantile diarrhea with cachexia were likewise benefited. No anaphylactic or other manifestations of intolerance were witnessed in any of the cases treated, and the author dismisses such manifestations as no objection to the use of the serum.

## BULLETIN DE L'ACADÉMIE DE MÉDECINE

August 17, 1915.

**A New Sign of Aneurysm,** by Couteaud.—Recent experience showed that traumatic aneurysm is overlooked because of absence of the cardinal signs of the condition even oftener than aneurysm not of traumatic origin. Where neither expansile nor nonexpansile pulsation, nor aneurysmal murmur, can be detected, Couteaud recommends comparison of the arterial pulse at the root of the affected extremity with that of the normal side. Where aneurysm exists, the pulsations on the affected side are less marked than on the other at the root of the limb, and grow weaker and weaker as palpation is carried down toward the injured point of the vessel. The injury present may, in some cases, be a thrombosis instead of an aneurysm, and necessarily involves either the main arterial trunk of the limb or a large collateral. Comparison of the pulsations on the two sides as described led in one case to the discovery of an anomalous supernumerary and deep brachial artery which had been severed obliquely by a bullet four cm. above the elbow; in this case the radial pulse had not been affected by the injury, and the diagnosis had remained obscure for three weeks.

**Antiparatyphoid and Mixed Vaccines,** by H. Vincent.—The immunity against the typhoid and A and B paratyphoid organisms conferred by inoculations with a mixed vaccine containing each of these three bacterial species proved complete in a series of 4000 men. The three vaccines, administered together, act as well as simultaneous vaccination against typhoid and smallpox or cholera and smallpox. Vincent disapproves of mixed typhoid and paratyphoid vaccination as a routine on the ground that the resulting local and general reactions are too pronounced. In all persons weakened by excessive exertion, therefore, two injections of typhoid vaccine, followed by two of antityphoid vaccine, should be given.

**Improved Form of Crutch,** by A. Pinard.—In a good crutch the height of the two points of support to the patient, that resting in the axilla and that held in the hand, should be capable of adjustment according to existing indications and the patient's needs. In Pinard's crutch provision is made for changes in the position of the handle between the two upright rods and, by a screw device at the lower end, for lengthening or shortening of the crutch as a whole. Each of these modifications can be readily and quickly made by the patient, who is thus able at will to rest most of his weight on the axillary support or handle, meanwhile keeping the body and head erect and the line of vision horizontal.

**Pseudotetanus Due to Pressure on Nerves,** by René Le Fort.—Three cases are reported in which pseudotetanic convulsions in a lower extremity were produced through the effects of shell fragments on nerve trunks—sciatic, posterior tibial, and musculocutaneous—in proximity to which they had lodged. Recovery followed removal of the offending foreign bodies.

## REVISTA DE MEDICINA Y CIRUGIA PRÁCTICAS.

September 27, 1915.

**Hydatid Cyst of the Orbit,** by J. G. del Mazo.—The orbit is one of the most unusual situations of hydatid cysts and the case described is interesting in several other features. The patient was a girl of eighteen years who complained of weakness of vision in the left eye which in one month advanced to total blindness of that eye, with marked exophthalmos and evidence of optic neuritis. At this time a small mass was made out in the upper eyelid which on puncture yielded eight c. c. of fluid containing the hooks of the echinococcus. Through the cannula at the time of puncture there was introduced one c. c. of one in 1,000 bichloride of mercury solution. In four weeks vision was again normal in the affected eye and after two years there was no return of the condition.

## RIFORMA MEDICA.

October 2, 1915.

**Catalysis in Ductless Glands,** by F. Galdi.—Since the discovery by Thénard in 1818 that living tissue had the power of decomposing hydrogen peroxide, many experiments have been done to show that the active agent is a ferment which has been called catalase. However, very few observers have gone into the quantitative determination of this ferment, therefore Galdi has completed a very extensive series of tests on the ductless glands of cats. These show that the suprarenal capsule has the power of decomposing almost ten times its own weight of hydrogen peroxide, the thyroid dissolving six times its weight, and the others following in order—ovary, hypophysis, testicle, thymus. The pancreas also has an internal secretion about equal to that of the ovary. It is interesting to note that this property is in exact relation with the vagotonic power of the extract of the glands. It seems reasonable to suppose that this holds true for the whole carnivorous species.

BRITISH MEDICAL JOURNAL.

**Treatment of Septic Wounds by Continuous Oxygenation or Irrigation**, by W. Atkinson Wood.—A rubber bag forms a closed sac in which the wound lies. Different sizes and shapes are made to fit different portions of the body, but the principle is the same in all. By means of adhesive plaster the upper and lower cuffs of the bag are fastened to the skin so as to prevent leakage of the fluid or oxygen. Two openings are provided, one above through which either irrigation fluid or oxygen is admitted, the other below for the free escape of irrigation fluid. This lower one can be connected with a long rubber tube which leads below the surface of an antiseptic fluid in a container beneath the patient's bed. In this way septic wounds can be subjected to the continuous action of free oxygen at a pressure of about four pounds to the square inch. Such treatment is particularly suitable in cases of infection with the anaerobic organisms. Where irrigation is to be employed the plan provides both protection to the wound and a simple and clean means of carrying on continuous bathing in an ever changing fluid, the contaminated liquid flowing off through the lower orifice as fast as it collects. With either oxygen or fluid the bag forms an ideal protective covering to the injured part and greatly diminishes pain. It also leads to much saving in the cost of dressings.

**Sandfly Fever and Bacteriology**, by C. J. Stocker.—In an epidemic of this infection, a bacillus, identical with that previously described by Leonard Rogers, was isolated from the blood of several patients. A sensitized vaccine was successfully prepared and used, but without definite results. In some cases, the fever fell rapidly after injection of the sensitized bacilli, in the other there was no apparent effect, but in none was any deleterious action noted. The mosquito, *Culex fatigans*, was very prevalent during the epidemic and cultures taken from the contents of the stomachs of twenty-three of these insects yielded the typical bacillus already in eighteen instances mentioned. From these findings it seems possible that this pest may also have a role in the spread of the disease. All of the mosquitoes from which cultures were taken had recently been allowed to feed on patients with active sandfly fever.

LANCET.

**Prevention of Fistula in ano**, by P. Lockhart-Mummery.—It is a fact not generally recognized that fistula in ano is preventable in the great majority of cases if proper treatment is instituted in time. The primary infection which leads to this condition starts usually from an abrasion of the anal mucosa at the upper level of the external sphincter. An abscess then develops in the ischio-rectal connective tissue, but as this tissue is extensive and offers no sharp limitations for the spread of an abscess the condition is often unrecognized until a large abscess has formed and produced induration. When this has occurred fistula is almost certain to result even with surgical treatment. If prevention is to be at-

tained, the abscess must be recognized in an early stage. This is possible by the palpation of some induration near the anal wall by grasping the tissues between a finger inserted into the anus and the outside fingers. The region is usually also somewhat tender to pressure. The early symptoms which should lead to this examination are pain, local tenderness, malaise, and an elevated temperature. When an abscess is discovered in this stage it should be at once incised from without and a rubber tube inserted for drainage. The tube should not reach the bottom of the cavity, but should be used merely to keep the wound open. Often the condition will be opened so early that pus formation will not be demonstrable, but this is to be desired. Healing will occur promptly and all danger of the formation of a fistula will have been removed. It is far better to incise unnecessarily in an occasional case than to run the risk of letting a fistula form.

**Duration of Treatment in 1,500 Cases**, by James Rae.—Prognosis as to the ultimate outcome of disease has been widely discussed, but there is little available information to aid one in estimating the probable duration of treatment before recovery may be reasonably anticipated. With the hope of gaining some information on this point, 1,500 cases were followed closely from the time of admission to the time of discharge in hospital practice. Among surgical cases it was found that thirteen dislocations totalled 117 hospital and 349 convalescent days for recovery; eighty-seven cases with lacerated wounds and contusions spent 871 days in hospital and 1,827 in convalescence; forty-eight cases of appendicitis gave a total of 1,061 hospital and 1,581 convalescent days; 101 cases of infection involving the connective tissues were in hospital 1,019 days and convalescing for 2,431 days; thirty-six cases of sprains covered 364 hospital and 935 convalescent days; and ninety-four fractures totalled 1,884 hospital and 2,943 convalescent days. Among medical patients fifty-two cases with gastritis spent 667 hospital and 1,360 convalescent days; twenty-seven cases with disorders of the heart required 330 and 714 hospital and convalescent days, respectively; the total hospital days and total convalescent days for 104 cases of bronchitis numbered 1,319 and 2,372; for eleven cases of bronchopneumonia the totals were 198 and 287; for seventy-seven pneumonias they were 1,294 and 1,873; and for 106 cases of acute rheumatism the figures totalled 1,390 and 3,435, respectively. The average duration of the period of convalescence for a surgical case was found to be more than twenty-eight days, while for a general medical case it was over twenty-five days. The total cost of the convalescent days for the entire group of over 1,500 patients was in excess of \$31,000.

**Two Cases of Plumbism from Unusual Sources**, by Arthur J. Hall.—The first case was traced to the contamination of horehound beer. The fluid was found to be acid in reaction and on examination it was discovered to contain one grain of lead per gallon. In the second case the source of infection was very difficult to trace, but it was ultimately found to be due to constant absorption from the practice of carrying lead shot in a pocket. The patient had acquired the habit of frequently inserting his thumb and forefinger

into this pocket and rubbing the shot together. The pocket was found to be filled with lead dust. Attention is also called to the constancy and diagnostic importance of the blue line on the gums in lead poisoning, and it is held by the author that this is almost invariably discoverable if carefully sought even in patients whose mouths are kept as clean as possible. Its discovery has led to the diagnosis of lead poisoning in several cases of sporadic plumbism, the symptoms of which suggested other conditions.

**Tonsils and Chronic Cervical Adenitis**, by H. Gardiner.—Careful cultures and smears were taken from the tonsils removed from thirty patients and pathogenic organisms were found in twenty-four of these. *Micrococcus catarrhalis*, the pneumococcus, and a streptococcus were each found in twenty-five per cent. of the tonsils; the staphylococcus in over sixteen per cent., and the tubercle bacillus in fourteen per cent. In some of the tonsils, several organisms were found together. All of the patients from whom these tonsils were removed had chronic cervical adenitis, and the results of this study make it seem probable that in the great majority of such cases pathogenic organisms are to be found in the deeper parts of the tonsils and are probably directly or indirectly responsible for the adenitis. Their indirect role would seem to be by crippling the tonsils to allow the entrance of other organisms into the cervical lymphatics. In a large number of cases the cervical glandular enlargement disappeared after the removal of the tonsils. Many of the tonsils removed were small and fibrotic; they were heavily infected in their depths. When the tonsil is capable of congestion and hypertrophy it probably is also capable of acting as an effective barrier to the further progress of the infecting organisms; but when it is fibrotic it seems to have lost this protective power in great measure. These findings lead to the conclusion that total removal of the tonsils within their capsules is the only logical means of caring for them.

#### BOSTON MEDICAL AND SURGICAL JOURNAL

October 7, 1915.

**Our Criminal Problem from the Standpoint of Classification and Segregation**, by Edith R. Spaulding.—If the criminal problem is one of treatment of the individual for his deficiencies rather than of punishment for the crime committed, the following fundamental provisions for the administration of such treatment are necessary: 1. Adequate provision for the permanent custodial care of all committable cases of mental defect, whether they have a court record or not. 2. The establishment of laboratories in courts and correctional institutions for the study and diagnosis of all offenders. 3. The equipment of all institutions with facilities for classification and treatment of the various types. This will necessitate separate buildings, at least one of which should be equipped for hydrotherapy. 4. The adoption of an indeterminate sentence, which will enable patients to be treated until they are able to return to the community with safety.

**Blood Pressure Determinations, Urinary Findings, and Differential Blood Counts in a Group of 662 Young Male Adults**, by Roger I. Lee.—The observations were made on the 662 members of the freshman class at Harvard. The average

age was 18 years, the average height 5 feet 8 inches, the average weight without clothes 143 pounds. The average systolic pressure was approximately 120 mm. Hg., the average diastolic pressure 80 mm. Eighty-five men, 12.8 per cent., of the 662 had systolic blood pressure readings over 140, the highest 180. There were seven systolic observations over 160, but only one case in which the systolic blood pressure was over 150 both standing and recumbent. In thirty-three of the eighty-five men, the standing systolic blood pressure was over 140, the recumbent 140 or under; in twenty-one the recumbent was over 140, while the standing was 140 or under; eighty-five showed a reading that might be interpreted as abnormal. Considerable variation was found during the period of a single examination. There were no systolic readings below 100 in either position, though occasionally one between 90 and 100 was found in one position. Eighteen of thirty-one cases with systolic pressure over 140 have been reexamined, and thirteen presented a normal reading at the second or third examination. Too much stress should not be laid on a single systolic determination of over 140. The diastolic pressures were more uniform with comparatively little variation in the standing and recumbent positions. The average was eighty. In only five men was it over 100, and these had systolic pressures of over 140. Three of these gave normal readings on reexamination, the other two were diseased. Of the eighty-five men with abnormal blood pressure albuminuria was found in nine, or 10.5 per cent. Albuminuria in the total 662 was 5.1 per cent., so the incidence of albuminuria among cases with an apparently abnormal blood pressure is approximately twice as great as in the total group. A definite valvular lesion of the heart was found in seven of the eighty-five cases. Albuminuria was found in thirty-four cases, which disappeared in ten, and in three others it was definitely orthostatic. Casts were found in only four. Glycosuria was found in five, but cleared up at once in two. The result of the examination of blood smears showed little variation from the usually accepted standard for the normal.

#### JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

October 30, 1915.

**Some Aspects of Ophthalmia neonatorum**, by George S. Derby.—From a study based chiefly of a series of 149 cases, the conclusion was reached that, all things considered, hospital treatment is preferable to home care, even where the infant is nursing. Monocular infection was rare in the cases which were treated at home and in those which came under observation after a considerable lapse of time from infection, while in the early hospital cases it was possible to prevent the spread of the infection from the diseased to the sound eye in the great majority of instances. By means of smears alone it was found impossible to be certain of the bacteriology of the ophthalmia, and cultures often showed that cases with Gram negative, biscuit shaped diplococci were not gonorrheal, but were due to the presence of *Micrococcus catarrhalis*. The gonococcus was found in only seventy-seven of the total of 149 cases, only a little over fifty per cent. In fifty-six cases no organism whatever was found.



This was probably due in some instances to the fact that treatment had been given before the patients entered the hospital. It was very noticeable that a considerable proportion of the gonococcal cases occurring in infants were of a type very much milder than is usually seen in adults. This may possibly be due in some measure to a certain degree of acquired immunity, secured as a result of the maternal infection. Some confirmation of this belief was found in the results of complement fixation tests undertaken with the blood of a few of the infants.

**Chronic Nephritis**, by W. Jarvis Barlow and R. L. Cunningham.—The material for this study, comprising 250 cases, was drawn entirely from private practice. There were four clinical groups with reference to their probable etiology. The first group included those cases which followed an acute infectious disease or alcoholic excess. The second, the cases which were associated with chronic endocarditis or arteriosclerosis. The third embraced cases occurring in the course of chronic diseases, infectious or not. And the fourth group were associated with pulmonary tuberculosis. Considering the first three groups, only the prognosis was found to be favorable when the patients could be placed under proper conditions. Many of the patients apparently with interstitial nephritis were found not to have any true disease of the kidneys, and presented no recurrence of the abnormal urinary findings after treatment. Patients with chronic interstitial nephritis, in whom there was good vascular and cardiac compensation, lived comfortably and in good general health for twenty-five or thirty years, and probably many live longer. In such cases the disease may be arrested, the patients may be clinically well, and might be regarded as cured. The treatment primarily requires a suitable climate; it should be warm, equable, and of low elevation without much wind. Next in importance is the proper regulation of diet, which requires individualization, although the use of red meats must be restricted in all cases. Hydrotherapy, with the employment of measures to induce sweating one or more times weekly, is of great value. Drugs are of little use except for the relief of occasional symptoms and of failing cardiac compensation.

**Sodium Citrate Indirect Transfusion**, by Irving Simons.—Three cases are recorded in which this method was used. In one, the transfusion was followed by shock which was nearly fatal. A subsequent direct transfusion by Crile's method gave excellent results in this patient. In a second patient a milder degree of shock followed the citrate transfusion. The third patient responded well to a Crile transfusion and was subsequently given a citrate transfusion further to combat her anemia. This was again followed by shock and collapse, which ended fatally.

**Galvanometric Studies of Cerebellar Function**, by I. Leon Meyers.—With the aid of a sensitive galvanometer studies were undertaken on a number of cats on which operations were performed for the removal of portions of the cerebellum or the cerebellum, or of both. The conclusion reached was that the cerebellum had no direct effect on the periphery, but acted primarily on the motor cortex of the cerebellum, the paracerebellar nuclei, and probably on the

basal ganglia. The primary function of the cerebellum was found to be to inhibit, control, and regulate the activity of these several structures, leading finally to appropriate and rhythmic muscular action. The cerebellum is essentially in the nature of a modified sensory structure which is somewhat analogous to the vagus nerve; its functions are to inhibit and control muscular actions, although it accomplishes this end by acting on the nerve centres instead of on the peripheral muscular structures themselves.

**Vaccine Treatment of Hodgkin's Disease**, by A. R. Hatcher and W. G. Lenmon.—A case is reported in which favorable results have been secured by the combination of x ray treatment with the administration of an autogenous vaccine prepared from cultures made from excised glands. The vaccine was given subcutaneously twice weekly, the initial dose having been twenty-five million. This was slowly increased until doses of two billion organisms were given. Six doses were given before improvement began. Then the enlarged glands began to diminish in size. While under treatment the patient had a suppurative appendicitis, which was operated upon and drained. During the course of this suppuration, the recession in the size of the glands was very rapid and it was thought that the toxins absorbed probably exerted a profound effect on the newly formed connective tissues, similar to the action of Coley's fluid. With the cessation of suppuration the regression in the size of the glands became less rapid, but continued slowly under the administration of the vaccine.

#### MEDICAL RECORD

OCTOBER 6, 1915.

**The Fluoroscope Screen and Radiographic Plate in Diagnosis of Alimentary Tract Lesions**, by C. W. Perkins.—The examination of the alimentary tract under the fluoroscopic screen is of even greater importance in diagnosis than the x ray plates. Under the screen, with bismuth in the tract, it is possible to palpate and outline tumors or other pathological lesions. Points of tenderness and the mobility of organs or tumors can be carefully gone over in this way. The radiological signs of gastric ulcer are visualization of the bismuth filled crater, the diverticulum of a perforating ulcer and organic hourglass stomach with lateral canalization. The symptom complex of duodenal ulcer is quick emptying of the stomach, hypermotility and hypertonicity of the stomach, late pyloric spasm, spastic indrawing of the greater curvature, pain over the duodenal area, defect in the cap, and small residue in the duodenum of stomach. Perkins maintains that it is necessary to have a defective cap to diagnose a duodenal ulcer. The localization of adhesions and pain points by palpation with the patient standing or recumbent which is always part of a screen examination is impossible by the serial plate method. Diagnosis should not rest on the external findings alone, but there must be cooperation of the clinician, the radiologist, and the surgeon.

**Excision of the Fistulous Tract in Anal Fistula**, by C. Savini.—Total excision of the fistulous tract is superior to all other methods of treatment and should be when possible the operation of choice. It

is a rational procedure as it permits a plastic suture of the sphincters, thus reducing the danger of incontinence and shortening the period of cure. The fistula usually involves only a small part of the sphincter so that after the excision there is always enough sphincter left to keep the anus continent. Incontinence is due more often to the division of the anus preceding the operation. A probe is introduced into the fistula and made to pass through and protrude from the anus. The various structures are then over the probe and if properly done the fistula is removed unopened. The wound is sutured with interrupted silk stitches which are tied at the end of the operation while the sphincter incisions are closed with chromic catgut. A rectal tube is used for twenty-four hours, and the silk sutures are removed on the tenth day, a cathartic is given on the third day and the wound is healed in three weeks.

**Treatment of Typhoid with Typhoid Vaccine Administered Intravenously**, by Helen McWilliams.—This treatment was first practised by Ichikawa in Japan in 1912, and more than 550 cases have been treated in this manner since that time. In more than half the cases the disease was cut short by one to several weeks. Several deaths may be attributed directly to injections of the vaccine, which is liable to occur with all new and radical methods of treatment. The proper dose for intravenous injections appears to be from one hundred to two hundred and fifty million bacilli and the injection produces first a leucopenia and later a high grade leucocytosis. Several cases at the New York quarantine hospital have been treated by this method recently with good results.

**Syphilis of the Lung**, by M. T. Easton.—Syphilis of the lung is probably not as rare as has been thought, and all lesions resembling tuberculosis, though not showing the tubercle bacilli, should be regarded as possibly syphilitic. The involvement of the base of the lung with a normal apex is a suspicious point; in syphilitic patients who are also afflicted with tuberculosis, it is quite important to administer antisyphilitic treatment while treating the tuberculous process. A case seen by Easton in a man fifty-one years old after a probable diagnosis of lung syphilis made a good recovery under treatment with hypodermic injections of three grains of sodium cacodylate given at first every day, then every other day.

#### LANCET-CLINIC

Oct. 16, 1915

**Differential Diagnosis and Preoperative Treatment of Prostatic Hypertrophy**, by W. S. Ehrlich.—Chronic prostatitis may be differentiated from prostatic hypertrophy, as in the former there is much less interference with urination, more pain, and marked tenderness on rectal palpation. There may be a slight elevation of the trigone in prostatitis, but the author has never seen trabeculae of the bladder wall from this cause. In tumors of the bladder, especially pedunculated growths of the trigone, prostatic hypertrophy may be simulated, and in vesical stone the symptoms may be more prostatic than anything else; in each of these conditions, as well as in contraction of the neck of the bladder,

cystoscopy is often required for a positive diagnosis. In incipient tabes dorsalis, the author has found the bladder changes so suggestive of prostatic adenoma that the cystoscope was again required; the diagnostic features here to be considered were observed to be the ease and apparent painlessness of passing the instrument, the lack of elevation of the trigone, the fine laterally disposed trabeculation, the prominent interureteric ridge, and the stiff appearance of the ureteral orifices. Stress is laid on the necessity of a complete uranalysis, and especially a renal functional—phenolsulphonephthalein—test, previous to operation. Surgical intervention is unsafe where the renal function is and remains low, though if it improves under drainage, there is a better chance of recovery. Anemia, if found present, should be corrected. Continuous bladder drainage for a few days or longer should always be instituted before operation. Patients with a large output of clear, sterile urine of low specific gravity and a rather small output of phthalein usually die if operated in without preliminary treatment. The most rational, though apparently unsurgical, procedure in them is to infect the bladder; the antibodies developed as a result spare the patient the twofold effects of the shock of the operation and a simultaneously acquired new infection.

#### Proceedings of Societies.

##### MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.

*Sixty-fifth Annual Meeting, Held at Philadelphia, September 20-25, 1915.*

The Retiring President, Dr. EDWARD B. HECKEL, of Pittsburgh, in the Chair.

(Continued from page 877.)

**Fulguration of Bladder Papilloma (Continued).**—Dr. JOHN L. LAIRD, of Philadelphia, said that the character of the bladder growth in relation to its amenability to this form of treatment was a serious consideration, the benign and the superficially malignant tumors being appropriate, the infiltrating malignant growths demanding immediate surgical intervention. The treatment of the various types of benign papillomata required a selection of current. The interval between treatments was important and should be governed by three factors, viz., the extent of bladder involvement, the type of current employed, and the degree of reaction to treatment. All vesical papillomata were potentially malignant and, therefore, early diagnosis and eradication were of the utmost importance. After an apparent cure, each case should be carefully followed up for recurrence. Some cases of severe and obstinate character required patience, and frequently the result was unsatisfactory and disappointing; but the majority responded promptly with a result little short of miraculous.

Dr. EDWARD MARTIN, of Philadelphia, said in regard to the operative treatment of bladder tumors, by which he meant cutting operations, those who observed and wished to hear from patients noticed that to their astonishment the old operating cystoscope

gave results in papilloma operation very much better than the open operation. Those who had had a certain number of these papillomata had observed widespread recurrence after operation, and there seemed no adequate explanation except the disturbance caused by gross traumatism. They have, first, the lesson that the local treatment, nontraumatizing, was better, and modern local treatment by desiccation was much better than by instrumentation. The second point was the innocuousness of this desiccation in the ordinary run of cases. For all practical purposes the majority of these people could go to their ordinary business. They had no further discomfort and their lives were not materially interfered with. When the cystoscopist was unable to decide as to the malignancy of the lesion, this desiccation treatment should be tried and resort to grosser methods of instrumentation might follow.

Dr. H. M. CHRISTIAN, of Philadelphia, emphasized the point made by Uhle and MacKinney that every so called benign tumor of the bladder must be considered potentially malignant, and that a man with a so called benign tumor had to all intents dynamite in the bladder. In cases on the borderline where there was a chance, he thought that the patient should be given the high frequency current. He wanted to emphasize again the point which Doctor Uhle made, of the importance of looking on sudden, inexplicable, rapidly disappearing and rapidly reappearing hematuria, with or without pain, as significant of bladder tumor and requiring examination immediately.

Dr. ALEXANDER RANDALL, of Philadelphia, called attention to the efficiency of electric fulguration of vesical papillomata (benign); the recognition of the ultimate and potential malignancy of all such growths, and that in their early stage, therefore, while still benign, vesical papillomata represented a precancerous state and their prompt and early recognition and treatment would be taking a definite step forward in the present campaign for the eradication of cancer.

**Treatment of Empyema.**—Dr. EDWARD MARTIN, of Philadelphia, in order to avoid infection from the skin, made a puncture through the skin, deep fascia, and into the muscle by means of a cataract knife. The trocar was then pushed into the pleural cavity, stopping when resistance of the chest wall was no longer felt. The location of the pus thus having been determined, an incision one and one half inch long was made through the skin and a large trocar thrust into the pus cavity. The stylet was removed and a silver tube passed through the cannula. The cannula was then withdrawn and the flanges of a tube were stitched to the skin by means of a silver wire. The silver was not irritating to the tissues and provided against compression or kinking as with a rubber tube. If necessary, a cupping glass or suction apparatus could be intermittently applied to produce negative pressure. Pulmonary exercises were to be instituted early. A dressing dampened with mild antiseptic solution was applied over the tube. If there was much adhesion between the pleural layers, these should be freed through a large incision in the intercostal space.

Dr. JOHN H. JOPSON, of Philadelphia, stated that his practice had been in favor of the ordinary methods of drainage and Richardson's advice to make large holes. This operation could be done easily and painlessly on a child if everything was carefully and systematically anesthetized down to the pleura. This should be done, under local anesthesia if the patient was in bad condition. He liked to get a look into the chest, free light adhesions in the lungs in the early stage, and remove large loose masses of lymph which would clog any tube and would probably break down and disintegrate. If they could do that and introduce the tube, they would be making a great advance.

Dr. J. D. SINGLEY, of Pittsburgh, said as regarding breathing exercises in these cases of empyema, it had been his custom for years to have the patients use an ordinary football to blow into. The amount of pressure was limited only by the will of the patient and it could be carried out of doors, where they liked to keep these patients most of the time.

Dr. HENRY C. WELKER, of Norristown, believed the keynote to success to be a liberal separation of adhesions and breaking up of locules and serum that could not be got at by the ordinary timid methods of opening up. They should go up to the apices, remembering that the accumulation frequently extended to a point where they had no idea it was possible for it to extend.

**Venous Thrombosis and Embolism; Cause, Significance, and Consequences.**—Dr. ANGUS McLEAN, of Detroit, said that, although various causes had been assigned for thrombosis, his experiments had shown that an infection or toxin was necessary to its production. In his series of 1,610 laparotomies, thirty-three were followed by thrombosis or embolism. Embolus appeared about two weeks after operation. The usual symptoms were chill, fever, and, if the obstruction was near the surface, pain. As for treatment, when once the condition had developed, absolute rest, warmth, and measures to encourage the venous circulation were indicated. In the case of a thrombus, absolute rest should be insisted upon as a precaution against secondary embolism. This rest must be continued until the clot had a chance to become thoroughly organized, a process which would usually take from three to four weeks.

Dr. EDWARD MARTIN, of Philadelphia, stated that Doctor McLean's ingenious and yet simple explanation had corroborated the view that many surgeons had had, that there must be an infectious basis in nearly all these cases of thrombosis. Less of it was seen now than used to be seen; particularly in the direction of the lung.

**Treatment of Puerperal Infection and Septic Abortion.**—Dr. JOHN M. FISHER, of Philadelphia, said that in cases of puerperal sepsis, the severity of the infection with the same microorganism even, varied in type from the most malignant, fatal in a few hours, to a type with symptoms so mild that in the absence of extraordinary precautions it might escape detection. He believed alcohol to be of service in the treatment of profound toxemia characterized by feebleness of heart action, depression of the nervous centres, and the so called typhoid



states with either high or too low temperature. The importance of eliminating toxic products through the excretory canals could not be too strongly emphasized. The influence that the ingestion of water exercised on the skin and kidney was well understood. By whatever method administered, it added to the volume of the circulation, raised blood pressure, improved the quality of the heart's action, promoted nutritive changes incident to constructive and destructive metamorphosis, diluted toxic products, and promoted their elimination by its stimulating action on the kidney structures. The profession had been slow to estimate the value of outdoor life in tents or porches in the care of patients suffering from puerperal and other forms of sepsis. By the open air treatment was meant the actual outdoor exposure of the patient and not merely removal to a sun parlor or veranda with closed sides.

**Prevention of Fecal Fistula in Suppurative Appendicitis.**—Dr. DONALD GUTHRIE, of Sayre, said that his choice of incision was the muscle-splitting, or McBurney's. In those who had well defined abscesses lying near the midline a straight incision was made over the most prominent part of the mass. Wherever possible they inverted the stump, using catgut. Where this was impossible, the cuff operation was done. An effort was made further to reinforce the field by tying in the cut mesoappendix. Drainage was afforded by large calibre soft rubber tubes placed as far from the head of the cecum as possible and removed by the end of the first week. Laxatives were never given until all drains had been removed. He had had three fecal fistulae develop in 853 cases.

Dr. C. E. THOMSON, of Scranton, always used gauze drainage and allowed it to remain until it came away itself, and always used linen thread for ligating the stump of the appendix.

Dr. G. M. DORRANCE, of Philadelphia, said he must get hold of a different kind of appendicitis cases from those spoken of by Doctor Guthrie. In a large number of his cases the appendix as well as the head of the cecum was gangrenous and came away when taken hold of. Therefore, he had a great many cases of fecal fistulae. He always regarded those cases as favorable because they invariably ended well.

**Treatment of Cancer by the Use of Radium in Conjunction with Surgery.**—Dr. GUY C. BOUGHTON, of Erie, said that most of the cases of cancer in which radium treatment had been used had been inoperable, many near a fatal termination; and in this type radium treatment had achieved what no other treatment could. He wished to emphasize that cooperation was necessary rather than destructive criticism if they were to establish the value of radium therapy. Pioneers in any field expected hard work. The days of pioneering in work with radium were far from being past, yet this agent was being accepted widely as a valuable adjunct to the older methods of treatment. They would not replace surgery by radium therapy, but rather by combination with radium therapy make surgery more effective. The surgeon could remove the greater part of the malignant tissue, but the radium rays in suitable cases could enter and destroy all of the remaining malignant cells, and in the treatment of even inop-

erable superficial cancers, carcinoma of the uterus, the prostate, the rectum, and the breast and in spindle celled or round celled sarcoma, lymphosarcoma, and in rodent ulcers radium had been of definite value.

Dr. RUSSELL H. BOGGS, of Pittsburgh, stated that radium had brought relief in many hopeless cases, and many times extensive growths had disappeared and a clinical cure had been brought about. All inoperable cases should be radiated, not only as a most excellent palliative measure, but in hope that either the cases might become operable or that the disease might be arrested and the patient gain months or even years of comfortable life. He believed it was just as important to add Röntgen therapy to radium treatment as it was to use radium in conjunction with surgery, because it was well known that radium would destroy the cancer cells only at a distance of from two to three cm. from the tube.

**Surgical Treatment for Absent Vagina.**—Dr. E. E. MONTGOMERY, of Philadelphia, advised patients not to have the operation, but to accept the situation and give up the idea of marriage. Where conditions seemed to make it desirable that a vagina should be constructed, it was important that it should have a lining of mucous membrane. The best plan was to line the constructed canal with a section of the intestine, utilizing either a portion of the ileum or of the rectum; he preferred the latter. The lower end of the rectum above the sphincter was utilized for the vagina and the rectal canal was reconstructed by loosening the rectum and bringing it down and making an anastomosis at the anus.

**Late Results in Acute Appendicitis.**—Dr. G. P. MULLER, of Philadelphia, in order to determine the late results of operation for acute appendicitis, had attempted to follow up 200 consecutive cases operated in by Doctor Frazier or himself, and 117 replies had been received. Hernia occurred in twenty per cent. of cases which had been drained, but in those not drained only one patient developed hernia. Nine patients suffered from adhesions, six of these having been drained and three not drained; fourteen had indigestion, eight of which were drainage cases; seventeen patients complained of pain, but it was difficult to determine the cause. Constipation was rather common. The postoperative comfort of the patient depended upon prompt operation, the avoidance of cathartics before operation, and the minimum of drainage.

Dr. JOHN A. KLUMP, of Williamsport, said that the best form of drainage in appendicitis was a soft rubber tube, split spirally or fenestrated, containing a strip of gauze loosely inserted. Experience had demonstrated that formerly too much and unnecessary drainage was employed. The Fowler position after operation was of value.

**Treatment of Undescended Testes.**—Dr. JOHN H. GIBBON, of Philadelphia, said that in the early months and years of life the mother or nurse should be instructed gently to draw down and push the testicle toward the bottom of the scrotum. If this failed by the third or fourth year his recommendation was that the Bevan operation should be performed. He had done this operation twenty-two times and had been surprised at the facility with which the organ could be carried into the scrotum.

Eight of his patients were over eighteen years of age.

Dr. R. G. LE CONTE, of Philadelphia, was entirely in accord with the views just expressed, but the manipulations for relief of the condition in infancy should be carried out very gently or more harm than good might be done.

**Free Transplantation of Fascia lata in Inguinal Hernia.**—Dr. JENNIE J. SEWARD, of Philadelphia, stated that the free transplantation of fascia, contrary to preconceived notions, had proved to be almost uniformly successful, and for the very reasons that were thought to render fascia unsuitable for transplantation, i. e., its poor nourishment and its lowly situation in the scale of organized tissues. This method was especially called for when the hernia was large, recurrent, sliding, or direct. The best place from which to obtain the fascia was just below the outer portion of Poupart's ligament, after undermining the lower edge of the skin incision for exposing the inguinal canal. The transplant was immediately sutured with catgut to the under surface of the everted margins of the transversalis fascia. The edges of this fascia were then united over the transplant.

Dr. J. S. RODMAN, of Philadelphia, said the recurrent cases were the most troublesome of inguinal hernias, and it was there especially that the use of some material to strengthen the abdominal wall was called for. Doctor Stewart had chosen the best material of all to transplant. In operating for recurrence the most difficult problem was to restore the anatomical condition to something approximating the normal. That could usually be done with the Bassini technic, and, if transplantation was added, it would suffice to cure the majority of such cases.

**Operative Treatment of Cancer of the Intestine.**—Dr. LEVI JAY HAMMOND, of Philadelphia, stated that a large proportion of patients suffering from cancer of the intestine did not apply for treatment until the growth was inoperable. In his fifty-six patients the growth was removable in only thirty. Adhesions of the growth were sometimes so extensive as to prohibit removal. This was especially true in the hepatic, the sigmoid, or the splenic flexure. The greatest difficulty was met in the removal of the involved lymphatics. Healing took place promptly after resection of the bowel, and union was sound in a very short while. The immediate mortality was not high and life was prolonged for years.

**Syphilis of the Nose and Throat.**—Dr. CHARLES P. GRAYSON, of Philadelphia, stated that those connected with busy hospitals must have wondered that so many of the victims of this disease of the nose or throat came to their wards or dispensaries showing very clearly either that it had been therapeutically mismanaged or even had entirely failed of recognition. The frequency with which syphilis attacked that region made it highly important that every practitioner should be well acquainted with its lesions. Immediately upon the diagnosis, the patient should be sent to the laryngologist and the dentist to have his mouth, nose, and throat put in a strictly sanitary condition, thus guarding against involvement of this region. Of the total number of chancres between eight and ten per cent. were extragenital, and of these, seventy-five per cent. occurred

in the mouth. One reason for occasional failure to identify buccal chancres was that suspicion was not aroused as to their syphilitic nature. The Wassermann test was not of value since it gave a positive reaction only six to eight weeks after the appearance of the chancre. Examination for spirochetes was important. The secondary lesions in the mouth were characterized by the slight discomfort which they gave a patient, yet their diagnosis was important because of their great infective power. A frequent problem was to make a clinical distinction between the tertiary lesions of syphilis and tuberculosis, carcinoma, ulcerated chancre, and, at times, Vincent's angina.

Dr. GEORGE B. WOOD, of Philadelphia, said that the indurated, usually not ulcerated condition of the tonsil in chancre was apt to resemble neoplasm. The slight discomfort of the patient with tertiary lesions of the nose and throat which might have caused extensive destruction, was a source of surprise.

Dr. J. SOLIS-COHEN, of Philadelphia, recalled a case of tertiary syphilis causing great loss of tissue in a woman who walked about in good spirits and apparent health.

**Syphilis of the Ear.**—Dr. S. MACCUEEN SMITH, of Philadelphia, said that the characteristics of the condition were those of nonsuppurative internal ear disease, causing tinnitus with vertigo if the vestibular, and tinnitus with deafness, if the cochlear branches of the nerve were involved. The limit for high tones was lowered, while that for low tones was relatively maintained. Differences of opinion as to detrimental effect of salvarsan injections on the ear should make them cautious; while it was of value in syphilitic cases, it was harmful in ordinary forms of deafness. Bell's palsy as the result of syphilis of the ear was more common than had been realized.

Dr. E. R. GLEASON, of Philadelphia, stated that lesions of the labyrinth usually belonged to the late secondary and tertiary periods, but had been known to occur as early as seven days after the appearance of a chancre. The Wassermann test lacked a great deal in aiding in the diagnosis of syphilis of the ear. Syphilis of the ear was usually bilateral and sudden in its onset.

Dr. B. A. RANDALL, of Philadelphia, said that aural involvement in syphilis might be surprisingly early. He had seen labyrinthine deafness within four weeks of the infection. As regards treatment, it was well to remember that they had had for a long time in Donovan's solution the combination of mercury with arsenic which could give them sometimes a cure as brilliant as salvarsan and was ready to the hand of many who were not prepared to administer salvarsan.

Dr. H. T. PYFER, of Norristown, stated that syphilis of the ear was suspected when, with hearing for conversation apparently normal, there was diminished bone conduction. He had had no bad results from salvarsan, but always followed it with mercury and iodides.

**Visual Disturbances in Pregnancy.**—Dr. GLENDON E. CURRY, of Pittsburgh, stated that visual disturbances during pregnancy were not infrequent. When present they were most significant and de-

manded prompt and decisive action to safeguard not only the sight, but also the lives of the patients. It was possible for a retinitis to exist for many weeks without the vision being disturbed. Albuminuria might be present, as the condition which gave rise to the inflammation of the retina was a toxemia but not necessarily an albuminuria. Should there be persistent increased arterial tension with wiry pulse and accentuation of the second heart sound, a pathological leucocytosis, or any other indication of toxemia, ophthalmoscopic observation should be made at frequent intervals. Such symptoms subsided when the uterus was emptied, though in the earlier stages appropriate treatment might render this unnecessary.

Dr. BURTON CHANCE, of Philadelphia, believed practitioners should observe most carefully the eyes of the expectant mother, and not delay the induction of abortion or of premature labor when vision was endangered, because the sight of the woman was of much more importance than was the life of the unborn child. When the visual disturbances occurred in the first six months of pregnancy, particularly when accompanied by violent headaches, pregnancy should be terminated at once, but when without marked ophthalmoscopic changes, in the last seven weeks of pregnancy and especially in the last two weeks, such symptoms should not in themselves call for the induction of premature labor, although the onset of eclamptic symptoms would free them from all further doubt as to the course to be adopted.

Dr. WILLIAM C. POSEY, of Philadelphia, said it was time that clinicians should appreciate two facts, first, that changes in the eyegrounds which had been occasioned by renal disease, were almost entirely diagnostic of renal disease, and might precede the presence of albumin in the urine; and, second, that the ophthalmoscope might give evidence of disease of organs other than the kidneys which had been excited by the toxemia of pregnancy. In acute nephritis, premature delivery was advised, as the prospect for sight was none too favorable, especially if the retinal vessels were diseased. As the renal disease of pregnancy and the complications of retinitis did not always disappear in future pregnancies, future conceptions need not always be prohibited.

Dr. LEWIS H. TAYLOR, of Wilkes-Barre, stated that the specialist was often placed in an embarrassing position when called upon by the general practitioner to decide whether pregnancy should be terminated because of visual disturbance. If, however, there was found a high degree of neuroretinitis in both eyes, with kidney involvement that did not yield to vigorous treatment, he believed the uterus should be promptly emptied. In all cases, careful general treatment and regulation of the patient's mode of living should be carried out.

Dr. GEORGE B. JOHNSON, of Franklin, said that the eyes in which the cause could be traced were restored nearly to normal, while those in which it could not be traced did not improve much. The treatment was the local use of atropine if tension was not increased, subconjunctival injection of 1.5 c. c. normal salt solution and two minims of ten per cent. dionin solution once to three times a week. This was alternated with high frequency currents. All received mercury or sodium salicylate.

### Intrarectal Use of Sodium Salicylate in Uveitis.

—Dr. J. F. KUNSON, of York, said that one dram of either the synthetic or the natural salicylate of sodium was dissolved in one ounce of starch solution, to which was added five drops of tincture of opium. This solution was diluted to four ounces with water. After giving a soapsuds enema, this solution was injected with a Davidson's syringe with a long rectal tube. The dose varied from sixty to 200 grains. The drug was rapidly absorbed and symptoms of salicylism were noted within one or more hours. The doses were repeated every twenty-four to forty-eight hours. There was rapid relief of the pain and clearing up of inflammation.

Dr. W. P. REBER, of Philadelphia, stated that the main factor in uveitis was the etiological diagnosis. Now that they had the complement-fixation test for various infections, they should have recourse to these tests in arriving at a diagnosis. He always favored subconjunctival injections of normal saline solution together with the orthodox local treatment. Oxycyanide of mercury was sometimes helpful. Salicylates were also of value.

(To be continued.)

### Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*The Biology and Treatment of Venereal Diseases and The Biology of Inflammation and Its Relationship to Malignant Disease.* By J. E. R. McDONAGH, F.R.C.S., Surgeon to Out-Patients, London Lock Hospital, etc. London: Harrison & Sons, 1915. Pp. 625. (Price, \$5.)

In the early chapters the author, by means of intricate data, seeks to disprove the theory that "Spiriochaeta pallida is the only phase in the life history of the syphilitic parasite." He believes that he has demonstrated conclusively, and shows photomicrographs in evidence thereof, that "there are many life phases of the leucocytozoon syphilidis."

The book is filled with extraordinary ideas, many of which we find utterly bewildering. For example, page 173, "monoarticular gonococcal arthritis frequently ends in an arthritis deformans"; page 394, in chronic prostatitis, "when a provocative injection of vaccine causes a nocturnal emission on the same night or the next night, it is almost certain that the patient has a chronic prostatitis"; page 396, in speaking of gonococcal prostatitis, "vaccines should be given, and continued monthly for six months after the patient has been cured." We ask mildly, Why?

We quote again, "if weak antiseptic solutions are always employed (in treating gonorrhea), no harm whatever will result, and the patient will never get a stricture (page 385). Extraordinary!

We note that the author still gives potassium iodide to assist in curing stricture (page 386). On page 403, he again insists upon deluging the patient with vaccines, "for at least six months after the epididymitis has vanished."

The author discusses venereal diseases and marriage at some length, but we could gain no clear cut idea of his views. For example, page 489, "I can say that the risks of a man infecting his wife are greater when the sore is of the papuloinflammatory-erosive type, than when the sore is of the papulononindurative-ulcerative type." Again, "If the patient has a high blood pressure, caused by syphilis, and there is any reason to fear that an arterial lesion is likely to cut short his life, new points are presented, and they require very, careful consideration, before marriage is advised or not."

We do not know any one who would concur with the following (page 491): "If the dilatability (of the urethra)



of the normal, the chances are that there are gonococci hidden in the follicles or in the subepithelial tissue."

This is the first English book wherein we have seen the complement fixation test mentioned. This is discussed at length, but again the author's idea of its value and practical application escapes us.

The final pages of the book on the biology of inflammation and its relationship to malignant disease are of no interest to the clinician.

Paper, print, and pictures are all excellent.

By A. VIVANTI CHARTRES. With an Introductory Letter by Professor L. M. Bossi of the University of Genoa. New York: Published by the Century Company, 1915. Pp. xiv-305.

The publishers of this book state that it is so closely related to one branch of medical science that they make an exception to their rule of not sending publications for review to medical journals. Marie Tarnowska brought about the murder of one of her lovers in 1907 and is about to be discharged from the Italian prison where she has spent her time since. A. Vivanti Chartres, known as a novelist, has taken down the lady's story and made this book of it. As a sociological or scientific document, it is quite valueless, as the evidence offered is purely subjective, being practically the autobiography of the murderess, who has profound sympathy with herself. As far as we can gather from the dark hints thrown out, Marie suffered from metritis or oophoritis or both, due to gonorrheal infection, and we are asked to forgive her performances on that account. Gonorrhea is not uncommon among adventuresses, but we have never heard of its being offered as an excuse for crime. If the book is accurate in detail, Russian society is a pretty rotten affair, no worse perhaps than any society made up of people both wealthy and idle, but tinged with an Oriental barbarism that has most cruel aspects, that substitutes physical violence, for example, for the verbal cruelty which would satisfy the idle aristocrat of a country further west. Marie's husband used to drink in the daytime champagne shot with vodka, a mixture likely to interfere with efficiency, save in getting drunk. We feel inclined to congratulate the Italian authorities for imprisoning Marie, who would probably have escaped punishment from a French or American jury. We have not intended to say anything that might be construed as a statement that this book was not interesting, for it is most entertaining. We believe it to be a work of art, however, and not quite photographic. Marie's remorse is dramatic and overdone and much of her action is purely theatrical and not true to criminal or degenerate nature, which does not worry much as long as the meals come along regularly. Are we perchance to see the lady in vaudeville in *post bellum* days?

*Treballs de la Societat de Biologia*. Any Segón, 1914. Publicats Sota La Direcció de A. PI SUNER, Membre de L'Institut de Ciències. Barcelona: Institut D'Estudis Catalans. Pp. 279.

Most of the articles in this volume are written in the Catalan dialect which makes difficult reading for the average student of Spanish. It is plentifully supplied with excellent photographs, photomicrographs, and plates in natural colors, which add greatly to its value. Naturally the articles deal largely with laboratory experiments and are concerned more with the scientific than with the practical side of medicine; therefore, while physiologists and research workers will find valuable matter in this publication, the average active practitioner will hardly benefit much from its study.

*The Starvation Treatment of Diabetes*. With a Series of Graduated Diets as Used at the Massachusetts General Hospital. By LEWIS WEBB HILL, M.D., and RENA S. ECKMAN (dietitian). With an Introduction by RICHARD C. CABOT, M.D. Boston: W. M. Leonard, 1915. Pp. 72. (Price, \$1.)

This little volume gives a clear and concise description of the Allen starvation treatment of diabetes as practised at the Massachusetts General Hospital. By this method it seems possible to produce complete disappearance of sugar from the urine in from two to four days, with apparently no ill effect on the patient, thus saving a great deal of time in treatment. The tests for sugar, acetone, and diacetic acid are given and the greater part of the work is devoted to diet lists, forty-eight in number, on which the patient is

placed after the urine is sugar free. From the results obtained it seems that this treatment is well worth a trial in all cases of diabetes.

*Student's Textbook of Hygiene*. By W. JAMES WILSON, M.D., D.Sc., D.P.H., Bacteriologist to the Counties of Down and Antrim, Lecturer in Hygiene and Public Health, Queen's University, Belfast. New York: Reuben Company, 1915. Pp. x-270.

This work begins with a timely review of bacteriology and parasitology as well as immunity, which are rarely given proper consideration in books of this kind. Air, food, soil, and water are then taken up, contagious diseases are particularly investigated, and a chapter is devoted to tropical diseases. The chapters on sanitary law, industrial hygiene, and vital statistics, are based upon the regulations in force in Great Britain and therefore are of value to American readers only for purposes of comparison. Although there are few plates or illustrations, nevertheless the book is well written, and is paraphrased in such a way as to make easy and profitable reading for the student for whom it is intended.

## Interclinical Notes.

The *Nurse* for October has among its professional contributors Dr. S. Adolphus Knopf, Dr. Anne E. Perkins, and Dr. Robert S. McCombs, besides Amos R. Wells, Litt. D., LL. D., and several registered nurses of uncommon literary ability. The department of Bedside Stories is particularly good and its establishment showed a welcome originality in editorial methods. The *Nurse* balks at beaten paths and hews her way into the jungle, making most picturesque routes of her own. The chance to win a prize of from \$10 to \$25 for an original Christmas story is still open. The pictures in this issue are striking, as usual.

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Among the excellent pictures in *Leslie's* for October 21st is one of the American Hospital at Belgrade, which is in charge of Dr. Edward W. Ryan and is known as the model hospital of the Balkans. Doctor Ryan has been decorated by both French and Serbian governments and his name is said to be familiar to every Serbian.

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There is one of Melville Davison Post's strange and powerful mystery stories in the October *Red Book*, The Hidden Path, in which Mr. Post's favorite detective, Uncle Abner, solves the problem in his customary dramatic fashion. There is a curious Old Testament sort of hardness in these tales, which makes one shiver for the culprit, in this case one of the descendants of a group of Highlanders said to have migrated to Virginia after the disastrous failure of Prince Charles Edward Stuart, and to have taken their dour religion and their superstitions with them.

## Meetings of Local Medical Societies.

MONDAY, November 1st.—Clinical Society of New York Throat, Nose, and Lung Hospital; German Medical Society of the City of New York; Utica Medical Library Association; Niagara Falls Academy of Medicine; Brooklyn Hospital Club; Hornell Medical and Surgical Association; Clinical Society of the New York Polyclinic Medical School and Hospital; West Side Physicians' Economic League.

TUESDAY, November 2d.—New York Academy of Medicine (Section in Dermatology); New York Neurological Society; Clinical Society of the West Side German Dispensary; Amsterdam City Medical Society; Lockport Academy of Medicine; Society of Alumni of Lebanon Hospital, New York; Syracuse Academy of Medicine; Buffalo Academy of Medicine (Section in Surgery); Ogdensburg Medical Association; Oswego Academy of Medicine; Medical Association of Troy and Vicinity; Medical Society of the County of Yates.

WEDNESDAY, November 3d.—Brooklyn Society for Neurology; Society of Alumni of Bellevue Hospital; Harlem Medical Association; Bronx Medical Association; Elmira Academy of Medicine; Psychiatric Society of

New York; Society of Alumni of St. John's Hospital, Brooklyn; Schenck Academy of Medicine.

**THURSDAY, November 24.**—New York Academy of Medicine (stated meeting); Brooklyn Surgical Society; Practitioners' Club, Buffalo; Geneva Medical Society; Glens Falls Medical and Surgical Society.

**FRIDAY, November 25.**—New York Academy of Medicine (Section in Surgery); New Utrecht Medical Society; New York Microscopical Society; Gynecological Society, Brooklyn (annual); Manhattan Dermatological Society; Practitioners' Society of New York; Corning Medical Association; Saratoga Springs Medical Society.

**SATURDAY, November 26.**—Benjamin Rush Medical Society, New York.

## Official News.

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending October 20, 1915:*

**Bahrenburg, L. P. H.**, Surgeon. Directed to attend a meeting of the South Texas District Medical Association, at Nacogdoches, Texas, October 7-8, 1915, to present an address on trachoma. **Bogges, John S.**, Surgeon. Relieved from duty at the San Francisco Quarantine Station, and assigned to plague suppressive measures in California. **Brown, B. W.**, Surgeon. Detailed as a delegate to the Sixth Annual Session of the Clinical Congress of Surgeons of North America, at Boston, Mass., October 25-30, 1915. **Carmelia, F. A.**, Assistant Surgeon. Granted three weeks' leave of absence from September 26, 1915, and two weeks' additional leave from October 17, 1915. **Corput, G. M.**, Surgeon. Authorized to proceed to New Orleans, on necessary station business, using launch *Orleans* during interruptions of trips of supply boats on account of storms. **Currie, Donald H.**, Surgeon. Leave of absence for one year from December 20, 1914, amended so as to terminate August 10, 1915. **Draper, W. F.**, Passed Assistant Surgeon. Relieved at the Hygienic Laboratory, and ordered to report at the Bureau for temporary duty; granted two weeks and four days' leave of absence from October 14, 1915. **Foster, A. D.**, Surgeon. Relieved about November 1, from duty at the Bureau, and ordered to report to the Director of the Hygienic Laboratory for temporary duty. **Goldberger, Joseph**, Surgeon. Detailed to attend a meeting of the National Association for the Study and Prevention of Pellagra, at Columbia, S. C., October 21-22, 1915. **Grubbs, S. B.**, Surgeon. Detailed as alternate delegate to the Sixth Annual Session of the Clinical Congress of Surgeons of North America, at Boston, Mass., October 25-30, 1915. **Hasselstine, H. E.**, Passed Assistant Surgeon. Granted one month's leave of absence from October 25, 1915. **Hurley, J. R.**, Passed Assistant Surgeon. Relieved from duty in plague eradication measures, San Francisco, Cal., and ordered to report to the Director of the Hygienic Laboratory, Washington, D. C., for temporary duty. **Lavinder, C. H.**, Surgeon. Detailed to attend a meeting of the National Association for the Study and Prevention of Pellagra, at Columbia, S. C., October 21-22, 1915; granted three days' leave of absence en route. **McMullen, John**, Surgeon. Ordered to proceed to Cincinnati on business connected with the trachoma hospital. **Michel, Carl**, Assistant Surgeon. Relieved from duty at Ellis Island, N. Y., and continued on duty on Coast Guard Cutter *Iasca*. **Miller, K. E.**, Assistant Surgeon. On completion of duty in connection with rural sanitation, ordered to report at the Hygienic Laboratory, Washington, D. C., for temporary duty; granted two days' leave of absence en route. **Paine, Liston**, Assistant Surgeon. Directed upon completion of investigation of Rocky Mountain Spotted Fever to report to the Director of the Hygienic Laboratory, Washington, D. C., for temporary duty. **Safford, M. V.**, Assistant Surgeon. Detailed as alternate delegate to the Sixth Annual Session of the Clinical Congress of Surgeons of North America, at Boston, Mass., October 25-30, 1915.

**Schereschewsky, J. W.**, Surgeon. Detailed to attend a meeting of the National Safety Council, at Philadelphia, Pa., October 18-21, 1915, and instructed to present a paper necessary to points in the neighborhood of the city of Pittsburgh, for collection of data in investigations of industrial hygiene. **Smith, F. C.**, Surgeon. Directed to proceed to Gallup, N. Mex., October 15, 1915, to investigate suspected typhoid or mountain fever. **Streeter, H. W.**, Sanitary Engineer. Directed to proceed to Washington, D. C., for consultation regarding the preparation of data collected in the Ohio River investigations. **Tarbett, R. E.**, Sanitary Engineer. Ordered to proceed to Harrisburg, Pa., for the collection of data regarding the pollution of the Ohio River. **Thompson, L. R.**, Passed Assistant Surgeon. Directed to proceed to Harrisburg, Pa., for the collection of data regarding the pollution of the Ohio River. **Tuck, D. H.**, Assistant Physicist. Relieved at Washington, D. C., and ordered to report at the Marine Hospital, Pittsburgh, Pa., for duty. **Voegtlin, Carl**, Professor. Detailed to attend a meeting of the National Association for the Study and Prevention of Pellagra at Columbia, S. C., October 21-22, 1915. **Von Ezdorf, R. H.**, Surgeon. Directed to proceed to the Rigolets (La.) Quarantine Station, to inspect damages done by recent hurricane. **Warren, B. S.**, Surgeon. Detailed to attend a meeting of the National Safety Council, at Philadelphia, Pa., October 18-21, 1915. **Weldon, Lon O.**, Assistant Surgeon. Relieved from duty at San Francisco, Cal., and ordered to report to the Chief Medical Officer, Ellis Island, N. Y., for duty. **Wheeler, G. A.**, Assistant Surgeon. On completion of present studies of pellagra, ordered to report at the Hygienic Laboratory, Washington, D. C., for temporary duty. **Willems, D. J.**, Assistant Epidemiologist. Detailed to attend a meeting of the National Association for the Study and Prevention of Pellagra, at Columbia, S. C., October 21-22, 1915.

### United States Army Intelligence:

*Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the week ending October 23, 1915:*

**Brooke, Roger**, Major, Medical Corps. Ordered to proceed to Fort Leavenworth, Kansas, and report to the commanding officer of that post for duty, and by letter to the commanding officer, Central Department. **Clarke, Howard**, Captain, Medical Corps. Relieved from duty in the Philippine Department, effective January 3, 1916, and will then proceed to the United States. **Craft, E. D.**, Captain, Medical Corps. Has joined Ambulance Company No. 2, assuming command thereof October 13, 1915. **Davis, William R.**, Captain, Medical Corps. Relieved from duty in the Hawaiian Department, effective December 20, 1915, and will then proceed to the United States and report for further orders. **Frick, E. B.**, Lieutenant Colonel, Medical Corps. Transferred to headquarters, Western Department, San Francisco, Cal. **Hagood, Rufus H., Jr.**, First Lieutenant, Medical Corps. Ordered to report in person to the commanding general, Fifth Brigade, for duty until he avails himself of the leave of absence granted him. **Hall, James F.**, Major, Medical Corps. Ordered to proceed to Boston, Mass., and take station for duty as inspector-instructor of the Sixth Sanitary District, and will then report by letter to the chief of the Division of militia affairs. **Harris, H. I.**, First Lieutenant, Medical Corps. On leave for two months from Fort Constitution, New York; address, 400 Lake Avenue, Rochester, N. Y. **Henry, Ziba L.**, First Lieutenant, Medical Reserve Corps. Relieved from duty in the Philippine Department, effective January 3, 1916, and will then proceed to the United States. **Hill, Felix R.**, Captain, Medical Corps. Ordered to proceed to Washington Barracks, D. C., and report to the commanding officer of that post for detail and service as a member of a board of officers to meet at that post October 25, 1915, for examination of candidates for appointment as probational second lieutenants. **Humphreys, Harry G.**, Captain, Medical Corps. Directed to proceed to Fort Sam Houston, Texas, and report to the commanding general, Southern Department, for assignment to temporary duty. **Keene, Thomas B. V.**, First Lieutenant, Medical Reserve Corps. Ordered to active duty in the

United States for one day. **McLellan**, George H., Captain, Medical Corps. Directed to proceed to Nogales, Arizona, and report to the commanding officer, United States troops at that place, for temporary duty. **Magee**, James C., Captain, Medical Corps. Directed to proceed to Fort Sam Houston, Texas, and report to the commanding general of the Southern Department, for assignment to temporary duty. **Richards**, Alfred, First Lieutenant, Medical Reserve Corps. Resignation of commission in medical reserve corps has been accepted by the President, effective October 18, 1915. **Robbins**, Chandler P., Major, Medical Corps. Granted one month and fifteen days' leave of absence, to take effect upon relief from duty with the Second Division. **Robertson**, James A., First Lieutenant, Medical Reserve Corps. Relieved from duty at Fort Thomas, Kentucky; will proceed to his home, and on arrival report to the Adjutant General of the army; will then stand relieved from active duty in the medical reserve corps, effective on his arrival home. **Scott**, Thomas H., First Lieutenant, Medical Reserve Corps. Directed to proceed to Fort Sam Houston, Texas, and report to the commanding general, Southern Department, for assignment to temporary duty. **Stearns**, Charles H., First Lieutenant, Medical Reserve Corps. Ordered to proceed to Fort Lawton, Washington, and report to the commanding officer of that post for detail and service as a member of a board of officers to meet at that post October 25, 1915.

### United States Navy Intelligence:

*Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Navy, for the four weeks ending October 25, 1915.*

**Ames**, M. H., Passed Assistant Surgeon. Detached from the Navy Yard, Boston, and ordered to the *Georgia*. **Asserson**, F. A., Surgeon. Detached from the *Wisconsin* and ordered home to await orders. **Blackwell**, E. M., Surgeon. Detached from the Bureau of Medicine and Surgery, Navy Department, Washington, D. C., and ordered to the *Solace*. **Bowman**, F. H., Passed Assistant Surgeon. Detached from the *Ohio* and ordered to the *Delaware*. **Brown**, H. L., Passed Assistant Surgeon. Detached from the *Chester* and ordered home to await orders. **Bunker**, G. W. O., Passed Assistant Surgeon. Ordered to duty at Navy Yard, Portsmouth, N. H. **Clifford**, A. B., Passed Assistant Surgeon. Detached from the Naval Medical School, Washington, D. C., and ordered to the *Washington*. **Drum**, L. F., Assistant Surgeon, Medical Reserve Corps. Ordered to Naval Medical School, Washington, D. C. **French**, G. R. W., Passed Assistant Surgeon. Detached from the Naval Hospital, New York, and ordered to temporary duty at the Navy Yard, New York. **Garrison**, P. E., Passed Assistant Surgeon. Detached from the *Solace* and ordered to the *Washington*. **Garton**, W. M., Surgeon. Detached from the *Solace* and ordered to the Atlantic Reserve Fleet to serve as fleet surgeon. **Hale**, G. D., Passed Assistant Surgeon. Detached from the *Ohio* and ordered to the *North Dakota*. **Hart**, S. D., Assistant Surgeon. Detached from the Newport Hospital and ordered to the Newport Training Station. **Irvine**, W. L., Passed Assistant Surgeon. Detached from the Training Station, Newport, R. I., and ordered to the *Chester*. **Lee**, A. E., Passed Assistant Surgeon. Ordered to temporary duty, Navy Recruiting Station, Richmond, Va. **Longabaugh**, R. I., Passed Assistant Surgeon. Ordered to the Navy Yard, Mare Island Cal. **McCullough**, F. E., Surgeon. Detached from the San Francisco Training Station and ordered to the *Florida*. **McGuire**, L. W., Passed Assistant Surgeon. Detached from the *Maine* and ordered to the *Rhode Island*. **Oman**, C. M., Surgeon. Ordered to the Naval Hospital, New York. **Owens**, W. D., Surgeon. Detached from the *Utah* and ordered to the Training Station, Newport, R. I. **Richards**, T. W., Surgeon. Detached from the *Florida* and ordered to the *Maine*. **Richmond**, Paul, Assistant Surgeon, Medical Reserve Corps. Ordered to the Naval Medical School, Washington, D. C. **Riddick**, W. J., Passed Assistant Surgeon. Detached from the Naval Hospital, Norfolk, and ordered to the *Neptune*. **Rossiter**, P. S., Surgeon. Detached from the *Colorado* and ordered to the Training Station, San Francisco, Cal. **Smith**, C. G., Surgeon.

Detached from the Naval Hospital, New York, and ordered to the Bureau of Medicine and Surgery, Navy Department, Washington, D. C. **Smith**, H. L., Passed Assistant Surgeon. Ordered to the Navy Yard, Boston, Mass. **Thomas**, G. E., Passed Assistant Surgeon. Detached from the Navy Yard, Portsmouth, N. H., and ordered to the *Utah*. **Willis**, B. C., Assistant Surgeon, Medical Reserve Corps. Detached from the Naval Recruiting Station, Richmond, Va. **Zalesky**, W. J., Passed Assistant Surgeon. Detached from Cavite Station and ordered to the *Saratoga*.

### Births, Marriages, and Deaths.

#### Married.

**Bigelow-Sumner**.—In Worcester, Mass., on Wednesday, October 20th, Dr. Edward Bridge Bigelow and Miss Bertha C. Sumner. **Cutler-Wright**.—In Boston, Mass., on Tuesday, October 19th, Dr. George D. Cutler and Miss Jessie Barr Wright. **Dawson-Long**.—In Boston, Mass., on Wednesday, October 20th, Dr. Roger P. Dawson and Miss Marguerite A. Long. **Dempsey-Punch**.—In Dorchester, Mass., on Monday, October 18th, Dr. J. Edward Dempsey and Miss Helen Punch. **Sheehy-Dowd**.—In Winchester, Mass., on Wednesday, October 20th, Dr. Edward W. Sheehy and Miss Emily M. Dowd. **Turner-Brown**.—In Des Moines, Iowa, on Saturday, October 2d, Dr. Matthew L. Turner and Miss Loretta E. Brown. **White-Hibbard**.—In Walla Walla, Wash., on Tuesday, October 5th, Dr. Eben W. White, of Castle Rock, Wash., and Miss Elinor Mae Hibbard.

#### Died.

**Baird**.—In Baltimore, Md., on Sunday, October 10th, Dr. William M. Baird, formerly of Atlanta, Ga. **Bolding**.—In Elbing, Kansas, on Saturday, October 9th, Dr. Edmund R. Bolding, aged forty-five years. **Crain**.—In Rutland, Vermont, on Tuesday, October 12th, Dr. Mark Richards Crain, aged sixty years. **Cromin**.—In New York, on Sunday, October 17th, Dr. Patrick W. Cromin, aged seventy-seven years. **Emory**.—In Winfield, Kansas, on Wednesday, October 13th, Dr. Ethbert B. Emory, aged sixty-six years. **Ferguson**.—In Hood River, Ore., on Wednesday, October 6th, Dr. Elmer E. Ferguson, aged forty years. **Hampton**.—In Florence, S. C., on Saturday, October 9th, Dr. J. T. Hampton, aged seventy-three years. **Huse**.—In Berlin, Vermont, on Sunday, October 10th, Dr. James Madison Huse, aged seventy-four years. **James**.—In Humboldt, Tenn., on Thursday, October 14th, Dr. George W. James, aged seventy-four years. **Jayne**.—In Brooklyn, N. Y., on Wednesday, October 13th, Dr. Andrew F. Jayne, aged eighty-seven years. **Kellogg**.—In East Orange, N. J., on Monday, October 18th, Dr. John Marshall Kellogg, aged seventy-five years. **Kessler**.—In New York, on Tuesday, October 10th, Dr. Adolph Kessler, aged eighty-two years. **Leigh**.—In Weatherford, Okla., on Wednesday, October 13th, Dr. A. Leigh, aged sixty-six years. **Long**.—In Statesville, N. C., on Saturday, October 16th, Dr. George W. Long, aged sixty-seven years. **McDougall**.—In New York, on Tuesday, October 5th, Dr. Colin McDougall, aged seventy-two years. **Morse**.—In Batavia, N. Y., on Friday, October 15th, Dr. Herbert A. Morse, aged seventy-one years. **Noll**.—In New York, on Sunday, October 17th, Dr. Joseph J. Noll, aged fifty-one years. **Noyes**.—In Boston, Mass., on Wednesday, October 20th, Dr. William Noyes, aged fifty-eight years. **Ormsbee**.—In Poughkeepsie, N. Y., on Wednesday, October 13th, Dr. Clarence Ormsbee, of Newburgh, N. Y., aged sixty-six years. **Patton**.—In Charleroi, Pa., on Thursday, October 14th, Dr. Noah Woodrow Patton, aged sixty-two years. **Peiro**.—In Evanston, Ill., on Wednesday, October 13th, Dr. Frank L. Peiro, aged seventy-six years. **Price**.—In Camp Hill, Pa., on Wednesday, October 13th, Dr. John C. Price, aged forty-four years. **Prugh**.—In Cincinnati, Ohio, on Tuesday, October 12th, Dr. George W. Prugh, aged sixty-seven years. **Smith**.—In Indianapolis, Ind., on Friday, October 15th, Dr. Andrew J. Smith, aged eighty-three years. **Tucker**.—In Louvale, Ga., on Monday, October 18th, Dr. J. M. Tucker, formerly of Atlanta, Ga.



# New York Medical Journal

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### Original Communications.

#### VALUE OF THE X RAY IN THE DIAGNOSIS OF GASTROINTESTINAL DISTURBANCES.

By JULIUS FRIEDENWALD, M. D.,  
Baltimore,

Professor of Gastroenterology, Maryland University School of  
Medicine and College of Physicians and Surgeons,

AND F. H. BAETJER, M. D.,  
Baltimore,

Associate in Roentgenology, Johns Hopkins University and Hospital.

The great difficulty in the diagnosis of many gastrointestinal disturbances has long been recognized. In spite of our most thorough methods of investigation, including the latest and most accurate tests, the diagnosis of many of these problems often remains obscure, and indeed is at times impossible. Any new method, therefore, which may clear up any of these most intricate problems is enthusiastically accepted. By means of Röntgen ray examinations new light has been shed upon many of the intricate problems which have hitherto baffled our means of investigation, and in consequence new and important helps in diagnosis are daily made clear. From what has already been accomplished, it seems quite probable, that as the technic of roentgenology and our means of interpretation of the x ray plates, become more perfected, many unsolved problems in gastroenterology will be cleared up. On the other hand, we are most anxious to emphasize the fact that this method is only one form of examination, and cannot be relied upon alone, but should always be preceded by a thorough clinical study of the patient; only when taken in connection with the other signs does it reach its greatest diagnostic power. In the x ray study of the gastrointestinal tract we may consider the following conditions:

1. Esophageal disturbances.
2. Gastric and duodenal ulcers.
3. Gastric cancer.
4. Gastric dilatation and pyloric obstruction.
5. Gastropnoia and enteropnoia.
6. Diseases of the gallbladder and chronic appendicitis.
7. Intestinal adhesions and angulations.

#### I. ESOPHAGEAL DISTURBANCES.

For the examination of the esophagus we use a meal consisting of fifteen to twenty grams of bismuth subcarbonate in 100 grams of milk and fifty grams of mashed potato. Normally the food starts down in the esophagus in a tenth of a second, and we can see the muscular contractions of the esophagus. The heavier meal allows the bismuth to

descend less rapidly. We can by examination note the displacement of the esophagus by neighboring organs. We can see diverticula, and recognize stenoses spastic or obstructive in nature.

#### 2. GASTRIC AND DUODENAL ULCER.

The x ray diagnosis of gastric (Fig. 1) and duodenal ulcer (Fig. 2) has engaged the attention of the roentgenologist ever since the production of high power apparatus has made it possible to get practically instantaneous roentgenograms of the gastrointestinal tract. It is only within the last three years, however, that we are beginning to observe results upon which reliance may be placed. The old theory that there is a possibility of diagnosing ulcer by bismuth adhering to the raw surfaces is now practically abandoned, inasmuch as experience has taught us that this rarely happens, because the irritability of the raw surface produces hypermotility with violent contractions, so that it is almost impossible for the bismuth to adhere to the raw surfaces. At present we rely more upon the functioning of the stomach and intestines than upon the actual demonstration of the ulcer. Curiously enough, the diagnosis of duodenal ulcer is much simpler than that of gastric ulcer. We can practically always rule out the presence of a simple duodenal ulcer, but we cannot always rule out the presence of gastric ulcer. The true line of distinction is the fact that in an irritating lesion of the stomach, such as ulcer, the hypermotility causes a tonic contraction of the pylorus with retention of gastric contents over a shorter or longer period, as well as deformity, according to the situation of the ulcer. On the other hand, in a lesion of the duodenum, we have again a hypermotility, not only of the duodenum, but of the stomach itself; but in this case we do not have the spastic condition of the pylorus, consequently the hypermotility produces a rapid emptying of the stomach contents. For example, in our experience, in simple ulcer of the duodenum not complicated by adhesions, we find the stomach will invariably empty the greater part of its contents in from fifteen or twenty minutes to an hour. There are in addition certain characteristic features connected with this lesion; we have decided hypermotility, yet the contractions are quite uniform, and there is no tendency toward hour glass formation of the stomach. The pylorus is patulous, and the bismuth flows quite freely into the duodenum. The duodenum is in very active contraction, and in many cases we find that there is a vacant area in some portion of it, and this area persists throughout the period of the examination. At times we may

observe bismuth running along either side with the vacant area between the two bismuth currents.<sup>1</sup>

In gastric ulcer we have just the reverse. There will be primary quick expulsion of contents and then the spastic condition of the pylorus appears, and we have a retention, lasting anywhere from two to four hours, depending upon whether the lesion is simple or complicated by adhesions.

The diagnosis between gastric and duodenal ulcer from clinical signs alone is often very difficult, and many clinicians consider it impossible in many instances. The x ray findings of the two conditions differ, however, so markedly that this method affords an almost positive means of differentiation.

Since we have taken up the positive phase of ulcer it is wise to draw some conclusions as to the negative finding. In the first place we believe that we can rule out the presence of a simple duodenal ulcer. If we observe that the stomach contents are not expelled promptly, and that the greater portion remains after the lapse of an hour, we maintain confidently that the trouble is not in the duodenum. Even in the old chronic ulcer, with adhesions, the motility is so marked that it cannot be overlooked. The negative diagnosis of gastric ulcer is not so certain. So many complicating phases are present, that the retention of bismuth in the stomach does not appear to have the same significance as the hypermotility in the duodenal ulcer. As has been pointed out, in gastric ulcer we have spastic retention. In simple atony and in prolapse we may have retention, yet the spastic character is not present, nor is there any tendency toward the formation of an hour glass stomach.

Another very important point which our studies have brought out in connection with duodenal ulcers, is that in a rough way we can determine the degree of healing. In duodenal ulcer, when the patient is given rest treatment and placed upon proper diet, all symptoms gradually disappear, and the patient becomes, comparatively speaking, well. This usually takes place in from four to five weeks. At the end of this time, however, if a second bismuth examination is made, we shall usually find the same characteristic signs as in the fresh ulcer, though the patient shows no symptoms whatever. In a series of cases of duodenal ulcer that have been examined from three to five weeks after the absence of symptoms, we have found practically no change in the motility of the stomach. The same hypermotility persists, indicating that there is still an irritating lesion in the duodenum.

When these patients are given the ordinary diet their symptoms are apt to recur in a short time. If treatment is continued, however, our experience has demonstrated that as the ulcer continues to heal, the motility of the stomach returns to a more normal condition, and, by making repeated x ray observations over a long period of time, we can observe when the ulcer is healed. There can be no question that this is one of the most important findings of this work, inasmuch as until this method was employed there was absolutely no means of determining whether ulcers had healed or not. Our only means of determining this question has been by a

return of symptoms when the patient was placed upon an ordinary diet, and this simply meant a relapse for the patient. By means of the x ray examinations made from time to time, we are thus enabled to determine the progress of healing.

*Conclusions.* From our studies of the many cases of peptic ulcer in which x ray examinations were made, we believe that we have been justified in drawing the following conclusions:

1. The x ray offers most valuable assistance in the diagnosis of peptic ulcer, and although this method is not yet sufficiently well developed to be relied upon alone without entering into the clinical aspect of the disease, it is of the greatest diagnostic help in obscure cases.

2. In duodenal ulcer there is excessive hypermotility of the stomach with rapid evacuation of the contents, so that the greater portion is emptied within the first half hour; there is hypermotility of the duodenum with formation, usually, of a vacant area, which remains fixed in all of the examinations.

3. The diagnosis of gastric ulcer is dependent upon two conditions, namely, the functioning of the stomach, and the finding of the filling defect. It is only when the filling defect is situated along the anterior surface of the lesser and greater curvatures that it can be demonstrated. On the other hand, it matters not what the situation of the ulcer is, the functions of the stomach are materially affected. We have in this condition an excessive irritation from the ulcer, with consequent hypermotility and a spastic condition of the pylorus, so that for the time being there is practically no expulsion of bismuth. It is only when the spasticity relaxes that a portion of the bismuth is expelled. In gastric ulcer, whatever its situation, we can always look for a certain amount of retention of contents. There is also a more or less marked hour glass formation.

4. The x ray affords an almost absolute means of differentiating between gastric and duodenal ulcer.

5. By means of the x ray examination we can rule out the presence of a duodenal ulcer.

6. We can approximately determine the degree of healing of an ulcer, which cannot be as certainly determined in any other way.

It may be of interest to mention the character of the bismuth meal that has been employed. Our experience has shown that with the different meals there is always a slight difference as to the motility of the gastrointestinal tract, consequently it has been our procedure for the last four years to employ one bismuth meal, namely, one and a half ounce of bismuth subcarbonate, in an ordinary glass of water, and sufficient mucilage of acacia to make an emulsion. This has the convenience of being very easily prepared, and does not tend to nauseate the patient, as so frequently happens when some other menstruum is used for the bismuth.

Our experience has been that the results as a whole are much more satisfactory if not too large a meal is given. Some of the meals vary in amount from sixteen to thirty-two ounces, whereas we seldom use over twelve.

### 3. GASTRIC CANCER.

The x ray diagnosis of gastric cancer has also engaged the active interest of the röntgenologist, and

<sup>1</sup>See also the negative phase, as observed, as a result of chronic ulcer, in the accompanying illustrations.

he has done much to aid in this difficult problem. We are all aware of the difficulties besetting the diagnosis of gastric cancer in its early stages, and how notwithstanding the most recent and most accurate methods of examination, this problem remains one of extreme difficulty. The x ray has presented us

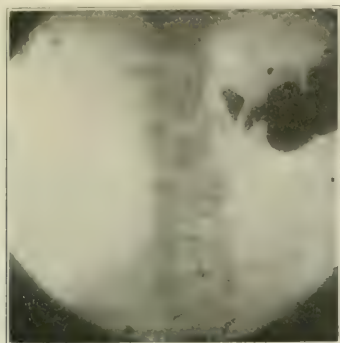


FIG. 1.—Penetrating gastric ulcer.

with an important additional means of diagnosis. Inasmuch as the large proportion of cancers have their seat at or around the pylorus (Fig. 3), early obstruction is not infrequent.

In the early stages of the disease, the obstruction is not complete, and it is only by means of the x ray, as we have already pointed out, that beginning or partial obstruction can be determined. In the early stages we have active contractions of the stomach with slow elimination of contents. Another very significant sign is that a portion of the stomach just within the pylorus on the greater curvature in the pyloric region shows a tendency to bulge. This

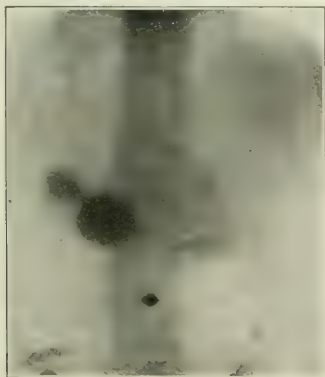


FIG. 2.—Duodenal ulcer.

condition is produced by the active contractions of the stomach forcing all of the food toward the pyloric region.

The pylorus not being patent, the prepyloric region becomes dilated under this constant pressure, so that the plate presents the pylorus, not at the end

of the stomach, as it were, but the prepyloric region extends further to the right than the pylorus, the pylorus resting on the top of the stomach, and pointing to the splenic region. The prepyloric bulging



FIG. 3.—Carcinoma of the pylorus.

is dependent largely upon the duration of the affection. In the early stages it is very small, but as the condition advances, the prepyloric bulging may reach the size of a hen's egg. As the condition advances still further dilatation begins to take place, and after a time, practically the entire fundus yields so that typical saccular formation is produced and all the bismuth rests in the fundus. In this state examination will show a retention of contents for from ten to twenty hours.

In addition, no matter where the cancer is located in the stomach, there is usually a filling defect, which may be small or large according to the size of



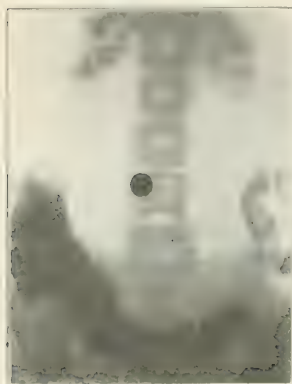
FIG. 4.—Carcinoma of the pylorus.

the growth; when at or near the pylorus, the usual absence of the bismuth shadow in the form of a "sawed off" appearance is manifested. Carcinomatous ulceration (Fig. 4) causes a broader, more irregular filling defect than the benign ulceration.



## 1. GASTRIC DILATATION AND PYLORIC OBSTRUCTION.

The diagnosis of gastrectasia from stenosis of the pylorus is not usually difficult, especially when the cardinal symptoms are present. But we all know that these findings are present only when the obstruction is marked or nearly complete, and that there are a large number of cases in which obstruction is suspected, yet weeks often elapse before the stenosis becomes sufficiently marked to warrant a positive diagnosis. For practical purposes cases of pyloric stenosis may be divided into two classes:



1. Cases with marked and constant retention of food remains and stagnation.

2. Cases with a moderate

amount of retention, often intermittent and frequently associated with gastrosuccorrhoea chronica.

There is, however, nothing definite in this classification, and the two types are often only stages of the disease in the same patient.

The diagnosis of the first type is extremely simple, and it is unusual nowadays to observe patients who have reached the extreme stage, except when the stenosis is due to malignant disease.

The diagnosis of the second type, however, is fraught with great difficulty. The condition is due to partial stenosis of the pylorus, and inasmuch as the symptoms produced by it are extremely vague, the condition is often overlooked, or an incorrect diagnosis is made.

Partial obstructions may be looked upon from three points of view:

1. Obstruction from within; 2, obstruction from without; and, 3 retention from muscular relaxation.



*Obstruction within the stomach.* In the first condition we are dealing chiefly with either a malignant condition around the pylorus, or ulcer with cicatrix, or idiopathic thickening of the pylorus. These

conditions produce practically the same effect upon the action of the stomach. In the early stages, as already pointed out, we have active contractions with

slow elimination of the stomach contents. Now a normal stomach evacuates its bismuth meal in from three to six hours. Generally we observe that the high stomach occupying the horizontal position empties much more quickly than the prolapsed fishhook variety, so that it might be stated that from three to four hours is the normal time for emptying the horizontal stomach, and five to six hours for the prolapsed fishhook variety. When in these various types we note that, while the contractions are good, yet the expulsion of contents is slower than under normal conditions, we may consider the possibility of some beginning obstruction. A second very significant sign is when a portion of the stomach just within the pylorus on the greater curvature in the prepyloric region shows a tendency to bulge.

*Obstruction from without the stomach.* We find this condition due chiefly to two factors: 1. A mass or growth pressing upon the pylorus and duodenum, and thus producing mechanical obstruction, and, 2, adhesions occurring around the pylorus, duodenum, and omentum.

The first condition is rather unusual. It can be cleared up by palpation of the abdomen, either mov-



Fig. 2. Appendix with gastric adhesions.

ing the mass or changing the position of the stomach so that under massage the contents will be expelled quite freely. The second, obstruction from adhesions, is quite common.

One of the most common causes of partial stomach obstruction is the formation of adhesions after an appendix operation or an unoperated chronic appendicitis. It frequently happens in these conditions that by the formation of adhesions involving the cecum and possibly the transverse colon, the omentum also becomes involved, and, being drawn over to the appendix region, pulls down upon the greater curvature. This tension or pull is frequently so strong as to interfere with the motility of the stomach, so that proper expulsion of contents is impossible because the greater curvature cannot contract properly. With this condition, the stomach may be definitely dilated. The prepyloric region of the stomach will be observed to rest in the appendix region, and there will be definite retention of contents, varying anywhere from six to eight hours.

This condition is so typical that if at the first examination the stomach occupies this position, we can almost definitely state that we are dealing with a partial obstruction at or about the pyloric opening. Then, too, we may have quite a similar condition arising from adhesions around the gallbladder. In these cases the duodenum or pylorus may be bound so tightly as very materially to narrow the portal of exit. In these cases again we have the active contractions, slow expulsion, and retention of contents beyond five or six hours. The degree of dilatation depends entirely upon the degree of obstruction.

*Retention from muscular relaxation.* At times we see a sluggish atonic stomach in which the contractions are so slow that the mere weight of the contents of the stomach gradually causes a uniform dilatation of the fundus. The position at the point of greatest prolapse is always in the centre of the fundus. The stomach assumes the appearance of a rubber bag in which a great quantity of shot had been placed, causing the lowest point of the bag to sag and become elongated. It is very difficult at times to distinguish between one of these atonic con-

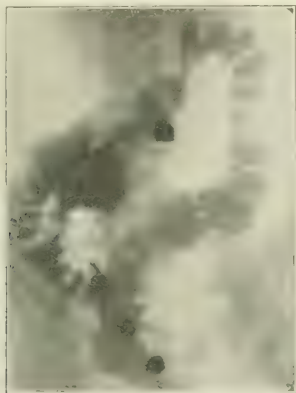


FIG. 8.—Adhesions after appendicitis abscess.

ditions, and one in which an obstruction had been existing for a sufficient length of time—when the stomach is almost worn out—so that there are practically no contractions and the stomach assumes the position of the atonic prolapsed organ. However, the picture of an atonic stomach is so characteristic and differs so markedly from that of partial obstruction, that the two conditions can usually be easily differentiated.

From our observations, it seems clear that the x ray is a very valuable aid in the diagnosis of beginning pyloric obstructions, as well as in complete obstructions.

##### 5. GASTROPTOSIS AND ENTEROPTOSIS.

It is generally admitted that there is no better means of determining the position of the stomach and bowel than the x ray. It is true that the location of these organs can be obtained by other methods, but the x ray examination is so definite, that whenever possible it should be employed. There can be no question, however, that since the x ray examination has become so widely used, the

interpretation of the significance of the prolapsed bowel has been entirely too broad, for there are many patients in whom the transverse colon has prolapsed into the pelvis, and yet in whom there are no evidences of digestive disturbances. It is only when there are adhesions and angulations, that digestive symptoms usually become evident. At the same time, it is exceedingly interesting to note the



FIG. 9.—Adhesions, chronic abscess.

very frequent occurrence of enteroptosis, which has been so clearly demonstrated by the x ray. The degree of enteroptosis may vary exceedingly, from a slight prolapse (Fig. 5) to a condition in which the entire stomach and colon are situated deeply in the pelvis. The x ray plates are also of great interest and value, inasmuch as they graphically locate the varying position of the organs, and indicate, when the pictures are again taken after



FIG. 10.—Stomach and colon.

treatment, how far the stomach and intestines have ascended toward their normal position.

##### 6. GALLBLADDER DISEASE AND CHRONIC APPENDICITIS.

We have already pointed out how partial obstructions of the pylorus are apt to lead to adhesions extending to the gallbladder (Fig. 6) and drag the stomach in that direction, or into the appendix re-

groom, pulling the stomach toward the right lower quadrant. Adhesions in either direction are apt to be associated with chronic disease of one or the other organ, that is with gallbladder disease or with chronic appendicitis. These adhesions, however, need not necessarily extend from the stomach or even from the duodenum, but may arise directly from the gallbladder itself, extending toward various portions of the intestinal tract, or from the appendix or its surrounding structures. The adhesions are apt to produce varying degrees of stasis, retention, and obstruction, according to their extent, and thus give us a definite picture in the plates as to the chronicity of the gallbladder or appendicular disturbance.

The demonstration of gallstones by the Röntgen rays has itself reached a position that warrants its more general use as an aid in diagnosis, and if the gallbladder region is examined for stones, prior to the bismuth examination of the gastrointestinal tract, gallstones may be demonstrated in a certain proportion of cases. Pure cholesterol stones cannot be differentiated by the x ray, but it is a well known fact that pure cholesterol stones are not exceedingly common, and that when the gallbladder is chronically inflamed, the stones have lamellae of calcium and bile salts incrusting on the cholesterol.

The calcium mixture is the only part shown by the x ray, and the clearness of the gallstones upon the plates will be proportionate to the amount of calcium. Inasmuch as in a large proportion of patients affected with gallstones for some time, the stones contain calcium, it is more than likely that as the technic becomes more perfected, gallstones may be demonstrated in many instances, especially where the symptoms have been of long duration. The main sources of error are renal calculi, calcified mesenteric glands, and costochondral ossifications.

The Röntgen examination of the appendix itself (Figs. 7 and 8), in its chronic state, is capable of rendering valuable service in a certain number of instances. When the lumen of the appendix is closed as the result of an obliterative process, bismuth will fail to enter.

Case recommends a special technic for the examination of the appendix: 1. The necessity of examining the patient in the horizontal position, with the screen held over the abdomen and the tube underneath the table; 2, the necessity of palpating the abdomen under the screen, with the gloved hand or preferably with the wooden spoon. The time of the examination is of some importance. Shortly after the cecum begins to fill, the appendix also fills. This usually occurs in six hours, although there are many cases in which the cecum is filled earlier or later. From this time on until the bowel is empty, and frequently for some time afterward, the appendix remains visible.

The ordinary technic of röntgenography, with the patient standing or lying, is not likely to show the appendix; we must first find the appendix fluoroscopically, and then make the röntgenograph. When the appendix remains visible (Fig. 9) for more than a day or two after the bismuth examination, it is in proportion to its poor drainage, a dangerous appendix (Case).

There are a number of cases in which the bismuth shadow persists for many hours or days, and sometimes several weeks after the rest of the bowel has been emptied of the bismuth content.

#### 7. INTESTINAL ADHESIONS AND ANGULATIONS.

When the bismuth meal is taken, it ordinarily reaches the cecum in from seven to ten hours, the transverse colon in twelve, and the sigmoid and rectum in eighteen to twenty hours. Delay in the passage of the bismuth may be due to various conditions, to a dilatation of the cecum, to ptosis of any portion of the colon, especially the transverse with atony, to adhesions of various portions of the intestinal tract, including the gallbladder region, cecal region, splenic flexure, or sigmoid, or to a redundant transverse colon or sigmoid; to ileac stasis or frequent angulations at the hepatic or splenic flexures. Any of these conditions may lead to chronic constipation, and at times in certain cases to actual obstruction. All cases of chronic constipation should be carefully studied with the x ray, and in many instances the cause becomes evident. In some the adhesions are so marked and so extensive that nothing but operation will correct the condition.

Unquestionably, by correcting uncomplicated cases of enteroptosis by medical means, much can be done to overcome long continued chronic constipation and its associated disturbances. Adhesions which involve the gallbladder or appendix or cause partial or nearly complete obstructions anywhere in the intestinal tract, must be handled surgically. Removal of an inflamed appendix or draining of a gallbladder, and relieving its adhesions or correcting adhesions dragging on the sigmoid, have frequently relieved a constipation which has existed for years, as well as other associated symptoms. On the other hand, we cannot help being impressed with the fact how frequently adhesions are formed and obstructions are produced; as in this day of operative surgery, such cases are quite commonly observed postoperatively when by chance they come to the autopsy room. At the same time, we are frequently amazed to see how Nature will accommodate herself to the malformations caused by such adhesions.

In the study of intestinal adhesions and angulations, bismuth enemata are used with advantage (Fig. 10). These consist of two and a half ounces of bismuth subcarbonate to the litre of water, to which sufficient mucilage of acacia is added to suspend the bismuth. The patient is placed in the knee chest position, and the low enema is allowed to run in slowly by gravity. This method of examination is especially useful in determining lesions of the lower bowel. It is of no value in determining prolapse of the bowel, for if the bowel is not adherent, the enema itself will cause it to regain its normal position; nor does the bismuth enema give any idea of motility. It is most useful in determining filling defects in the lower bowel, as in carcinoma, as well as in locating constrictions.

In conclusion, we hope that we have been able to demonstrate the great aid afforded by the x ray in the diagnosis of certain abdominal affections; yet this method is but one of many methods by



which conclusions can be drawn concerning these most intricate disturbances. Its results are as yet imperfect, and it is only when they are taken in conjunction with the clinical signs that we can hope to obtain the very best results.

1013 NORTH CHARLES STREET,  
4 EAST MADISON STREET.

### CHRONIC INTESTINAL STASIS.\*

BY ANTHONY BASSLER, M. D.,  
New York.

There are many chapters and sections to intestinal stasis. Multiplicity of conditions and constant varying pictures met with in the course of a careful examination of a large enough number of cases take us away from an empirical attitude and bring us to that of a student. It has been stated (1): "The change in the consensus of opinion upon the treatment, particularly surgical, of intestinal stasis is dependent upon the more extended knowledge of the diagnosis of chronic anomalies and diseases," a statement I would criticize in the way that the generalization of our knowledge has come about by way of not paying attention to facts that were known at the time of surgical exploitation, and failures which have happened from that method of treatment. It is harped on generally that to Lane and other surgeons, and to definite surgical procedures belongs the credit for the advance in the subject, or for drawing it to our attention. Regarding this I would say that to nothing so much as the primary short sightedness on the part of enthusiastic surgeons are due such discredits as come from failures. To reiterate: Intestinal stasis is a condition seen in varied pictures as so called cases of the condition present themselves. It is distinctly only a symptom, as cough is a symptom of pulmonary conditions, or edema is a symptom of renal disorders, and, unless one keeps this clearly in mind, no valuable understanding of the subject can be gained.

While I am loath to describe what is now designated as chronic intestinal stasis, there are enough instances in which certain symptoms occur so that an inductive but not a conclusive picture may be drawn. Among these may be enumerated as the clinical aspects the following:

1. Attacks of abdominal distress situated anywhere in the abdomen, generally in the epigastrium or right iliac region, these not being associated with the taking of food.

2. Local tenderness in two areas—that of the right iliac region and the region of the hepatic flexure. The point of maximum tenderness is usually somewhat below and internal to the point of greatest tenderness in appendicitis—that is, the lower ileum or the caput caeci.

3. Constipation, a marked feature in the majority of cases, which may be preceded by attacks of abdominal pain and perhaps alternates with diarrhea and output of mucus.

4. A sensation of distention by gas, limited to the right side of the abdomen, perhaps causing a palpable cecum, and one in which splashing can be elicited.

5. Symptoms of intestinal intoxication, such as a feeling of general ill being, lack of energy and endurance, headache, backache, and loss of appetite. The skin may be sallow, the complexion muddy with rings beneath the eyes, the flexures of the armpits, groin, and popliteal regions may be stained, and the breath may be offensive. There are various neurasthenic symptoms, both local in the abdomen and general in the body, considerable loss in weight or inability to add weight whatever the diet and the routine of life may be.

6. Various eye symptoms of a functional type, diminution or exaggeration of both superficial and deep reflexes, insomnia of a neurotic type, slow or fast heart's action, symptoms of distress apparently in the urethra which are without visible local cause, coccygodynia, subjective pains in the left hip, flank, and subscapular region.

7. Prolonged stoppage of bismuth at certain points in the intestinal canal, as shown by x ray examination after a bismuth meal. While this is sufficient to enable many to make or confirm the presence of intestinal stasis, to me it is often fallacious. General dependence upon this one method of examination is very likely to lead one astray. It is a method of examination that should be tried, but never depended upon absolutely. Reasons for this are given later.

8. Careful examination of stool and a twenty-four hour specimen of urine collected under known conditions of diet, suitable for the age, weight, and work of the individual, permitting long enough time on the diet so that specimens obtained represent the foods taken. The examination of these, showing in the urine evidences of slight kidney irritation and perhaps an indefinite reaction to either Fehling's or Benedict's solution, a high sulphate partition in which the ethereal sulphates represent a greater proportion than one to ten to the preformed, high phosphorus output, and the presence or not (according to the type of toxemia) of indican, urobilin, and faint traces of urobilin. In the examination of the feces—feces and water test—a low gas content in the indolic and a high gas content in the saccharobutyric; and in the culture tests, a high gas content in the indolic and a low gas content in the saccharobutyric, a strong alkalinity or acidity of the stool, a very dark or light color, the presence of bacteria abnormal either in the number of Gram negatives or Gram positives and the individual study of both types of organisms, this matter being studied from Gram differentially stained stools, and sedimentary fields of culture media. In my opinion these last examinations are the most valuable methods of diagnosing chronic intestinal stasis.

While the foregoing represents a somewhat composite picture of the condition, it must be understood that the symptoms may be fewer, different, or elaborated upon almost endlessly in all of the phases of the clinical side and x ray examinations, but not on the laboratory tests which, individually, are too technical to present here. My opinion is that in most instances what has been considered to be chronic intestinal stasis has not been the true condition. Only cases studied thoroughly, in which the diagnosis made is often only a part of the whole picture, can give anyone a conception of the sub-

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fect to enable him to know what he certainly should know before advising radical procedures in treatment. The history of medicine has a number of examples wherein empirical medicine was in advance of scientific. We know that quinine was specific in malaria long before we knew that quinine was inhibitory to the propagation of the parasite that causes malaria. In chronic intestinal stasis, however, only theories of the cause of the conditions came out after methods for its correction were inaugurated, and inasmuch as we still have only theories (and many of them), none of which are definite or settled upon as correct, it is plausible to assume that from a surgical standpoint the development of this subject has been unscientifically brought about and often as an apology for rash mistakes made. But it is my belief that it is upon the study of these theories that we may get some insight into the condition.

The first theory advanced was that of Lane and Jordan, which, because of an enthusiasm born of biological ignorance on the one hand and readiness for surgical exploitation on the other, has brought a grave mortality with few successes. At least the failures have finally brought the overenthusiast to the point of realizing that human life and health is not solely dependent upon surgical alteration of the direction of the fecal current.

To quote from a recent article of mine (2), "Has Mr. Lane proved his procedure to be wise? To the surgeon commonly observing the result there is but one answer—No." The work of this enthusiastic surgeon, based upon a propagandist's hope of the future, reminds us of the unnecessary ovariectomies, nephropexies, indiscriminate appendicectomies, anchoring mobile cecums, and operations for splachnoptosis. In all of these practice and time have softened early enthusiasm, for finally the cases in which such surgical procedures proved useful were found to be much fewer than was believed in the beginning. This knowledge was obtained through surgery alone, in reviewing not the operation nor the operator, but the shortage of results. The diagnosis of chronic intestinal stasis is made by Lane on the basis of certain clinical phenomena and Röntgen ray examination. We know that in these cases the x ray method of examination is fallacious in that physiological stops in the fecal current occur, these being normally prolonged in some people, and that, what in many instances have been designated as cases of stasis are after all only normal conditions or those brought about as referred states from definite diseased conditions situated elsewhere in the abdomen, for which conditions surgeons in the past have shown the proper procedure in the well known operations for appendicitis, gallbladder disease, ulcer, and other distinctly understood conditions. The exposition of Lane, which he is to be given full credit for, is his view that abnormal retention in parts of the intestinal tract occurs because of certain bands holding the intestines in fixed position, causing angulation and bringing about local delay, these being obstructive in nature. But all possible reduplications of the peritoneum he considers attempts on the part of Nature to hold up the intestines, which have a tendency to fall on account of man assuming the erect position, and thus should

interest the surgeon. I ask whether there is any record, or even a suggestion in history that man ever walked on all fours. The cave dwellers, the first men of whom we have distinct record, walked as we do, and this was at least six thousand years ago. Were the folly of this not away from all biological fact and not offered in connection with what may reap mortality in the human being, it would be amusing. When will men who work in sciences that are allied to biology, learn that Darwin's theory of evolution in the minds of the best biologists is now recognized as untenable? There is not one tangible evidence of evolution from one species into another in the over 20,000 species of organic life we have in this world. We have evidences of the crossing of one type of species into another, producing hybrid results, but these soon die out, the original primary species propagating endlessly. Upon such pseudo-scientific basis as this every sort of disease, from flat feet to loss of hair, is attributed to man standing erect, which he always did. Lane states, "even the gynecologist would not have been evolved if women had been improperly drained." There comes a ray of hope for the human race shed like an aurora from the red headed girl who she says is immune; and yet, my experience is that the red headed girl (made so by Nature and not by the hairdresser) has often a perfect case of intestinal stasis. I fear that he has presumed too much upon Kipling and the girl who cut the canvas in *The Light That Failed*, because, perhaps she too might have been a case of the saccharobutyric type of intestinal toxemia, in which the exercising of strong emotions not encompassed by control is common. Lastly, in his theory, the exception to the necessity for doing a colectomy in about five per cent. of all cases is pregnancy, because by it the toxic, thin, and miserable girl may be converted into a plump, clean, happy woman. This almost reasons as an excuse for war babies in peace times and many of them, it making no difference whether the woman is married or not, for surely red headed girls are uncommon enough in all nations to make it wise that the majority of the unmarried brunettes take their chances with pregnancy rather than with a colectomy, it being far safer. I concede to him that occasionally bands and veils cause definite obstruction, and in this sense require some plastic surgery, but when it comes to excision, anastomoses, and other serious forms of operation performed on an unsuspecting public, it requires more than religion, philosophy, and science to condone it. Anyone can show that at least eighteen per cent. of all people have a Lane or ileal kink, and that in the majority of these cases some delay exists, but it can also be shown that in by far the largest number of those who come under medical observation, a Lane's kink exists that is not responsible primarily for the symptoms. Of 167 cases of definite Lane kinks noted by me in Röntgen ray examination, in only five did this kink cause definite delay, and I am now strongly of the opinion that unless the ileum is dilated proximal to the kink, the kink is not significant. The same is true of other kinks.

Regarding the responsibility of intestinal stasis for ulceration of the duodenum and stomach, experience has proved that in most of the cases of

ulcer there is no intestinal stasis, and that surgical procedures for the intestinal stasis do not cure the ulceration of the duodenum or stomach, or prevent the ulcer from returning if the case is of that type. If the ulceration was due to stasis, ileac implantation would be needed in addition to the gastroenterostomy or the ulcer would not heal, or would return if a gastroenterostomy only was performed. Yet we know that simple gastroenterostomy answers for the vast majority of these ulcers, no further surgery being necessary, showing that the stasis is not an important factor in their etiology.

It has been my experience within the last year to meet people who have been short circuited, and who have been benefited thereby for a space of a few months, but who now present the identical symptoms of toxemia they had before they were operated upon, although the connection between the ileum and lower sigmoid or rectum is perfectly at work.

The Röntgen ray method of diagnosing intestinal stasis, in which Jordan has done so much work for Lane, while valuable, is likely to lead to error in the subject. The misfortune was that when the medical men used the Röntgen ray in connection with diagnosis in the abdomen, as well as elsewhere in the body, they did not do their first work in normal individuals. They began immediately with abnormal subjects, and an unwarranted degree of enthusiasm developed, which only time can modify, on the part of those who depend solely upon this means. If Jordan, as well as others, examined a normal individual every third or fourth time, they would be surprised at the number of people who have all the x ray signs that have been held so important in these diagnoses. Of course, the proportion would not be as great as in ill people, but the number would be so considerable that many of the definite views held at present would be modified. Only a clinician who is engaged in all sides of the work, with the x ray as well as the laboratory, can appreciate the value and limitations of any one method of abdominal diagnosis. I again reiterate what I have said many times in the last four years, namely, that we must go slowly and be conservative in drawing definite conclusions from x ray examinations alone. The x ray method is at present as fallacious in diagnosing intestinal stasis as it is useful when true obstruction exists. I consider it from a surgical aspect. Gastric stasis is more often due to other conditions beside kinks than Lane would have us believe.

Many of the most toxic individuals I see are those who have no abnormal physiological stops of the barium meal. Surely there must be many surgeons who, on diagnoses made by the x ray men of bands, folds, abnormal stops, etc., have opened abdomens to find that nothing existed, and, unfortunately there are not a few who have done major surgery in such abdomens, the patients not being any better for it. The x ray man must be a clinician, and the best possible type of one, when it comes to understanding an abdomen before he can, by his single method of examination, draw definite deductions in even an individual case of ileal stasis. We may trust him in definite obstruction, but in what Lane has advanced as ileal stasis—no.

The next theory I would draw attention to is the

one of Kellogg and Case. These authors add tortions of the cecum and colon and particularly insufficiency of the ileocecal valve, permitting ileal stasis to occur by reflux from the colon, as important. Mention is made of ileums that were so dilated that they practically added length to the colon. Reports are given of a large number of cases of ileal stasis in which this incompetence of the valve or spasm of the ileocecal sphincteric mechanism, or a combination of the two, was the cause. Substantiation of the theory is given in cases improved by operation on the valve, benefit in its mechanism after operation, and the fact that Kiedel, Groedel, and Diellen have reported instances of this condition. No one can question that incompetence of the ileocecal valve is a clinical finding in some of these cases, and it is plausible that it has a significance in connection with the subject, but what must also be remembered, is that in nearly every case of incompetence we are dealing with a resulting condition, and while operation will help for the time being, the end results will not be as universally brilliant as Kellogg and Case have presented them. Persons are met with in whom the ileocecal valve is not constantly relaxed as Case has stated. Even without treatment of any kind I have observed four cases in which influx from the colon was noted at one time and not at another. A careful study of this valve has strongly suggested to me that distinctly more knowledge is necessary before we can accept Kellogg's and Case's beliefs. My observations have been made entirely with the x ray, and this being the same as Case's (although perhaps not so extensive or intensive in interest as his), has led me to the belief that it is not of much significance in most instances. Much depends upon the condition of relaxation of the hollow viscera of the abdomen, for when this is present the incompetence is liable to be present also, and I fail to understand how operation on the valve will afford permanent benefit. A careful study of the function of this valve shows that at times its relaxation, permitting influx from the colon, is a normal phenomenon. In almost every individual in whom the general status of nutrition is low, enemas sufficient in bulk will reach the ileum, the valve relaxing for the passage of liquids upward from the colon. After operation, or for whatever reason, if food by mouth has been withheld for days, influx through the valve is common, being an effort on the part of Nature to obtain better nutrition. Careful post mortem work will far too often show a degeneration in the plexuses around it, in the sympathetic nerves coming from the valve, and the centres that preside over them for the general acceptance of the Kellogg and Case theory.

While Case has taken exception to the foregoing statements of mine, saying that no primary operations upon the valve are done for incompetency alone, yet when reading his literature upon the subject we cannot but feel that he is swinging the pendulum of this propaganda too far. Unfortunately his method of diction is a fast and loose type, and we cannot obtain either a positive or a negative deduction from it. But recently again Kellogg discusses the artificial production of valve form in operative procedures at which anastomosing the large and



small intestine was also performed, and he reports sixty-six cases of incompetent ileocecal valves operated upon with satisfactory results. In every case of preexisting ileal stasis, the valve was found to be patent after his operation, and, with the exception of two or three, the ileum was found to empty itself within the normal time, or in less than two hours. While he is to be congratulated on such good results, we must nevertheless understand that when we anastomose large and small intestine in addition to repair on the valve, the degree of beneficial result may not be due only to suturing the valve, and further, such optimistic reports on the valve operation have encouraged many surgeons to operate upon incompetent valves primarily, and of course to get very limited or no benefit.

The importance of the neurogenic tissue comprised in the plexuses of Auerbach and Meisner, and the paths of the sympathetic from them to and including the upper abdominal plexuses, received no attention in any popular way until at present. An article in the *Lancet* for August 21, 1915, by Arthur Keith, entitled *A New Theory of the Causation of Enterostasis*, is now creating considerable interest. Keith offers the importance of "nodal points" in the alimentary canal of man somewhat analogous to the sinoauricular node and bundle systems in the heart. It has been known for some time (thanks to the enlightenment in the matter that x ray examinations have brought about) that there is a physiological food delay at the junction of the esophagus with the stomach, another at the junction of the stomach with the duodenum, one near the duodenojejunal junction, the lower end of the ileum, and three along the great intestine, namely, near the commencement of the transverse colon, at the rectocolic junction, and about the anal canal. These, Keith states, are brought about by a primitive tissue intermediate between nerve and muscular tissue and interposed between Auerbach's myenteric plexus and the smooth muscle of the intestinal wall. This tissue, he says, "is not a simple structure composed of merely nerve cells and nerve fibres, but one of a composite texture. There are ganglionic cells in the plexus and there is an ample network of particularly fine fibres. But there is also an abundant third element in the plexus, branching intermediate cells which appear to become continuous with process of certain groups of muscle cells on the one hand and with the branched processes of ganglionic cells contained in the nerve fibres of the plexus." This intermediate tissue, he says, often so closely resembles either the muscle or the ganglionic cells that it is difficult to tell which it may belong to. On the bases of the facts of point delays noted by x rays, what is known about the heart, and the finding of this intermediate tissue, he built a working hypothesis that the myenteric plexus represents a nodal and conducting system. The tissue possesses two distinct functions—one the initiation and regulation of the muscular contractions in the segment of the intestine which it controls; the other the power of conducting impulses which lead to the forward propulsion of the intestinal contents. He goes on to say: "Now, seeing the similarity between the cardiac and alimentary motor mechanisms, we do not seem overpresumptuous if we sup-

pose that irregularities may occur in the nodal and conducting system of the alimentary canal—irregularities of the same kind as occur in the heart." Regarding sphincters at some of these nodal points, he suggests that "it will probably be found that a disturbance in the action of a sphincter is but a part of the disturbance which affects the entire rhythmic section to which it belongs." The final step in the establishment of this explanation of the mechanism of the production of intestinal stasis was supposed to be attained when he was able to demonstrate fibrotic and degenerative changes in this nodal tissue in segments of the intestines removed by Lane and others for the relief of chronic intestinal stasis.

In full justice we must concede to Keith the nodal and conducting mechanism idea. Perhaps enterostasis occurs by errors in it, yet we cannot but feel that to Cannon and Alvarez and the many x ray men who have from time to time drawn attention to localities at which stops occur, most of such credit as there is belongs. Coming out ten months after I drew attention to the importance of weakening of the musculature by protoplasm and nucleoplasmic degeneration, and degeneration of the sympathetic fibres and ganglionic cells (2), I cannot concede to him more than merely offering an anatomical reasoning for physiological facts known long before it appeared. I do not concede that this theory explains the primary cause of intestinal stasis, for it explains only why the phenomenon occurs, not what the origin is. Disease of the node or the conducting bundles of the heart brings on certain irregularities of the cardiac action, but the causes are still back of them in syphilis, rheumatism, and the degenerations brought about by toxins of infectious disease, metabolic disturbances, etc. It is the cause or causes producing the nodal or conducting disturbances in the intestines that are the important facts of the subject, for it is in them that prophylaxis and primary correction are contained. I suggest that if Keith carried his observations further, he would find that of the pathological conditions he mentioned in connection with my own theory, more can be learned.

It is well known that the plexuses of Meisner and Auerbach are nervous systems peculiar to themselves, and it is plausible to believe that they preside over the automatization of intestinal movements. The plexus of Auerbach is situated between the two layers of muscular coat, sometimes designated as the external mesentery, and that of Meisner underneath the glandular layer on a level with the submuscular connective tissue, or the internal mesentery. Leaving out of consideration the control that the sympathetic ganglia have on the arteries and glands, and confining our attention to the motor matter, we may agree with Keith that at the places in the alimentary canal he mentions, this tissue is more complex than ordinarily seen elsewhere along the course. Studying the ganglia of various types, together with that of the dendrites which are of infinite variety, usually puts us in a maze as to what exactly happens to bring about intestinal stasis. But there is enough disease represented in the protoplasm of the ganglia which is rich in dendritic crowns, both the single as well as the

bicellular and tricellular types, to observe that the tissue is not normal. This can also be observed in the cellules of Dogiel, even under the simple preparations of methylene blue, in the pyriform element of the unipolar type, and the star shaped cells, the most numerous met with, all showing, compared with normal tissue, a deep staining power and evidences of shrinkage as well as granulation. My interest, however, was particularly directed to the cells with long expansions, which are supposed to be motor, but this connection could not be proved. Here and there we meet with distinctly irregular types of dendrites which, compared to normal, strongly suggest some particular disease, but it is not possible to deduce whether these are of the exogenous or endogenous types. In the network of the Auerbach plexus, in which the larger number of afferent or exogenous fibres is contained, distinct pathological conditions may be seen. But beside such changes from normal as are observed in the ganglia and dendrites of the Auerbach plexus, distinctly more may be noted in the Meisner and the dendritic arborizations that arise from it, making the mesh in the villi. If I understand Keith correctly, the intermediate cells he describes of importance in connection with the subject, are those which Dogiel has confirmed the existence of. Cajal agrees with the point set forth by LaVilla, but does not agree with Killiker's opinion that they are conjoined with the plexus. These so called Cajal cells stain differently with the methylene blue and chromate of silver, and if these are the same cells which Killiker has spoken of, the answer that Cajal has made to Killiker holds good with Keith, namely, "at any rate, if Killiker thinks that he is dealing with conjunctive cells, he is obliged to make a separate and distinct variety, a variety confined exclusively to organs provided with a sympathetic nervous plexus." And, "such intermediate cells in the body are not important in primary ways." Perhaps Keith only agrees with Killiker after all. Cajal believes that they are cells of a primitive character and without differentiation. On the other hand, if what Keith holds as the intermediate structure are the terminations of the fibres at the level of the smooth muscle, we should like to have more than a statement that he had discovered such fibres when the old published remarks of Cajal are read (3). Or, are the cells that Keith describes those of nerve fibres that end by means of true motor plates, or by minute arborizations called motor spots, or are they the nervous fibres that end by free films? It would seem that in justice to these histologists Keith must have discovered a tissue beyond these motor spots or plates, a tissue which has the combined character of two tissues such as that which the heart represents in both nerve and muscular tissue, to use Keith's description. I have not been able to go beyond the finest fibres of the interstitial plexus in the cement between the smooth muscle cells and those that end by free extremities. Most careful study has made it impossible for me to go beyond these in the best preparations, or to show a more intimate method of connection between the dendrites and the muscular protoplasm, and certainly I have not been able to find anything that looks like a muscle cell among the ganglia of the sympathetic, either

in the plexuses or their terminals. Thus, I am not inclined to agree with Keith as to this newly discovered tissue, and I hope that he will describe the details of the histology more fully than he has. We can easily study the fine nerve branches in the duodenum as they divide at right angles or ramify in straight lines to the muscle plane. What Keith has not mentioned, which I have observed in connection with my researches, are changes in the arborizations that come off from the ganglionic cells of the plexus of Meisner, those leading up into, and making up the nervous meshwork of the villi. These, in my opinion, are brought about by resorption of toxic bodies from food bacterial poisons, and are the first pathological conditions established in these cases. Diseased conditions can also be noted more marked in the Meisner plexus than in the Auerbach. With the advanced condition the cells and fibres of the Auerbach are subsequently involved, and in still more advanced types, such as those of general relaxation, the paths of the sympathetic, and even some of the ganglia of the preaortic plexus, particularly in the celiac plexus and semilunar ganglia. The advance of diseased conditions is from within the intestine, then through it, and finally extrinsic. Thus I believe that the true cause of intestinal stasis comes from the contents of the intestinal canal, and, even accepting Keith's nodal theory, we have still to look further than the pathological conditions in the ganglia and dendrites for the actual cause.

From my examinations of tissue from operations and post mortem examinations during the last three years, together with the study of the bacteriology, I must say that these offer a great deal more suggestion than just surgical mechanics as the proper treatment. The biology of the subject in this most important matter is still dark to many, and none are more unfortunately blind than those who will not see or cannot see because their attention is riveted on the outlet of the polluted river rather than up stream where the pollution takes place, namely, treating results rather than giving attention to prophylactic or rational corrective handling before results take place, or biological attention at the time a case in an adult is seen. To me intestinal stasis is a medical matter almost entirely. Surgical procedures for conditions that ensue as results or complications may be necessary in individual cases, but never the major surgical procedures of Lane for nonobstructive stasis or toxemia, his form of operation for disease in tissues remote from the abdomen, partial types of resections (such as the cecum), or anastomoses (such as ileosigmoidostomy) being performed in the absence of marked disease or obstruction. From long neglect many of these cases have local conditions requiring surgery, but there should be only such surgical procedures as have been known for years, procedures necessary to remove badly diseased areas, not those of glorified abdominal plumbing in which the mortality is high, the results more liable to be transitory, negative, or bad rather than good, in which moral effect, medical treatments, and others deserve the credit rather than the enthusiasm of the surgeon or the form of operation done. Many of the patients, when they come back to the medical man, are worse off than if they had taken a sojourn in the country for the

same time as that spent worshipping at the altar of surgery. In the article of mine mentioned I offered the following:

Whatever Adams has said to the contrary, it is nevertheless true that infections of the intestinal contents are the primary factors of greatest importance in connection with the lesions of the alimentary tract. It was examined bacteriologically a number of stools of these patients, and compared them with those of normal individuals, significance would at once be noted. This is far too large a subject to present in detail here, and Herter and Kendall's published works will supply enough to guide one in the beginning. The primary cause of these conditions is mostly a bacterial matter, and it is the food bacterial products that eventually bring about the status which some surgeons are endeavoring to remove by drainage, but which cannot be done successfully because the infections commonly continue after the operations.

The course of these cases is about as follows: Early in life the intestinal canal is infected from food and drink. The infecting organism or organisms acquire the power of habitation so that it or they become more or less permanently established. As middle life comes on the vicissitudes of the individual, his habits and dietetic indiscretions, his artificial existence in the cities and elsewhere, bring their train of added factors which influence the bacterial development unfavorably to him. The constant resorption of bacterial products affects the tissues nearest to them, namely, the walls of the gut. Errors in the secretions of the pancreas, the intestine (succus entericus), the liver (bile), the stomach, etc., are first to take place, and the musculature is weakened by a protoplasmic and nucleoplasmic degeneration in the fibres, all coats being liable to involvement. Gradually a degeneration of the sympathetic fibres takes place, and as this extends the ganglia and fibres become involved, showing a granular degeneration and shrinking of this highly specialized tissue. When this is established completely enough, the hollow viscus dilates and elongates, for the inhibitory power of the sympathetic system is assailed. Then, usually, all the hollow viscera of the abdomen show this change, although certain parts like the stomach, small intestine, cecum, colon, sigmoid, or rectum, may show it to a greater degree. After this the less immunized tissues of the body (those distant from the abdomen) show their influence on them, and we have the picture of an individual we so often see in practice. As local resistance of the gut wall is assailed, the bacteria may gain entrance into the blood stream, and filtering out in remote tissue, proliferate there with the production of local pathological change.

To substantiate the importance of the bacterial food origins we should begin the study of stasis by examining the stools of children and young adults. It is not only in the acute diarrheal disturbances of young children that this subject is important, but even more so in bacteriological changes afterward, causing the chronic infections. There is a normal bacteriological status in the intestinal canal of human beings, and it is surprising how uniform this is in a large number. Every case of intestinal toxemia shows this to be away from normal, and in practically every adult case the infection had existed for years—mostly from childhood. If we are right in our etiological and diagnostic beliefs that diphtheria bacilli in a sore throat mean diphtheria, typhoid bacilli in stools and general system mean typhoid, pneumococcus in sputum means pneumonia, and tubercle bacilli, tuberculosis, and so on through the most valuable advances in medicine in all stages of its career since its beginning, then it is biologically important on etiological, diagnostic, and therapeutic lines that the intestinal infections must so be considered. My researches in the pathogenic types show this to be true, the organisms found being in the colon, the pseudodysenteric and true dysenteric forms, the aerogenes capsulatus, strepto-

coccus fecalis, alpha and beta types of paratyphus, the so called "slimy bacillus," the proteus, alcaligenes, pyocyanus, butyrus, entericus, macerans, putrificus, subtilis, paratyphoid, and others that may be important in individual cases. It is upon the presence and activity of these organisms that the true cause of intestinal stasis is based, and the time must come when this fact will be generally recognized, even though this kind of work is difficult of quick understanding and application in both diagnosis and treatment.

#### REFERENCES.

1. *International Medical Journal*, p. 944, 1917.
2. *Journal A. M. A.*, 1918, Oct. 29, 1914, pp. 1499, 1500.
3. RAMON Y CAJAL, *Histologie du système nerveux de l'homme et des vertébrés*, 2.

21 WEST SEVENTY-FOURTH STREET.

## THE SESAMOIDS OF THE FLEXOR BREVIS HALLUCIS; THEIR IMPORTANCE.

### *A Surgical Precaution.*

By NOBLE PRICE BARNES, M. D.,

Washington, D. C.

Every new business, occupation, pursuit, game, or gift occasions new morbidity and new mortality. Every excessive pleasurable indulgence wreaks its corresponding retribution of discomfort and distress. Consequently, today we find expressions of yesterday's intemperate use of the feet in the too frequent and furious terpsichorean festivities, the sequel of the insanely popular hesitations, tangoes, fish walks, angle worm wiggles, peristaltic waves, and other forms of the dizzy whirl perpetually practised by the devotees of "Saint Vitus, that blessed patron of the dance."

One of these injuries has become sufficiently frequent to merit serious consideration, emphasizing the need of a more general knowledge of the importance and a better understanding of the anatomical relations of unrecognized or forgotten and neglected parts, not only for the early instituting of prophylactic measures, but for the employment of precautionary surgical procedure.

Of the sesamoids we have known little and cared less. Their demands for attention have been few, consequently our indifference and ignorance. But, as necessity is the mother of invention, so injury is the mother of investigation and research.

The pair of bones that give rise to this consideration deserve a more distinctive name because they are a constant and an intricate part of one of the most important joints of the body. As the patella is to the knee, so is this pair of bones to the great metatarsophalangeal articulation. In fact, this pair is of much greater importance, for the articulating surface of these bones is proportionately greater, their presence prevents anterior dislocation of the great toe, they sustain the weight of the body much of the time, they are the fulcrum of the foot, the pivot of locomotion, and the pulley of an important tendon.

The patella may be, by preference or necessity, occasionally called upon to support the body weight a few minutes, but its duties are insignificant when compared to the constant grind that must be endured by these lesser, unnamed, and unknown bones that were born to bruise unseen.



Anatomists are satisfied to give this set of bones, that should be given the dignity of a distinctive name, but passing notice. Exhaustive and even padded systems of surgery omit entirely even a mention of the subject, and in searching recent journal

of an active muscular habit than in those who are weak and debilitated."

In his last (fourth) edition of *Human Anatomy*, Piersol states that "sesamoid bones with the exception of the patella are not usually included in the

description of the skeleton. They are small, rounded bones developed for the most part in the capsules of joints, but sometimes in tendons. Their function is to obviate friction and in some cases to change the direction of the pull of a muscle. The number of sesamoid bones is very variable, but the usual idea that they are, so to speak, accidental, depending on the mechanics of a certain joint or tendon, must probably be abandoned. . . . Those of the first metatarsophalangeal joint are large and constant."

Thilenius considers sesamoids "as real parts of the skeleton, all of which have their place in certain animals, but all of which either are not developed or if they do appear are again lost in others."

J. J. Nutt, in his *Diseases and Deformities of the Foot*, writes: "These (sesamoid) bones are not accidental formations due to pressure (Bell), but have been found in the still born baby (Cross). They are essential to the perfect physiology of the foot."

Dwight, in his *Clinical Atlas*, Variations of the Bones of the Hands and Feet, writes: "Bones sometimes called sesamoids are typical parts of the skeleton. . . . Sesamoids of the metacarpophalangeal joints and interphalangeal joints and the corresponding ones in the feet are much more numerous in the fetus than in the adult. . . . Most sesamoids have no particular function. . . . the two under the head of the first metatarsal are constant." Pfitzner has prepared a table illustrating the greater frequency of sesamoid bones in the hands of the new born. Thilenius, Keibel, and Mall give the thir-



FIG. 1.—Showing sesamoids of the metatarsophalangeal articulation.

literature since beginning this investigation, I find but one article, a very timely one by Speed (*Annals of Surgery*, Oct., 1914), who writes of the Injuries of the Great Toe Sesamoids—"the one set in the series of sesamoids found in the whole body" and "seldom considered either clinically or anatomically."

Speed, whose edition of Gray may be as old as mine, makes the usual and accepted statement that "they are more common in males than females and also in those of active muscular habit."

Beckman, in an article, An Unusual Bone Tumor of the Foot (*Surg., Gyn., and Obs.*, July, 1912), reprinted in the *Mayo Clinic* for 1912, writes as follows:

Sesamoid bones are not uncommonly found in the sole of the foot. Gray's *Anatomy* states that two small sesamoid bones are found in the tendon of the flexor brevis

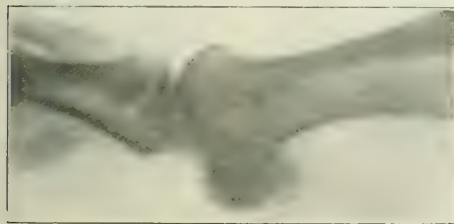


FIG. 2.—Adult sesamoids, showing ball-like protuberance.

pollicis opposite the metatarsophalangeal joint of the great toe, occasionally one in the metatarsophalangeal joint of the second toe, the little toe, and still more rarely in the third and fourth toes.

Gray further states "they are more commonly found in the male than in the female and in persons



FIG. 3.—Boy, fifteen years old. Radiograph by Captain Christie, A. M. S.

teenth and fourteenth year as the usual time for the osseous centre to appear in the pair of sesamoids, and Thilenius states that this may not take place until after middle life. Hasselwander gives an earlier

age the eighth year in females and the eleventh year in males.

My findings are in more accord with this last anatomist, as shown by many radiographic plates. While the distinctive shadow is rarely seen under eight years in either male or female, it is equally

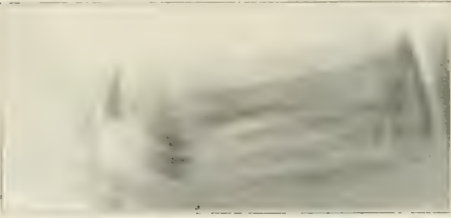


FIG. 5.—Showing sesamoid bones of the foot.

rare not to find it after the tenth year. Their constancy and prominence is shown by all the plates taken at random of males and females from fifteen to seventy-five years of age.

These bones are, therefore, a constant and, when we consider their position, a necessary part of the human body. They are situated one in either head of the flexor brevis hallucis (Fig. 1). This muscle passes under the metatarsophalangeal articulation. Its inner head is inserted in association with the tendon of the abductor hallucis; the outer head is inserted in connection with the tendon of the oblique and transverse adductors. The muscle is not only a flexor of the metatarsophalangeal joint, but a slight adductor as its origin from the cuboid is to the outer side of the middle line of the foot.

The bones are bound together by a strong fibrinous structure and capsular ligament, forming a groove on the under surface for the passage of the tendon of the flexor longus hallucis.

Without dwelling at length upon the varied and

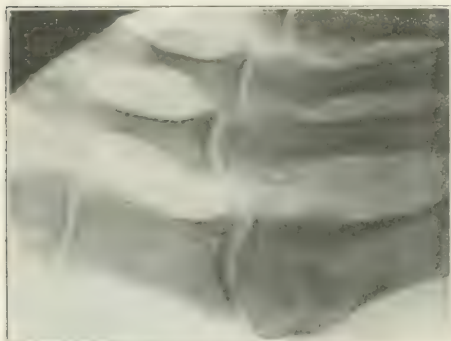


FIG. 6.—Showing sesamoid bones of the foot.

important actions of this muscle and tendon that can be found in any good book on anatomy, suffice it to state that the sesamoid bones must be present and the great metatarsophalangeal joint must be normal for its proper functioning.

The sesamoids with their fibrinous structure pre-

sent a convex, ball-like surface that drops down about one cm., in adults, producing a protuberance that forms the ball or pivot or fulcrum of the foot (Figs. 2, 3, 4). The upper surfaces are concave to fit the two distinctive surfaces on the dorsum



FIG. 6.—Showing exostosis.

of the head of the great metatarsal bone (Fig. 7), and with their connecting ligaments and fibrinous tissue covered with serous membrane, enter into the formation of the great metatarsophalangeal joint. The inner of the pair is situated directly under the head of the great metatarsal (Fig. 1), while the outer extends beyond and shows on the radiographic plate like a tuberosity on the outer surface of the great metatarsal bone.

If every joint with its every movement is essential to perfect usefulness and perfect comfort, no more argument is needed for the presence of these sesamoids. Radiography has enabled us to trace to their origin many pain reflecting lesions and thus these bones have at times been found the seat of obscure and perplexing conditions. Injuries to these bones are the result of direct violence, and the extent of injury is proportionate to the force of the violence or the length of time of its continuance.

Thus, a heavy weight falling on the foot, the body weight being caught with great force on the ball of the foot, as in falling from a height or slipping while carrying a weight, or the twisting or

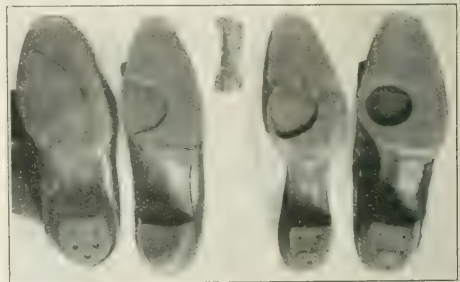


FIG. 7.—Showing the injury sustained in dorsum of the head of the great metatarsal bone, showing plan devised to protect the injured sesamoids.

slipping of the foot off the prong of an automobile clutch or brake, may fracture one or both of these bones completely. The inner bone situated directly under the head of the metatarsal, is the more commonly injured (Fig. 5).

The result of a serious trauma of this sort asserts itself with corresponding pain and tenderness, increasing with use. Disability, from resulting inflammation and sympathetically lame muscles, becomes complete.

More frequently in these days of constant dancing, hard floors and pavements, high heels and thin shoe soles, the trauma comes on gradually. Short rests and cold applications at the onset give relief, but on resuming the excessive glide under the hypnotic sway of the rhythmical rag and the spirit of "on with the dance, let joy be unconfined," the heat and discomfort, pain and tenderness return.

Continuance of this indulgence produces a cellulitis, tendosynovitis, periostitis, tissue thickening, and sometimes exostosis (Fig. 6) and the corresponding lame muscles from unnatural walking.

Trauma of the tissues thus produced naturally enforces some form of rest treatment. To this rest treatment the attendant may add counterirritants,



FIG. 8-1. Inverted joint showing the difficulty of dissecting out the sesamoids without opening the joint.

heat and pads. Often like many disorders of the aching feet, they are referred to a cobbler or find their way to pseudo scientists who profitably treat them for everything from weakened arch to arthritis deformans.

Rest treatment with well padded shoe soles will, in some instances, give a measure of relief, but in all the inside appliances the prominent projection sinks through the soft pad or opening only to come in contact with a hard surface, and the effect is the same as that of a thin or badly worn sole. The sensitive and subacutely inflamed parts are constantly being injured.

The plan I have devised to protect these injured bones is more effective. The shoes the individual has been wearing, the more worn and thin the better, are simply half soled with a good thick leather, cutting out the inner surface completely corresponding to the position of the sesamoids.

New shoes have the outer sole removed, corre-

sponding to the position of the bones in question. A hole an inch or a little more in diameter is cut out sharply and completely to the inner sole. If the thickness of the sole is not enough to keep the sesamoids from touching the floor, an extra sole is applied cut out in the same way (Fig. 7). No inner pads are used, but the projection is permitted to make its own depression on the soft inner sole which acts as a hammock or drum head.

In fracture or trauma followed by exostosis open surgery is needed. The former may be treated in the same manner as fracture of the patella, or the exostosis may be removed without disturbing the joint.

These serious conditions, heretofore, have usually escaped recognition until the pathological changes and corresponding disability make complete removal of the sesamoids justifiable, as shown by the experience of Speed (*Annals of Surgery*, Oct., 1914).

In reply to my letter of inquiry, Doctor Speed writes: "The cases on which operation for removal of the bones was performed have been symptomless ever since, without exception. I consider it very important to allow enough absolute rest after operation, to have all irritation and inflammation subside, particularly that of the tendon sheaths. Two patients I have operated on are now doing heavy labor every day with no pain in the foot, one after two years."

In the article previously referred to, Speed gives the technic for removal of the sesamoids, stating: "They should be dissected out, both from the fibrous covering of the tendon, without opening the joint structure." The difficulty of this procedure is illustrated in Fig. 8, a photograph of the inverted joint in question.

To recapitulate: 1. The sesamoids of the great metatarsophalangeal articulation are a constant and necessary part of the human anatomy and deserve a name.

2. They are an intricate part of an important joint, having an articulating surface proportionately greater than the patella.

3. They prevent anterior dislocation of the great toe.

4. They are the pulley of the flexor longus hallucis.

5. They sustain the weight of the body much of the time.

6. They are the pivot of locomotion.

7. They are the fulcrum of the foot.

I desire to acknowledge the courtesy of Captain Christie, of the Army Medical School, and Doctor Clark, of the Casualty Hospital, for valuable services in radiography.

208 MARYLAND AVENUE

**Treatment of Tetanus.**—Hartmann (*Presse médicale*, March 15, 1915) reported that in three cases of tetanus treated by Léger, subcutaneous injections of oxygen gas in large amounts, two litres, were followed by recovery. The hypodermic needle used was introduced, for the purpose of injecting the gas, first in the tissues adjoining the site of infection and later, on subsequent days, in various parts of the body.



## FIBROID OF LIGAMENTUM OVARII PROPRIUM.

BY ALFRED M. HEILMAN, B. A., M. D., F. A. C. S.,  
New York.

The very rarity of origin of the case about to be described makes it worthy of record in medical literature. While searching through the pathological material of the Charité, in Berlin, and studying the



FIG. 1. I. Tumor arising from ligamentum ovarii proprium. II. Right ovary with section removed for microscopic examination. III. Left ovary; part of latter has also been removed for examination.

ovarian fibroids there collected, I came across this interesting tumor and obtained permission from Professor Franz and Doctor Ashheim to study it in detail.

CASE. Mrs. M. K., aged forty-four years, menstruated every four weeks for five days at a time ever since she was fifteen years old. She had six children and five abortions. March, 1912, she had a severe cold and sudden difficulty of urination. There was no further trouble until June 1st, when she suffered from urinary retention. June 30th, there was another attack of this retention for which she was catheterized for two days and then sent to the hos-



FIG. 2. Microscopic view of tumor, showing dense arrangement of cells, with rounded and oval nuclei, very little intracellular tissue, and few bloodvessels.

pital. Physical examination revealed a large annaxal tumor for which a panhysterectomy was performed, July 6, 1912.

The specimen removed consisted of a uterus of normal size with a tumor, 14 by 16 cm. and a circumference of 36 cm., attached to the ligamentum ovarii proprium. Both ovaries were normal. The tumor was hard and smooth.

On cross section it was hard, shiny, smooth, and without cysts.

Microscopical examination showed the tumor to be composed of tissue very rich in cells. Most of the nuclei were oval or rounded, close together, and separated only by a few sharply defined, thicker, red stained, connective tissue bundles. The nuclei in all parts of the tumor were regular in form and in the intensity with which they took the stain. There were here and there larger and smaller vessels, in part surrounded by hyaline degeneration. One saw in the sections by the Giesson method, yellow portions which were undoubtedly blood. In the sections from the edges of the tumors there were cell groups separated from one another by edema. In the ovaries from this specimen there were large corpora fibrosa and subepithelial cysts.

Diagnosis: A fibroid tumor, very rich in cells and arising from the ligamentum ovarii proprium.

The patient made an uneventful recovery and left the hospital cured. I examined her myself, July 12, 1914. She had of course not menstruated since the operation was performed. She felt perfectly well. There was nothing abnormal to be felt on vaginal examination. The abdomen showed a healed median incision.

2 WEST EIGHTY-SIXTH STREET.

THE CLINICAL DELIMITATION OF  
HYSTERIA.

BY MEYER SOLOMON, M. D.,  
Chicago.

Although much has been written about hysteria, in its many aspects, it is really surprising to find that, in spite of all the discussion, the term is still used very loosely, and that too, not by the general practitioner alone, but by the specialist in nervous and mental diseases as well.

The name, hysteria, as applied clinically to the numerous conditions which are pigeonholed under this rubric by physicians, is, to be sure, incorrect and, etymologically considered, virtually meaningless. Except for the implications of Freud and his followers, we have, it may be agreed, discarded the old idea of the relationship of the uterus to hysteria. From this viewpoint, then, hysteria is a misnomer, leads to misunderstandings, and, as a term, should be eliminated from scientific nomenclature to be replaced by another term more correct and more descriptive. Nevertheless, although I am not inclined to agree with Janet's reported declaration that hysteria is a disease with such a beautiful and wonderful history that it would be a very sad thing if we did away with it, another name which will fill the bill better has not been forthcoming, and we may find it necessary to adhere to the old term for a little while longer.

Although the substitute word, neuromimesis, has been offered to replace hysteria, there are many objections to its general adoption. It lays too much stress on the resemblance to other diseases, and the clinical conception resulting from universal acceptance of this term may be as ambiguous as is that now with hysteria.

So loosely is the term hysteria employed by most physicians, including many specialists in this field, that we soon find, as Dana (1) says, that "if we take in all that is usually called by this name, it is a condition that cannot be defined." In spite of the

definitions that have been presented by the many workers in the fields of neurology, psychiatry, and psychopathology, we still find that for many, if not most, of the general practitioners and special research workers, it is as difficult and impossible for them to give a satisfying definition of hysteria as of insanity. For this there surely must be some reason. If the conception and picture were definite, so that there was some clean cut morbid entity to which all agreed, there should be some uniformity in defining what was meant by hysteria. Otherwise our ideas concerning this condition are not at all clear, and different writers may be calling different conditions by the same name, or classifying different clinical entities under the same heading.

In no department of medicine do we find classification more arbitrary and uncertain than in psychopathology and psychiatry. So true is this that many feel that a one or more word diagnosis is unscientific and should be done away with, and, so long as the nature, origin, and evolution of the condition are thoroughly understood, it does not matter much what one calls the condition. Yet, for purposes of intercommunication and for simplicity's sake, diagnosis by name is necessary. These names stand as symbols for concepts, and if the clinical concepts are definite and clear, there should be no great trouble in finding a proper and scientific name.

Classification of the feeble-minded has been placed on a higher level than ever before. Classification in psychiatry is being gradually perfected. Classification of the psychoneuroses has its past history, and is still going on. Recent trends are to be much commended, and yet there is no general agreement upon any one classificatory scheme. The terms hysteria, neurasthenia, psychasthenia, hypochondria, and others are not used with that definiteness that scientific medicine demands.

We may merely recall the fact that certain terms are frequently resorted to as a cloak for ignorance or as a means of relieving ourselves from making a thorough examination and an exact diagnosis, while at the same time satisfying ourselves that we have arrived at a rational understanding and diagnosis by labelling the condition by some name with a mystical and vague connotation. It is for just this reason that hysteria, neurasthenia, dementia præcox, rheumatism, influenza, and the like have been made mere waste baskets for the accumulation of ill defined if not nondiagnosed clinical pictures of widely different natures and origins. In a recent article on *The Use of Words*, McCrae (2) has done well to call our attention to these facts. This paper is not particularly concerned with the nature and origin and development of hysteria. In other words, the theories concerning the genesis and evolution do not especially interest us at this moment. Nevertheless, in the following discussion, some of these theories may be referred to, as necessity demands.

A review of the history of the conception of hysteria shows it to have been uncertain, having sometimes wide and at other times narrow limits. The appreciation of the psychogenic origin of the condition, which is really the beginning of the modern period in the theories of hysteria, finds its first great sponsor after Briquet in Charcot, who viewed hysteria as an actual psychosis, using this term in a

broad sense, or at least a psychoneurosis, dependent upon dissociation of the personality. Janet should receive full credit for the development of the theory of dissociation of the personality as the underlying mechanism in hysteria. Although Gilles de la Tourette, one of Charcot's pupils, did much to present the factor of suggestion as a prominent characteristic, it remained for Bernheim definitely and persistently to call attention to the great role of suggestion in the production, by education or as a result of accident, of most of the symptoms or syndromes which were being denominated hysteria. In fact he assumed the extreme standpoint that only the symptoms of the major attacks are pure or true phenomena of hysteria, while all the others are artifacts and superadded by artful or artless suggestion (training or accident, autosuggestion or heterosuggestion). More recently Babinski has propounded somewhat similar views, in which he contends that hysteria should be limited to what he is pleased to call pithiatism, in which the symptoms are capable of being reproduced by suggestion and removed by persuasion. A still more radical view is adopted by Steyerthal, who would have it that there is no such thing as hysteria, that most patients with so called hysteria are really suffering with neurasthenia or constitutional inferiority, while the so called stigmata of hysteria are but signs of exhaustion. From many quarters there are efforts to dismember the hysteria group. But aside from the psychogenic origin of the phenomena, and the presence of perverse or somatic emotional reactions, there does not seem to be any agreement on the many issues involved. As a matter of fact, there is not even agreement as to the true stigmata of the disease. With this state of affairs, let alone the many theories of the specific nature of the phenomena, it is no wonder that many of us find ourselves lost in a stormy sea and unable to reach land.

The broadening and indefiniteness of the hysteria concept in the minds of most physicians and students of the disease may be laid at the door of the following: 1. Errors in diagnosis with the inclusion of, *a*, nonnervous and nonmental focal, somatic, organic disease of peripheral organs or parts of the body, of, *b*, organic nervous diseases, and of, *c*, other psychoneurotic and psychotic states of a non-hysterical kind; 2, the inclusion of conditions due to deceit and deception or fraud, as in the self mutilations—better called *mythomania* (Dupré); simulation with the symptoms due to suggestion and corresponding to Babinski's pithiatism.

Babinski's views have received such consideration and are so illuminating in many points that they are worthy of more extended presentation. As mentioned above, he would limit the term hysteria to his pithiatism, which in Greek means *cured by persuasion* (3). In fact he would substitute his newly coined pithiatism, a psychic state in which the patient is so suggestible that the symptoms are capable of being produced by suggestion (by which Babinski means the acceptance or realization of unreasonable ideas) and removed by persuasion (which, for Babinski, is the acceptance or realization of reasonable or sensible ideas). Thus only those symptoms should be classed as hysterical or pithiatic which are induced by suggestion and curable by persuasion.

This includes the so-called *stigmata*, such as anesthetics and the like. He would exclude from what others are calling hysteria and from his own pithiatism all those symptoms which are in any way due to simulation or deceit, whether the symptoms are also producible by suggestion (thus simulating Babinski's true pithiatism or only hysteria, with the anesthetics, etc.), or not producible by suggestion (as, for example, fever and anuria), or produced consciously for purposes of fraud and deception (such as the self mutilations, erythema, ulceration, and edema—see called Dupré's *mythomanie*). Of course Babinski excludes the errors in diagnosis already enumerated or mentioned above. He also remarks that the symptoms of the present so called true hysteria have three subgroups, termed respectively the pithiatic (already described, and corresponding to real hysteria, in the opinion of Babinski), the *émotif* (mainly visceral symptoms, due to moral shock, with imitation probably playing a greater role than emotion), and the reflex (with exaggerated tendon reflexes, vasomotor phenomena, dermatographia, etc.).

Although appreciating all attempts scientifically to dismember the hysteria of old, yet the extreme views of Steyerthal, who denies that there is such a thing as hysteria, and of Babinski, as just reviewed, do not meet the facts. Babinski, for instance, limits his concept of hysteria to his pithiatism, in which the symptoms are removable by suggestion-persuasion. When, however, a patient presents any true stigmata which are the true signs of pithiatism, but it is found that they are not removable by persuasion and hence apparently are not due to ordinary suggestion in the sense in which this term is used by Babinski, he would not hesitate, it seems plain, to class the patient, with his symptoms, among the simulators. Now, as a matter of fact, as Dana (1) insists, major hysteria with its episodes and its intercurrent state is a clean cut clinical picture, and its diagnosis is as certain as tabes dorsalis or general paresis and depends on objective tests. The term, hysteria, cannot therefore be erased from the slate in the manner advised by Steyerthal or Babinski.

Aside from the phenomena excluded for one reason or another, we still have definite phenomena occurring as the result of emotion, hence of psychogenic origin. It has been assumed by many of the writers on hysteria that purely ideational states, intellectual in nature, may bring about true, lasting, somatic phenomena. The role of emotion, as seen most typically in hysteria following accidents, does not seem to have been sufficiently stressed by many.

Déjerine and Gauckler (4), after excluding conscious or unconscious simulation and the mythomanias, insist upon the existence of hysteria as a morbid entity. Although these other conditions may resemble hysteria, in the sense in which this term is understood by Déjerine and Gauckler, yet they are by no means identical with it. They state that "no symptom whose origin does not lie in some emotional traumatism, and which has no relation to the various modes of physical emotion, or which is not due to the emotional inhibition of a certain number of mental representations, is, to our way of thinking, an hysterical symptom." Hysteria is character-

ized by an excessive physical emotionalism, the symptoms consisting of the hysterical attacks or emotional disturbances and of the protracted symptoms. The attack itself is really the least specific thing in hysteria, and is nothing more than an emotional discharge, the symptoms of hysteria not necessarily being connected with the attacks, but frequently coming on slowly; but, whether slowly or abruptly, always following emotion. The candidate for hysteria is characterized by a certain constitution or make-up, congenital, as a rule, or acquired, by virtue of which there is a more intense reaction to emotional stimuli which are themselves frequently trivial, with a certain specificity in his physical emotional reactivity, the dissociating action of the emotion on the psyche producing forgetfulness, and, in pure cases, an attitude of indifference toward the condition. Extreme suggestibility is not particularly characteristic of hysteria, since it occurs also in so called neurasthenia, victims of which are, in fact, more suggestible than those afflicted with hysteria. If this were so, since all of us are more or less suggestible, all of us must be somewhat hysterical, as Moebius and others contend. But the criterion of hystericizability would then be the degree of suggestibility. Now, we find that mere mental suggestion, without accompanying emotion, cannot produce or cure the protracted symptoms of hysteria, but are effective in this respect in the so called mythomanias and probably also in the specially educated hysterics. Suggestion may play a secondary but important role in the persistence of hysterical symptoms, but only a relatively small part in the genesis of these very symptoms for which emotional shock is the one great pathogenic factor. A mental suggestion or a suggested idea may evoke hysterical phenomena if it is strongly reenforced by emotion or effect.

The specific localization of hysterical symptoms is determined by the individual emotional predisposition or make-up, and by the nature and location of the emotional shock or point of injury, as the case may be.

The reason why we find that the symptomatological manifestations of hysteria correspond to the intellectual acquisitions or mental representations, and not to the anatomical or functional localization, is to be sought in the fact that "long before having been a bulbar phenomenon, emotion is a phenomenon of psychic localization."

Déjerine and Gauckler lay down the following dicta: "The hysterical symptom always appears as being a residue, or an emotional relic. . . . Everything that an emotion may create in an accidental or transient way, hysteria may accomplish in a lasting way." In brief, "the domain of hysteria may in fact be limited to the very domain of physical and psychic emotional reactions." The typical hysteria, then, is the sort that we are accustomed to see in the truly traumatic variety. It may, of course, follow emotional trauma or upset of any nature and any inciting factor.

It is to be noted that most of the modern writers on hysteria lay particular emphasis upon the emotional, genetic, disintegrating, provocative agents leading to the development of hysterical manifestations. This is the general trend in modern psych-



pathology, and the problem of the emotions with the many ramifications and interrelationships is one of the most fascinating yet practical working grounds in psychology, normal and abnormal. In fact, right within the confines of internal medicine and surgery proper, we see this question forging its way to the front, as seen, for instance, in the work of Crile, Cannon, and their followers, and in the study of the basal ganglia, the autonomic nervous system, and the ductless glands. Déjerine and Gauckler's insistence, therefore, on the genetic relationship between emotion and the manifestations of hysteria is a step in the proper direction and one which most students of these problems should be willing to follow.

Can we go as far as Déjerine and Gauckler? As mentioned above, they say, without qualification, that "the domain of hysteria may in fact be limited to the very domain of physical and psychic emotional reactions." Yet in their discussion of hysteria they speak of the symptoms being in accordance with the mental representations or intellectual acquisitions, and of the mental state of indifference or passivity toward the somatic disturbances which they believe to be characteristic of the pure, uncomplicated hysterical subject. There is here a contradiction as to just what constitutes the symptoms of hysteria, even granting that they are always emotionally induced.

That these authors are in error when they assert that they would apply hysteria as a proper term to the whole domain of physical and psychic emotional reactions can be proved from their own standpoints and statements elsewhere, and by the simple statement that in the other psychoneuroses and in the psychoses proper we find a host of similar physical and mental reactions superinduced by emotion, and yet we cannot label these with the nosological stamp, hysteria. If this were so, the hysterical camp would be of a most conglomerate and complex construction. Furthermore, even devoting our attention to the somatic symptoms alone, we find that many of them, the visceral disorders in particular, are grouped by most writers under other conditions also, under neurasthenia, psychasthenia, anxiety neurosis, etc., while some would even altogether exclude these visceral disturbances (resulting from emotionalism) from the disease hysteria.

Babinski, it is to be noted, excludes from his pithiatism or his true hysteria, not only all types of simulators as enumerated by him and already mentioned, but also all those symptoms which he has classified as emotive and reflex. Among his emotive symptoms come the visceral disturbances. Surely not all forms of psychophysical disintegration, with the great number of resulting symptoms of a psychic nature (including the affective and intellectualistic aspects), of the special senses, and of a general sensorimotor type, plus those dependent upon disturbance of the autonomic nervous system and the ductless glands, are to be classed with hysteria. Not even all the phenomena, physical or physiological and psychic, brought about by mental dissociation or dissociation of the personality, should be classified as hysteria.

A dividing line must be drawn somewhere. This is necessary for a sensible and working clinical

classification. This dividing line may be artificial and arbitrary and the intermediary states bordering upon this cut-off group or syndrome may be numerous and much allied, but a division must be made somewhere for practical purposes, if for nothing else. Diseases of the stomach may complicate each other or merge one into the other, but it would not be well to label them all stomach disease, and let it go at that. So also, with the emotional disturbances and the hysteria problem and so with the whole classification of the psychoneuroses and psychoses.

We may agree with the previously quoted writers and others to exclude the various conditions which have been mentioned. We may limit hysteria to those disorders of a so called functional type which are the result of emotion, aided and abetted by suggestion, but due, we should insist, primarily to emotion. Now, all sorts of psychic states have been grouped with hysteria, some of them more or less intimately associated with the somatic or corporeal phenomena of hysteria and others not at all related to them. In order to present a definite picture it seems advisable to adopt the standpoint of Déjerine and Gauckler and require a state of relative indifference or passivity with respect to the physical condition to be the characteristic of the subject afflicted with pure hysteria. If there is any other psychic state than that here described, which accompanies the physical syndrome which may be present, it may be named appropriately, or in accordance with present psychopathological or psychiatric terminology where possible.

As regards the somatic symptoms, we may agree to exclude from the hysteria concept diseases wrongly diagnosed, such as organic disease of the peripheral or other parts of the body, including the nervous system. We may also consent to the exclusion of those conditions which rightfully belong under the caption of one of the other psychoneuroses and of the frank psychoses. In addition, simulation, conscious or unconscious, deceit and deception, may properly be isolated as separate conditions and form no part of the hysteria group. Next we may take out that condition which Babinski would regard as true hysteria and which he calls pithiatism. Finally, it would be well to omit from hysteria symptoms which come under the heading of Babinski's emotive (including visceral) and reflex phenomena. This apparently would accomplish a complete dismemberment of the hysteria complex, with the exception of one class of symptoms. The only physical symptoms, therefore, that would be admitted into the playground of hysteria, and be called hysteria, would be the sensorimotor disturbances, including the disorders of the special senses, which we know so well, and which are not due to suggestion or simulation, but are protracted symptoms not removable by mere suggestion-persuasion. Pure major attacks should also be included.

The subject touched upon so very superficially in this paper opens up a big field. It is one which has been for some time past, and will continue to be for some time in the future, a veritable battleground. It is a problem of clinical classification, which must be fought out and eventually solved. Perhaps no universal agreement can be had until the term hysteria has been done away with, and other more ap-

propriate and more correct names have been applied to each of the subgroups referred to in this brief discussion.

But it seems to me that it is perhaps not a bad beginning to limit the term hysteria in the manner here urged—to the gross sensorimotor, including the special sense disturbances which are the bodily effects of a lasting nature, flowing out of emotional upset. The crises, when of the true type, should also be included.<sup>1</sup>

It will be noticed that I have not entered into the questions of the nature and origin of hysteria, which has been holding the rapt attention of so many brilliant students in this fascinating field of neurology and psychiatry; nor have I attempted in any manner to approach the problem of the differential diagnosis of the various conditions mentioned. I have not even enumerated the many symptoms grouped by so many under hysteria. I only wished to bring up the special question under consideration in a general but definite fashion. That was my only object at this time.

#### REFERENCES.

1. DANA: The Limitation of the Term, Hysteria, etc., *Jour. Abn. Psychol.*, 1909, 14, 1.
2. SMITH ELY JELIFFE: *Diarrhea in Infancy*, 1917, South Kedzie Avenue, Chicago, Ill.

1517 SOUTH KEDZIE AVENUE.

### DIARRHEA IN INFANCY.\*

#### *Its Prophylaxis and Treatment.*

By C. K. JOHNSON, M. D.,  
Burlington, Vt.,

Instructor in Pediatrics, University of Vermont.

During the past few years preventive medicine has taken its rightful place in the front rank. The great advances in the prevention of typhoid fever, yellow fever, beriberi, and many other diseases make every one welcome preventive medicine. It seems appropriate to refer to preventive medicine in connection with this paper, as my experience in treating gastrointestinal disturbances in infants more strongly convinces me as each summer passes that much of this illness could be prevented. We must all agree with the old adage, that an ounce of prevention is better than a pound of cure.

There is no young animal that of necessity has to try its luck in digesting such a wide variety of food as the human infant. Bacteria no doubt play an important part in the production of diarrhea, but their mere presence in the intestinal tract does not by any means result in diarrhea. Finkelstein believes that there must be some injury to the intestinal epithelium before these bacteria become harmful. Many American writers seem inclined toward this view. Finkelstein also believes that the sugars are the predominating factor in causing a dis-

order of digestion with resulting intestinal injury, this being followed by bacterial activity and diarrhea. There is no doubt that the sugars are frequently the causative factor, but from experience I believe that the overfeeding of fat is responsible for much digestive disturbance. As an illustration I could cite cases where top milks were given with a weak barley gruel with a resulting diarrhea.

Heat and humidity have been much considered as causes of gastrointestinal disturbances, but it seems well established that a high temperature with a low humidity is less dangerous than a lower temperature with a greater degree of humidity. These factors undoubtedly act by lowering resistance. Hot weather also acts as an indirect cause by favoring the growth of pathogenic and putrefactive bacteria in milk. The bacteria may gain entrance to the intestinal tract in unclean milk or by unclean methods in its preparation, the use of pacifiers, and the like.

The role taken by the house fly as a cause of diarrhea has been well illustrated by the investigation of the Bureau of Public Health, New York, reported by Armstrong. Two similar areas in the Italian district of the Bronx were selected. In each there were 311 families, with a population of 1,725 in one area and 1,744 in the other. The general conditions were similar and there were about the same number of breast fed infants in each. One area was well protected from flies, the houses were screened, manure was treated with iron sulphate, and motion pictures of an instructive nature were used. Records of morbidity were kept from July 21st to September 13th. The number of children with diarrhea under five years of age was twenty in the protected area against fifty-seven in the unprotected area. The total number of days' sickness among the children was 273 in the protected area and 984 in the unprotected.

Investigations in various parts of the world have shown that of infants dying of gastrointestinal disturbance about eighty-five per cent. had been artificially fed, leaving fifteen per cent. breast fed. This well established observation ought to be convincing to any mother as well as to the physician who sometimes may be easily tempted to prescribe artificial food.

As the first and most important procedure in the prevention of diarrhea I advise that whenever possible the infant be breast fed. I am convinced that more mothers could nurse their infants if they were more persistent during the early weeks of lactation, as many times when the breast secretion is at first deficient, a little persistence with perhaps small supplemental feedings will result in an abundant milk supply. The nursing mother should be thoughtful as to her diet, avoiding food that seems to cause symptoms of indigestion either to herself or her infant.

If the infant must be artificially fed, we should always be sure that the mother understands about the care of the nipples, bottles, and all utensils used in the preparation of the food. We should if possible secure milk from a healthy herd, and under the best hygienic conditions. If we have reason to doubt the quality of the milk, I advise that it be pasteurized. Overfeeding, especially during the summer months, is often a cause of digestive dis-

\*It is thus seen that I would limit the term hysteria to the functional sensorimotor syndromes, excluding functional disturbances of the visceral or autonomic nervous system and the more definite hysterical crises. I am sure that the term hysteria, as it is commonly used, is too broad and indefinite to be of any value. It is, therefore, eminently fitting and highly desirable to substitute some other, more definite term. I have chosen the word hysteria, as it is the best known to better experts in philology, in Greek and Latin, than I happen to be.

†The word hysteria is the name of the second meeting of the Galesburg, Mo., Convention of the American Medical Association, held in 1917.

turbance, and I wish to emphasize the importance of taking into consideration the infant's weight, the stools, and its general condition when varying the food formula.

A healthy infant that has gained indifferently during the hot summer is much to be preferred to one that has made a more rapid gain in the early summer only to acquire gastrointestinal disturbance with loss of weight and strength.

Fresh air and intelligent care are very important, both in prophylaxis and in treatment. The clothing should not be too plentiful in hot weather, and should be varied as the weather indicates.

Gastrointestinal disturbance in the breast fed infant is most often caused by overfeeding, the infant often nursing too frequently, thereby emptying the breast and securing a high fat ratio. On the other hand, frequent nursing does not give the stomach time to empty, and digestive disturbance is apt to result.

Certain articles of food in the mother's diet are no doubt at times causative factors. As a prophylactic measure, nursing at regular intervals, not too frequently, is of much importance. When digestive disturbance has already occurred I should stop nursing for twenty-four hours, giving the infant a weak barley gruel sweetened with saccharin. It is not advisable to continue the starvation diet longer. At the end of twenty-four hours let the infant nurse at the breast from three to five minutes, this being preceded by a small drink of water. The nursing interval should never be less than three hours at this time. As the bowel condition improves, the time at the breast may be gradually lengthened. If there is much vomiting, lavage is beneficial. If there is much fever and restlessness and the condition of the stools seems to demand it, castor oil or calomel may be given at the first visit.

#### TREATMENT.

In outlining the treatment of diarrhea, it will be necessary to describe briefly the different types, as the treatment varies with the type. Most cases of diarrhea in young infants are of the fermentative type. It is well known that the intestinal tract normally contains both fermentative and putrefactive bacteria, beside other varieties. It is quite possible by supplying a diet upon which either the fermentative or putrefactive bacteria thrive, to cause that variety to predominate. Thus by giving a carbohydrate food the fermentative group rapidly multiply and the putrefactive group are diminished. If a proteid diet is given, the reverse is true. This has been well shown by Kendall. I will not attempt to go further than this into the bacteriology, as it does not seem practical from the point of view of the general practitioner. The putrefactive cases are usually in children that have been fed on milk and water mixtures without carbohydrates. In the fermentative type the stools are quite characteristic, usually more numerous than in the putrefactive type, watery, foamy, and of acid reaction; they irritate the buttocks. The putrefactive stools are fewer in number, firmer, of alkaline reaction, and of a foul sour odor.

Another type of diarrhea, or what is usually termed dysentery, is due to several different or-

ganisms, including the Shiga bacillus and the Flexner bacillus. Kendall states that these bacilli do not produce toxins if an exclusively carbohydrate diet is given.

We may also have a simple indigestion without characteristic stools, with but slight temperature, the food frequently having been changed in an effort to find something that would agree.

It seems certain that if we are to be successful with these diarrhea cases, we must not depend upon any routine, applying it to every case, but each case must receive due consideration. In most cases of diarrhea with frequent stools it is not only unnecessary to give cathartics, but they may do positive harm, especially in weak infants. Abt has shown that calomel given to the normal infant causes blood, at least microscopically, to appear in the stools, and hence must further injure the already damaged epithelium. There are several methods of treating these cases, all being by diet.

*Fermentative type.* 1. Stop all sugar; 2, give a mixture of one third milk and two thirds water that has been boiled actively for three minutes with constant stirring. If there is vomiting, plain water may be given for twelve to twenty-four hours before giving the milk mixture. This method is successful in the majority of these cases. If the previous diet and the symptoms seem to indicate fat intolerance also, a portion of the cream may be removed before mixing the food. This feeding should be continued for two or three weeks, and after the first few days sugar is added cautiously. If this treatment is not successful after a good trial, or the case is one of long standing, I should use Finkelstein's *Eiweiss Milch*. This is made as follows: One quart of milk is heated to 100° F. and two teaspoonfuls of essence pepsin are added. This is then allowed to stand until jellied, then heated to 160° F. to kill the ferment. The whey is then thoroughly drained off and thrown away. The curds are worked through a rather fine sieve two or three times, and water is added to one pint. To this add one pint buttermilk. One or two grains of saccharin are usually added. The average composition of this food is fat, 2.5 per cent.; sugar, 1.5 per cent.; proteid, three per cent.; salts, 0.5 per cent. Finkelstein originated this food with the object of having a minimum of sugar with relatively high proteid; in his early cases he did not add sugar until after a considerable time, but more recently he advocated the gradual addition of sugar after three or four days. As to the kind of sugar, it has been shown that a mixture of dextrin and maltose may be given earlier and in larger quantities without causing a return of the diarrhea than either milk sugar or cane sugar. It is advisable to keep the sugar somewhat under the usual percentage for some time after recovery. The gradual addition increases the sugar tolerance.

In the putrefactive diarrheas give a weak barley gruel for one to three days, depending on the stools and the general condition of the infant. Then give the boiled milk and water mixture without sugar. If progress is not satisfactory within three or four days, another twenty-four hours of barley gruel may be beneficial. In all cases the milk may be



gradually increased as conditions permit so the infant may secure food sufficient to gain in weight.

In dysentery, in the very early stages a cathartic may be advisable to free the intestines of undigested food, castor oil being preferred. In treating dysentery give plain water for twenty-four hours, then a weak barley gruel for two or three days. Older children may have farina, zwieback, bread, pap, etc. As improvement in the stools occurs and the temperature falls, gradually add milk to the diet.

In some instances we are unable to secure good results in these cases, or if we have been successful, when we try to gradually increase the strength of the food to a point where a weight gain is possible, the diarrhea recurs and we are obliged to begin anew. It is especially this type in which I have used Keller's malt soup with benefit. I have had very good results, however, with a modification of this. Suitable proportions of whole milk and water are mixed, and to this are added one level tablespoonful each of wheat flour and dextrimaltose, the whole being cooked for one half hour in a double boiler. This is much less expensive than the Keller preparation and the results are generally good.

The alcohol friction bath is valuable as an antipyretic, it also makes the child much more comfortable.

Of necessity, a paper of this sort must be limited and the subject is an extensive one. I only hope that I have pointed out some general principles in treatment that may be of value. I have purposely omitted drugs, as they are of secondary importance. In collapse the normal salt solution, either subcutaneously or by the drop method by mouth, is very useful. Camphor in olive oil hypodermically is valuable. In many cases I have used the liquid cultures of Bulgarian bacilli with good results.

75 GRANT STREET.

## IMMUNIZATION WITH AUTOGENOUS PROTEINS IN BRONCHIAL ASTHMA.

### *A Preliminary Communication.*

By HENRI ISKOWITZ, M. D.,  
New York.

Bronchial asthma has been regarded as a functional disease of nervous origin; the pathology has been so imperfectly understood that no attempt has been made to give it definition. The affection is characterized by paroxysmal attacks, occurring at variable intervals, by dyspnea, and by abundant bronchial secretion.

Two theories have been current as to the origin of the bronchostenosis which is invariably found. One theory assumes that the stenosis is due to a vasomotor disturbance, which causes a swelling of the mucous membrane and a narrowing of the bronchioles; the other, that the narrowing is due to a contraction of the muscle fibres. In 1910, Meltzer (1) suggested that the disease was of anaphylactic origin. His theories were based on the work of his associates, Auer and Lewis (2), of the Rockefeller Institute, and the work on anaphylaxis done by other observers, following the discovery of this phenomenon by Theobald Smith (1903).

The history of anaphylaxis commences with the observation of the effects of eel serum on dogs made by Richet (3). He applied the term anaphylaxis to the phenomena observed. To Theobald Smith is accredited the recognition of the significance of these phenomena. This was followed shortly by the investigations of Pirquet and Schick (4), of Rosenau and Anderson of the United States Public Health laboratories (5), and Otto, of Frankfurt (6), on the relation of the anaphylactic phenomena to those observed in antitoxin poisoning. Anaphylaxis, the opposite of prophylaxis, meaning "without protection," is employed to designate a state which results from the injection of some foreign protein into the living organism.

Three distinct stages are found in the anaphylactic condition; first, the stage of incubation. With the injection of a foreign protein into the living organism, a process of digestion is begun by the cells of the body, requiring for completion from twelve to twenty-one days. It is dependent on the release in the blood of certain chemical ferments to which the name of antibodies or amboceptors has been given. The reaction is extremely delicate, very minute doses of the protein injection being required to produce it.

Second, there is the stage of sensitization, which begins with the completion of the first stage. This is dependent on the presence in the body of antibodies or amboceptors which remain as a result of the original injection. This state may last for months, years, or for life. It may be transmitted by heredity.

Third, we have the stage of anaphylactic shock, caused by a reinjection of the same protein or antigen. The protein injected is rapidly broken up by the amboceptors present in the blood, and acute intoxication results. This is caused by union of the antigen and the antibodies, the combination being subject to a proteolysis by the alexin or complement. This proteolysis splits the protein into two parts, one of which is extremely toxic; it is known as anaphylatoxin.

The clinical phenomena of anaphylactic shock have particular significance in their bearing on the lungs. In the guinea pig the characteristic symptoms are directed to the respiratory organs. There is usually a short preliminary period lasting several minutes. This is followed by a period of restlessness and uneasiness. The animal sneezes and emits coughing sounds. With this an increased rapidity in respiration is noted. This is succeeded by irregularity in respiration, which becomes slow and shallow. The thorax is expanded. Dyspnea is of inspiratory character. Respiration grows shallower and shallower, with marked inspiratory effort. Such conditions usually terminate in death, with the heart beating a long time after breathing has stopped.

The pathological findings are a fully distended lung, which completely fills the thorax. The lung does not collapse after opening the pleura. A microscopical study of the lung shows that the distention is due to neither emphysema nor edema. Auer and Lewis have shown that death is due to a stenosis from a peripheral process. This process is a constriction due to the tonic contraction of the

smooth muscular fibres in the bronchi. The contractions are not of central origin.

Biedl and Strauss (7) have established that anaphylactic death in guineapigs is caused by suffocation due to spasm of the musculature of the small bronchi; that the spasm is of peripheral and not of central origin. Schultz (8) has shown a hyper-susceptibility of the smooth muscle in a sensitized animal to the antigen.

Let us now observe the clinical phenomena of a bronchial asthmatic attack. "The paroxysm is usually preceded by prodromal symptoms, which the patient himself soon recognizes as indicating the approach of an attack. These symptoms consist of general discomfort, drowsiness, depression, yawning, a good deal of secretion, sneezing, epigastric oppression without disturbance of digestive functions. The paroxysms may occur at any hour of the day or night, but oftenest about midnight. The patient may go to bed comfortable and awake with the onset of the attack. There is a short dry cough, some wheezing, and distention of the lower zone of the chest. The patient desires fresh air. He draws it in with all the power of his inspiratory muscles. When the attack is fully developed the patient assumes a posture permitting the greatest possible freedom of respiration. The face is livid and swollen, cyanosis great. Clammy perspiration breaks out and the extremities become cold. Respiration becomes labored, the expiratory part prolonged. There is a wheezing stridor. The chest is expanded. On examination the lungs are found extended downward. Notwithstanding the dyspnea, respirations are reduced in frequency. The pause which follows normal expiration is absent, inspiration following immediately. The attack lasts about two hours. The paroxysms abate, the expectoration becomes profuse, and the attack is over." (Osler, *Modern Medicine*, p. 715.) The close parallelism between the condition here described and the phenomena of anaphylactic shock in guineapigs would be sufficient to indicate that the two states have a similar origin. The closely related pathological findings bear out this assumption, and establish beyond question that bronchial asthma is of anaphylactic origin.

**Etiology.** Asthma may be hereditary or acquired. No age is exempt. A large percentage of cases of bronchial asthma have either a hereditary history or a history of protein sensitization. Seventy-five per cent. of these cases show a nasal pathological condition. The other twenty-five per cent. are cases of intestinal origin or cases of dog, cat, and horse asthma. A small percentage may be due to accidental causes, a case of which is described by Justus Mathews (9).

There are three factors in the causation of asthma: 1. Predisposing constitutional causes; 2, a local pathological condition; 3, the protein.

**Predisposing constitutional causes.** A predisposition to the condition is nearly always present. This may be hereditary. A lack of protection against protein may be a family trait. Some cases show faulty metabolism, gout, etc.

**Local pathological conditions.** Nearly all cases of asthma show pathological conditions of the nose. This usually embraces either a sinus affection or a

chronic rhinitis with an increased secretory disturbance. Osler states that disease of the lung rarely if ever causes asthma, and that emphysema and bronchitis, commonly associated with the asthma, are the results and not the cause of the condition.

Freudenthal (10) has shown that the nasal secretions pass from the pharynx through the rima glottidis into the trachea, and from thence into the lower portion of the air tract. This occurs as soon as the patient assumes a prone position. We have estimated that this secretion from the nasal tract, in cases of asthma, may be as much as a pint in twenty-four hours.

**The proteins.** Sanford, of Mayo's clinic, has made a series of experiments on guineapigs, using pus and mucus from asthmatic patients as an antigen. The initial dose was received in each case without symptoms. The reaction to the toxic dose was uniformly a typical anaphylactic shock, ending in death. This establishes the fact that mucus and pus are capable of acting as antigens. Our experiments with rabbits have confirmed this. We have used the nasal secretions as well as the secretions from the bronchi in asthmatic patients.

The mucous membrane of the bronchial tree has a marked power of absorption. In a case with a constitutional predisposition, and with a mucus or mucopurulent discharge from the nose passing through the rima glottidis into the bronchi, an abrasion of the mucous membrane permits a parenteral absorption of protein. Frequent attacks of acute bronchitis may bring about this abrasion. The result of this absorption is an injury to the epithelial cells of the mucosa and the endothelial cells of the finer capillaries. This is followed by, 1, increased permeability of the cells; 2, a specific protective ferment against the protein, or in other words, sensitization.

Along with the local reaction, an absorption and a sensitization of other parts of the body take place. A vicious cycle is thus established, in which a parenteral absorption of protein by the mucous membrane of the bronchi acts as an excitant. In many cases the increased permeability of the cells permits sensitizations of other parts of the body, particularly in the intestinal tract. A large quantity of mucus and mucopurulent secretion is swallowed. With a sensitized state of the intestinal mucous membrane, the swallowed secretion is absorbed and acts as a heterogeneous protein in the organism.

In the normal process of digestion a certain amount of unchanged protein is absorbed. With sensitization present, whether acquired or hereditary, the unchanged protein thus absorbed becomes a sensitizer. Our observations have shown that a wide variety of food proteins cause sensitization. The most common form of protein thus absorbed is that of egg albumin. Multisensitization is therefore a sequela. In children we have frequently a primary intestinal anaphylactic condition.

The majority of attacks occur after the patient has been asleep for some time. This coincides with Freudenthal's observation that the secretions pass the rima glottidis when the patient is supine.

**Immunization.** In attempting immunization we have two factors to contend with; first, a desensitization or depletion of the antibodies or ambo-

of the body, second, the development of tolerance by the body cells for anaphylactic poisons. According to Weil (11), the antibodies which result from the first injection are present both in the blood and in the fixed body cells. The antianaphylactic condition occurs when the antibodies in the blood are largely in excess of those in the sessile cells. Anaphylactic shock, according to this theory, is the reaction of the antigen with the fixed body cells. Very small repeated doses of antigen raise the antibody content of the blood. Large doses of the protein then injected are broken up and disposed of in the blood before they reach the sessile cells. The sensitized stage is one in which the antibodies in the fixed body cells are in excess of those in the blood.

**Technic.** A bronchial catheter forty-five cm. long is passed into the bronchus and connected with a sterile suction bottle of about one decilitre capacity. Sixty c. c. of the secretion are collected and placed in a sterile flask of a capacity of one litre. The flask is stopped with a rubber cork having an opening for a glass tube to permit the passage of gases from the secretion. The flask is then placed in a sterilizer and the contents are sterilized. The secretions are then boiled down slowly on a water bath, until we have a thick viscid gelatinous mass. This mass, variable in amount, is used as a base for the preparation of the desensitizing agent. To it is added sixty c. c. of normal saline and a 0.25 per cent. solution of phenol. The dissolved solution is filtered. This then represents the standard solution, from which all further dilutions are made.

Where it is impracticable to obtain bronchial secretions, because of some organic heart or other disturbance, the secretions from the nasopharynx are collected, using the same technic for cleansing the mouth as that given for bronchial secretion collection.

**General treatment.** The patient is placed in the most favorable condition for treatment. This includes plenty of fresh air and sunlight. Tonics should be prescribed, if necessary. Constipation and pathological conditions of the stomach should be corrected, when present.

**Local treatment.** Vigorous treatment should be directed toward all nasal pathological conditions. Hypertrophic tissues should be cauterized or removed, and chronic sinus inflammations cured, by operation if necessary. The author has had considerable success with the removal of middle turbinates in asthma. Provision should be made for free nasal air passage. Every means should be used for preventing excessive nasal secretions.

**Bronchial treatment.** The patient's larynx is anesthetized with a ten per cent. solution of cocaine. For this we use a long flexible laryngeal applicator. As soon as the larynx is cocaineized, the applicator is bent into such shape as to pass into the rima glottidis and so into the trachea. In this way we anesthetize the upper part of the trachea. The patient is then instructed to brush the teeth vigorously with a five per cent. solution of tincture of iodine, and to gargle the mouth with a one in 5,000 bichloride solution. Under the guidance of the laryngeal mirror, the sterilized bronchial catheter is passed into the larynx, trachea, and right bronchus. The passage

of the catheter into either the right or the left bronchus can be facilitated by having the patient bend the thorax in the corresponding direction. The bronchial catheter is then connected with the suction bottle, under a negative pressure of ten pounds. By means of a mercury gauge attached to the bottle the negative pressure is steadily maintained.

The trachea and bronchi are entirely freed from secretion, sixty c. c. being set aside as previously explained. The bronchial catheter is then disconnected from the suction bottle and attached to a nebulizer containing a mixture of 0.5 per cent. solution of adrenaline in oil and a five per cent. solution of iodine in oil in equal parts. This vapor is passed for five minutes.

In all long continued anaphylactic reactions, a chronic inflammation is a sequela. In asthma the sequela is a bronchitis. The treatment outlined has for its purpose, 1, the removal of the secretions, which through changes and absorption act as an antigen, and, 2, the treatment of the chronic bronchitis.

**Description of the bronchial catheter.** This is a soft rubber catheter fifty mm. in diameter, and forty-five cm. in length. It has two openings, one directly at the end which is inserted into the bronchus, and the other at the side about one cm. from this end. For children correspondingly smaller catheters are used. A ring, twenty cm. from the end of the catheter, serves to show when the catheter has reached the trachea, that being the distance from the front teeth to a point just within the trachea. A corresponding ring, twenty-eight cm. from the end, shows when the tube has passed the bifurcation.

**Treatment of the digestive tract.** A sensitization to food proteins is present in a large proportion of cases of bronchial asthma. The inception of the anaphylactic state may thus take place in the digestive tract, particularly in children. A series of allergic tests with a large number of food proteins has been made to determine the specific sensitization in each case. Among the proteins tried we have succeeded in obtaining reactions in two cases with egg albumin. Other food proteins that have been used for this purpose are edestine, nucleoprotein, lactalbumin, egg globulin, casein, etc.

In the absence of proof as to a specific antigen, our treatment here must be prophylactic. Patients themselves can often tell which particular food stuff will bring on an attack. Our method has been to forbid milk, eggs, cheese, red meats, spiced meats, and condiments. Mineral oils administered internally have been successfully used in many cases for the prevention of toxic protein absorption in the digestive tract. In some cases we find it advantageous to wash the stomach. Patients are forbidden to swallow any nasal secretions, and are told to wash the mouth thoroughly before eating or drinking.

**Serum treatment.** The solution which has been made from the gelatinous substance of the bronchial secretions is used as a basis for further dilutions. The first injection is 0.5 c. c. of the solution diluted to one tenth of the original strength. The injections are given every third day, in increasing strength over a period of ten weeks. We feel our way carefully in increasing the strength ratio. The



injections are given in the interseapular region, ordinary methods of sterilization and preparation of the skin being observed. We are employing the complete fixation control to determine immunization.

**Immunity.** This varies with the individual. The question, whether immunity is permanent, is important. We believe that with the elimination of the dropping of nasopharyngeal secretion into the trachea, recurrence is not to be expected. In children we are experimenting with immunization by means of egg albumin and egg globulin. In all cases of intestinal protein poisoning extreme care should be devoted to the diet. Until the specific foods which act as antigens have been determined by allergic tests, all foods which come under suspicion should be avoided.

CASE I. M. K., widow, aged forty-two years, had had asthma for twenty years. Had been operated on for nasal conditions three times. Had a chronic ethmoiditis and sphenoidal sinusitis. Had been an invalid for the past three years; had asthma constantly. Had had twenty injections of autogenous proteins. Stomach washed; diet of rice and farinaceous foods and fruit. Patient felt perfectly well, slept comfortably, and had no recurrence of attacks for ten weeks.

CASE II. G. M., aged fifty-six years, furrier, had had asthma thirty-five years. Enlarged middle turbinates. Granular pharyngitis. Turbinatectomy both sides, cautery applied to pharynx. Patient on a diet. Given thirty injections of autogenous vaccine. Patient was then able to sleep comfortably at night. Cough and expectoration very much less in quantity. Asthmatic attacks markedly improved.

CASE III. D. S., female, aged thirty-three years, had had asthma one year. Had been unable to lie down in bed ever since the onset. Had tried climatic treatment without avail. Nose showed a deflected septum, marked hypertrophy of one middle turbinate. Deflection corrected, turbinatectomy on enlarged turbinate. Autogenous vaccines given, fifteen injections. Patient markedly improved, able to resume her housework; slept well at night. No recurrence of attacks. Condition became absolutely normal.

CASE IV. C. C., aged twelve years, had had intermittent asthma for past four years. Eating eggs, or food containing egg, would bring on an attack. Tonsils and adenoids operated on, inferior turbinates cauterized, diet regulated, constipation corrected. Patient had had bronchial inhalations of iodine with catheter. Had had no recurrence of attacks for three months. This was a case where primary sensitization was probably in the intestinal tract.

CASE V. M. R., aged ten years, had had asthma ever since he was one year old. Climatic treatment without success. Had had adenoids operated on. Red meats, placed him on a rigid diet, and gave autogenous proteins. This boy had eight injections. He was soon able to sleep through the night. Cough and expectoration diminished, breathing comfortable.

#### REFERENCES.

1. S. J. MELTZER: *Journal A. M. A.*, Sept. 17, 1910.
2. AUER and LEWIS: *Ibidem*, v, 53, p. 458, 1900; *Jour. of Exp. Med.*, 12, 1910.
3. RICHET: *C. R. de la Soc. biol.*, 1898.
4. VON NAUQUET and SCHICK: *Die Serumkrankheit*, 1906.
5. ROSENAU and ANDERSON: *U. S. Public Health and M. H. S. Hyg. Lab. Bull.*, 29, 1906; 30, 1906; 36, 1907.
6. OTTO: *Das Theo. Smith'sche Posa...*
7. BIEDL and STRAUSS: *Zeitsch. f. Immunitätsforschung*, v, 7, 1910; *Centralblatt für Physiol.*, 1910.
8. SCHULTZ: *Jour. Phar. and Exp. Therap.*, 1, 1910.
9. HUSTUS MATTHIAS: *Vergleichende...*
10. *Asthma*, *Yeni Doc.*, Sept. 26, 1913.
11. WOLFE FREUDENHAL: *Am. Med.*, p. 176, Mar., 1915.
12. WEIL: *Jour. Med. Res.*, 27, 1915.

58 WEST FIFTY-EIGHTH STREET.

#### VINCENT'S ANGINA.\*

*With a Report of a Case Treated with Neosalvarsan Given Intravenously.*

By ADOLPH G. DE SANCTIS, M. D.,

New York,

Assistant Surgeon, Kingston Avenue Hospital, Brooklyn.

Vincent's angina is a disease which, to my mind, has remained in obscurity in the practice of medicine. In looking over the current medical literature and books of today, I must confess that I have come across but few articles dealing with this subject, and those for the most part are superficial. Still, as we all know, it is a fairly common condition, and, in a good proportion of cases, the condition is not diagnosed. This article is the result of much clinical experience with this disease, including original work done by the writer and Dr. A. Schwenk during their service as interns at Kingston Avenue Hospital, Brooklyn. It is the intention of the writer to present this short treatise on the subject so that the condition may be brought to light and the new treatment carefully studied and criticised by his colleagues.

**Synonyms.** Vincent's angina is also known as pseudomembranous angina and ulcerative tonsillitis.

**Occurrence and etiology.** Vincent's angina is chiefly a disease of the young, occurring far more frequently in children than in adults; but I myself have seen a case in a man forty-two years of age. It is a fairly common disease. We can divide the causes into the predisposing and exciting. Under the predisposing, I would include, 1, general debility following systemic diseases especially the infectious diseases of childhood; 2, previous infections of the oral cavity under which we may include ulcerative conditions of the tonsils, pyorrhea, decayed teeth, etc.; 3, oral uncleanness. The exciting cause of the condition is organisms, as first described by Vincent and carefully worked out by Herrman, Frühwald, and others. Vincent described a fusiform bacillus together with a spirillum which he found in smears made directly from the lesions. The bacillus is from six to twelve microns long and from six to eight microns broad; that is, about two to three times as long as the diphtheria bacillus. It has tapering ends, hence the name fusiformis. It is nonmotile. The spirillum is long, wavy, or corkscrewlike; most of the spirilla have four or more turns and form a network in which the bacilli can be seen. The spirillum is never found alone, but the bacillus is sometimes seen without the spirillum. When stained with methylene blue, the bacilli take an irregular stain, so that dark bands alternate with light ones. Both organisms are negative to Gram's stain. Many attempts have been made to culture them, but they have never been made to grow into pure culture. We have made direct smears from other necrotic conditions of the tonsils, and oral cavity such as cancrum oris, and were interested to find organisms identical to those just described, whereas the clinical pictures were certainly not that of Vincent's angina. From these observations, I was led to believe that cancrum oris and Vincent's

**Vaccination against Cholera.**—According to Moreschi and Marcora (*Gazzetta degli Ospedali*, October 9th), Löffler's vaccine injected into the veins produces immunity at once complete and of high degree.

\*An abstract of this paper was read before the Kingston Avenue Hospital Medical Society, Brooklyn.

angina are closely allied, and I concluded that the former was but a malignant and more virulent infection of the latter, and that both have the same etiological factor. Some will say that noma is a streptococcal infection; true, we always found streptococci and staphylococci in smears from this condition, but we also found that to be the case in Vincent's angina, although in fewer numbers. Then is Vincent's angina a mild form of cancrum oris, or are they two separate and distinct conditions? At present, I am inclined to believe as stated before, that one is but a malignant form of the other caused by a more virulent type of the same organism.

**Transmission.** The disease in my mind is neither contagious nor infectious. We did not isolate our cases and under the ordinary precautions of using separate utensils, etc., no other case developed in the ward at the same time.

**Pathology.** The condition usually occurs on the tonsils, although the lesions are sometimes seen on the uvula, soft palate, cheeks, and gums. I have seen a case in a man forty-two years of age with lesions on both tonsils, both cheeks, and gums on both sides. Bruce and Farrel have reported cases in the larynx and trachea. However, in most cases, the lesions attack the upper portion of the tonsil and are usually unilateral. As the name, pseudomembranous angina, indicates, the lesion is not covered by a true membrane, but by a false one, which can easily be removed, leaving a raw, bleeding surface. This false membrane is due to a necrosis of the superficial layer of the mucous membrane, and varies in color from grayish white, yellowish green, dirty blue to a dirty brown. The lesion itself is an ulceration covered by the false membrane. The ulcerations vary in size from that of a pea to the size of an American quarter dollar, and are from one eighth to one half inch deep. They are irregular in shape and are enclosed by red, inflamed areas resembling newly formed blood-vessels, and these in turn are separated by areas of healthy tissue. The only other point of interest in the pathology is the enlargement of the cervical and submaxillary glands. Other organs are in no way affected.

**Symptoms.** The symptoms may be divided into general and local. The general vary a great deal in severity; some cases manifest apparently no symptoms; others give a mild general disturbance, while still others are marked and distressing. However, the vast majority of the cases I have seen had a mild reaction, the temperature rising to 100° or 101° F., the patient complaining of headache, chilliness, and general lassitude, and going to bed. In few cases the temperature rose to 102° or 103°; there were attacks of nausea and vomiting, painful swallowing, and marked general disturbance. In almost all cases the cervical and submaxillary glands were enlarged on the same side as that of the lesion. Under the local symptoms we have a white, coated tongue, infected breath, and the characteristic lesions described in the pathology; the pseudomembranous ulcerations, varying in color and size, and usually seen on the upper portion of the tonsil.

**Diagnosis.** The conditions usually mistaken for Vincent's angina are diphtheria and syphilis. From

diphtheria we can distinguish it by culture of the organisms and examination of direct smears from the lesions, which latter will show the characteristic bacillus and spirillum; from syphilis by a Wassermann reaction, examination of direct smears, and also by the fact that syphilis will usually show other characteristic symptoms. In taking smears from the lesions, we must remember to go deep, as superficial smears may not show the organisms.

**Prognosis.** The prognosis is very good, except in cases involving the larynx and trachea. Quite a few cases tend to become chronic, lasting for months. The disease is apt to recur.

**Treatment.** The treatment is chiefly local, although in run down patients tonics are indicated. A point to be remembered is that no operation should be performed upon the oral cavity as long as the organisms are found, as the disease may spread to the operated area. A great number of agents have been used locally in Vincent's angina, far too many to mention in this article. The most valuable are potassium chlorate, silver nitrate solutions either five or ten per cent., tincture of iodine, hydrogen peroxide, Seiler's solution. A method which was followed by good results is the administration of potassium chlorate, in three grain doses, three times a day, in conjunction with mouth washes of the same drug. Tincture of iodine painted on locally several times daily gives good results, as does also the application of silver nitrate solutions. Lastly, neosalvarsan has been used in solution applied locally to the lesions and has given satisfactory results. The method we used cleared up the lesions within a week, whether they were chronic or not. We gave neosalvarsan intravenously. I believe that this is of special value in the treatment of cases that have resisted all treatment. I report two cases, one to illustrate the value of this method, and another the value of the potassium chlorate method.

CASE I. Alice K., aged ten years, admitted to scarlet fever ward, June 9, 1914. Previous history: Had measles, never had diphtheria or scarlet fever. Very sick child, temperature 102° F., pulse 130, respiration 30. Typical punctate erythematous rash covering entire body. Tongue red; papillae enlarged; marked congestion in throat; exudate on right tonsil and uvula. Eyes, ears, nose, negative. Cervical adenitis; glands enlarged and tender. Heart, lungs, abdomen, extremities, culture for diphtheria, and urine, negative. Diagnosis, scarlet fever.

The patient suffered the usual course of scarlet fever with no rising temperature till July 24th, when she was ready to be discharged. On this day, however, the child did not feel well, complained of headache, and went to bed. Temperature was 101° F., pulse 132, respiration 24. The cervical glands of the left side were swollen and tender. On examination of the throat there was found a greenish white membrane about the size of a ten cent piece on the tonsil. When stripped off it left a raw bleeding surface. The tongue had a heavy white coat and the breath was fetid. Examination of the heart, lungs, etc., revealed nothing. Diagnosis of diphtheria was made and 10,000 units of antitoxin were given. The membrane did not clear up and, July 26th, on examination of smears made directly from the lesion the characteristic bacilli and spirilla were found. At this time there were greenish white patches of membrane on the left cheek

and gums of the left side, beside that on the tonsil. We painted the areas with tincture of iodine several times daily, and used mouth washes of potassium chlorate, but this failed to improve the condition. On August 5th, 0.6 gram neosalvarsan was given intravenously. From this time on the lesions became smaller and smaller, until August 9th, when they finally disappeared, leaving slightly reddened areas. During all this time the temperature was normal, and the child felt perfectly well. On August 22nd, the child was discharged.

CASE II. Joseph C., aged forty-two years, admitted October 23d, to diphtheria ward. Previous history negative. General condition, fair; temperature  $102^{\circ}$  F., pulse 100, respiration 20. No rash, tonsils were congested, dirty bluish ulcerations on both cheeks posteriorly and involved gums on both sides. When these were touched, they bled freely. The breath was very foul. No evidence of stenosis in larynx. Considerable enlargement of cervical and submaxillary glands. Tongue, heavy white coat. Eyes, ears, and nose—negative. Heart, lungs, abdomen, and extremities, negative. Urine, Wassermann reaction, Widal test reaction, von Pirquet reaction, and culture for diphtheria negative on two successive days.

Twenty thousand units of antitoxin were given, but failed to improve the local condition. Silver nitrate, ten per cent., and various other mouth washes were used with no effect. On October 26th direct smears made from the areas showed abundance of bacilli and spirilla and the diagnosis of Vincent's angina was made. Potassium chlorate, three grains, was given every four hours, in conjunction with mouth washes of the same drug. Under this treatment the local condition cleared up, although rather slowly until November 11th, when the lesions had entirely disappeared.

#### REFERENCES.

1. PARK: *Bacteriology*. 2. HOLT: *Diseases of Infancy and Childhood*. 3. KOPLIK: *Diseases of Children*. 4. BALLENGER: *Diseases of Nose, Throat, and Ear*.

204 WEST TENTH STREET.

**Treatment of Ophthalmia neonatorum.**—G. A. Neuffer, in the *Journal of the South Carolina Medical Association* for February, 1915, states that he has met with universal success in this condition by means of the following treatment: A sixty grain (4 gram) to the ounce (30 c. c.) solution of silver nitrate is at once applied to the conjunctiva and immediately precipitated with a solution of sodium chloride made by dissolving one teaspoonful of the salt in a glassful of water. This application is repeated once every twenty-four hours, until one is satisfied that the disease has been controlled. Only in extreme cases are more than two applications necessary, and often one proves sufficient. In addition, an ounce (30 grams) of boric acid is ordered dissolved in a quart (litre) of hot water and the solution kept constantly warm. With this the nurse or mother is instructed to wash out the eyes as often as any pus collects, even if this is required a hundred times a day. One drop of a one per cent. solution of an organic silver preparation is dropped into each eye three times a day as long as there is any pus; after this an astringent lotion is substituted. The author also has squares of lint kept on a block of ice and applied constantly, with frequent renewals, for forty minutes in each hour. The treatment described should be applied both day and night until the condition has been mastered.

## Our Prize Discussions.

QUESTIONS for discussion in this department are announced at frequent intervals. So far as they have been decided upon, the further questions are as follows:

CLXIII.—How do you treat pernicious anemia? (Closed.)

CLXIV.—How do you treat insomnia? (Answers due not later than November 15th.)

CLXV.—How do you treat ophthalmia neonatorum? (Answers due not later than December 15th.)

CLXVI.—How do you treat the constipation of sedentary men? (Answers due not later than January 15th.)

If three or more copies of these questions be received most satisfactory to the editors will receive a prize of \$25. No importance whatever will be attached to literary style, but the award will be based solely on the value of the substance of the answer. It is requested (but not required) that the answers be short, if practicable no answer to contain more than six hundred words; and our friends are urged to write on one side of the paper only.

All persons will be entitled to compete for the prize whether subscribers or not. This prize will not be awarded to any one person more than once within one year. Every answer must be accompanied by the writer's full name and address, both of which we must be at liberty to publish. All papers contributed become the property of the JOURNAL. OUR READERS ARE ASKED TO SUBMIT THEIR FOR DISCUSSION.

The Prize of \$25 for the best paper submitted in answer to Question CLXII has been awarded to Dr. Thomas W. Jenkins, of Albany, N. Y., whose article appears below.

### PRIZE QUESTION CLXII.

#### THE TREATMENT OF THE EFFECTS OF EXCESSIVE SMOKING.

By THOMAS W. JENKINS, M. D.,  
Albany, N. Y.

The first thing to bear in mind is that considering the large amounts of tobacco used, very little harm results, and care should be taken not to incriminate tobacco when the troubles under observation may be due to other causes. Especially we should be guarded in prognosticating relief of heart conditions in middle aged men by ordering them to refrain from tobacco.

The evil effects of tobacco are due to nicotine, pyridine bodies and ammonia, hydrocyanic acid, and carbon dioxide. The evil effects produced are nervousness, monoplegia, gout, rheumatism, dyspepsia, general increased blood pressure, and a dryness of the throat leading to excessive drinking, principally of alcohol.

Nicotine is volatile and its volatility is enhanced by moisture and distance. Its pernicious effects are upon ganglion cells, thus blocking synapses. Pyridine bodies are more stable and are stimulant, and their evil effects are analogous to those of extractives in general. Hydrocyanic acid destroys hemoglobin, thus rendering acidosis likely. Carbon dioxide combines with the hemoglobin, also tending toward the production of acidosis. Ammonia irritates and dries up the pharynx and fauces, which condition is also increased by the potassium in the tobacco leaf, when cigars are smoked. Dyspepsia frequently follows.

Tobacco as a whole keeps the blood pressure above normal, thus tending to cause a capillary fibrosis.

The acute symptoms of excessive smoking are nausea, vomiting, purging, pallor, giddiness, depression, tremors, contracted pupils, and clonic convulsions. One minim of nicotine has caused death in



As long as one had a dram of tobacco in an anema has caused death. All these symptoms may not be found in any one case, unless it should be that of young persons, who have smoked excessively, as some do in order to become *used* to tobacco.

The treatment of these cases is the withdrawal of tobacco, and dram doses of aromatic spirits of ammonia in plenty of water, along with hypodermic injections of caffeine and nitroglycerin.

The symptoms of chronic tobacco smoking are cardiac palpitation, false angina pectoris, rapid or intermittent pulse, granular inflammation of fauces and pharynx, tremors, giddiness, nervous depression, sclerosis of middle ear, amaurosis, scotomata, color blindness, and dryness of throat. Not all of these are likely to be found in any one case.

The treatment lies in the withdrawal of tobacco as the chief requisite, and where a patient will give up smoking all is well and good as a rule.

When a patient will not or cannot give up smoking, considerable ingenuity must be exhibited. Just back of the burning zone of tobacco is a zone of moisture which causes the nicotine to be dissipated: the longer the distance the smoke has to travel the greater the dissipation of nicotine. The larger the zone of moisture the greater the dissipation of nicotine.

Hence the evils of the cigarette, the cigarette being small and short.

Excessive smokers should therefore be advised to use long stemmed or Turkish pipes in which the smoke passes through a bowl of water. Where cigars are smoked, long thick ones should be selected and thrown away when half consumed. To reduce the quantity of tobacco, advise the patients to smoke only after each meal and just before going to bed. Postpone the after meal smoke until the last possible minute. The cigar before going to bed shortens a long evening and prevents a restless night.

In the degenerative stage of toxic neuritis, salicylate of sodium is the remedy *par excellence*. For stimulation in syncope, strychnine is ideal, and is also indicated in the regenerative stage.

For dyspepsia, give pepsin and hydrochloric acid; for capillary fibrosis, iodide of potassium. Excessive smokers should drink water freely.

*Dr. Louis Newcett, of New York, writes:*

The most frequent result of excessive smoking is tobacco heart. Tobacco should be stopped at once, or, if this is impossible, it should be used in markedly restricted quantity, so as not to produce harmful effects. In angina pectoris, stop tobacco. Angina due to tobacco, stops on its disuse. Sometimes it may be resumed in moderation, after the poisoning effects have worn off. It may be necessary to give a little strychnine, digitalis, or strophanthus. The bromides will allay irritability. The anginal attacks are treated in the usual way. For stimulation give camphor, aromatic spirits of ammonia, in the usual doses, also black coffee, the cold douche, massage, etc. If the tobacco is entirely stopped, and the patient receives digitalis, with careful advice as to eating, drinking, exertion, exercise and rest, with plenty of fresh air, such a heart will improve, acquire its normal tone, the mitral valve will again become sufficient, and to all intents and purposes the

patient will be well. Hydrotherapy is strongly indicated. Entire recovery, if there is no organic lesion, may be expected in from three to six months.

Another result of the excessive use of tobacco is the condition recently called the "circulatory renal complex," including partially or wholly the symptoms of arteriosclerosis, cardiac disease, and chronic interstitial nephritis. In this condition we must lessen the nervous tension and worry, and, if possible, advise travel and sea or country life. Outdoor recreations and occupations should be encouraged. Hot or warm baths at home or at spas are excellent sedatives. Massage, electricity, and active and passive motion are beneficial. The patient should rest frequently with at least eight hours in bed daily.

The diet should receive careful attention, and should be varied according to the habits and needs of the patient. Very little alcohol is allowed and then only in dilute forms as beer, light wines, or highballs occasionally. Avoid hot and irritating sauces and condiments. Salt is used in moderation. Tobacco is best abandoned, but it may be allowed in moderate amount in certain cases, provided that the blood pressure is closely watched during its use. Nitrogenous foods are limited, but each individual must be judged separately. For the anemia give fresh green vegetables. Water is encouraged except in dropsical conditions. In regard to tea, coffee, and cocoa, we must individualize. Sugar is desirable, except in glycosuria.

The drug treatment is symptomatic and meets six indications: 1. Of sedatives, the best are sodium and strontium bromides, which are used for temporary effect only. Physical and psychical methods are better. 2. To depress the blood pressure when hemorrhage occurs or threatens, use the nitrites or nitroglycerin, or venesection. For continued use, the iodides are best. 3. Circulatory stimulants—digitalis and strophanthus are the old standbys. 4. To facilitate digestion and absorption give symptomatic treatment. 5. To facilitate excretion, give diuretics and cathartics, of which the salines and chologogues are best. 6. For specific effects, potassium iodide is best. In luetics, give mercury and salvarsan. Iron tonics are given for the anemia, and antacids for gastric hyperacidity.

An easy and frequently effective method to overcome the habit of smoking is to chew gentian root between meals, and to rinse the mouth with a one fourth of one per cent. solution of silver nitrate, which causes a most repugnant taste in the mouth, and removes all desire to smoke.

Frequently, a double poisoning of tobacco and alcohol occurs. These are the most difficult cases to handle and are well treated by the Lambert method. The use of tobacco should be tapered off during the first twenty-four hours. As the first dose, give six drops of the belladonna mixture (consisting of 2 drams fifteen per cent. tincture of belladonna, extractum xanthoxyli fluidi and extractum hyoscyami fluidi, of each one ounce), also five compound cathartic pills and five grains of blue mass simultaneously.<sup>1</sup> Start with six drops of the belladonna

<sup>1</sup>Lambert begins his treatment with four compound cathartic pills, which he calls CC pills. His mixture consists of two ounces of the old fifteen per cent. tincture of belladonna, an ounce of fluid extract of xanthoxylum (prickly ash), and an ounce of fluid extract of hyoscyamus. The reader will note that he administers this in connection with morphine. See *Journal, A. M. A.*, September 17, 1909, and February 18, 1911.—EBS

mixture in capsules every hour for six hours. At the end of this time, increase the dose two drops until sixteen drops are taken, and continue at this dose until symptoms of belladonna poisoning appear, when it is diminished or discontinued. After these symptoms have subsided, begin again with reduced doses. Twelve hours after the initial dose, give three to five compound cathartic pills, and at the end of the twenty-fourth hour after the initial dose, give cathartics followed by salines if necessary, and again at the thirty-sixth hour. At the end of the forty-fifth hour, give two ounces of castor oil. If it is necessary to continue the treatment, give the cathartic pills and blue mass at the forty-eighth hour, ending the treatment at the sixtieth hour.

In addition to the foregoing general treatment, there are certain local conditions resulting from the abuse of tobacco. They are: 1. Amblyopia in which the patient must abstain entirely from tobacco and alcohol. Improve the general health. Strychnine is given by mouth or hypodermically, in increasing doses up to the limit of toleration. Potassium iodide may be used in alternating periods with the strychnine. 2. The ill effects of tobacco smoke upon existing diseases of the throat arising from other causes, are the same as those of any other form of irritant, and should be avoided. Chronic nasopharyngitis is often found, causing tickling, irritating, dry cough. Silver nitrate, twenty to thirty grains to the ounce, is serviceably applied once or twice a week, and milder solutions for daily use. Withdraw alcohol and tobacco entirely, and give tonic treatment. For chronic laryngitis, give attention to diet, hygiene and tonics, also stop all tobacco and alcohol. Locally, inhalations of oil of pine are good. Forbid use of the voice. After cleansing with alkaline solution, use sprays of silver nitrate, thirty grains to the ounce and upward. 3. Smokers' patches are found very often in luetics who smoke, and frequently in nonsmokers. This lesion retrogresses under mercury and iodide, or salvarsan and iodide treatment. Cleanliness of the mouth must be maintained together with the cessation of smoking and the removal of all sharp edged teeth. Apply ten per cent. tincture of iodine, and have the mouth rinsed ten to twelve times a day with one half to three per cent. saline solution. 4. In chronic superficial glossitis, withdraw hot food and condiments, and wash the mouth frequently with a solution of borax, ten grains to the ounce, especially after meals. 5. All irritable and infiltrated fissures, cracks, and wart-like projections should be considered precancerous lesions, and their early removal should be advised. 6. Carcinoma of the lip and tongue are also indirectly caused by the excessive use of tobacco, from the irritation of the pipe stem. Early surgical removal is the only hope in treatment. Every suspicious lesion such as ulcers, warty growths, indurations, etc., should be removed as early as possible. 7. In chronic constipation of the spastic variety, with mucous colitis, colic and diarrhea, tobacco should be interdicted, and the appropriate symptomatic treatment instituted. 8. In all diseases of the gastrointestinal tract, it is advisable to limit, if not forbid the use of tobacco. In gastric ulcer it should be absolutely stopped. 9. Systemic nervous disturb-

ances, such as muscular trembling, tremors, muscle cramps, and profuse perspiration of hands and feet, require withdrawal of tobacco.

In conclusion, the effects of excessive smoking, with the exception of the malignant lesions, will pass off with the avoidance of the excesses and the appropriate local treatment.

*Dr. McW. B. F. Sutton, of Brooklyn, observes:*

The treatment for excessive smoking is as yet in an experimental stage; nothing is yet known as an authentic curative. It must be considered under the headings: 1. Removal of the cause; 2, diet; 3, medicinal; 4, hydrotherapy and hygiene.

To remove the cause we must have sufficient will power, as the use of tobacco in all of its forms is nothing but a habit, the quantity used being increased till a large quantity is consumed.

Diet should be light, digestible, and nutritious, only a small amount of meat is permissible. The following articles are forbidden: Highly seasoned food or pickled meats or pickles, spices, pastry, sweets, coffee, tea, and alcoholic beverages. Keep the bowels regulated. A solution of silver nitrate one eighth of one per cent. as a mouth wash, three times a day, has been largely used. I have tried it and found it a good aid, but not curative.

In case the following symptoms arise, tachycardia, arrhythmia, or palpitation, order a cool spinal douche, 68° F., with force, followed by a hard friction rub on arising, and give the following:

|                                      |        |
|--------------------------------------|--------|
| R Fl. ex. veratri viridi, .....      | 3.00   |
| Potassii bromidi, .....              | 15.00  |
| Tr. nucis vomice, .....              | 30.00  |
| Syr. rubi idæi, .....                | .....  |
| Elix. digestivi comp., q. s. ad..... | 90.00. |

M. et sig.: One dram an hour before meals three times a day.

If there is a high tension pulse, add spiritus glycerylis nitratis, two grams to the foregoing prescription. In pyrosis, or irritable stomach, treat the cause. In general, a tonic of Fowler's solution, nux vomica, phosphoric acid, or iron will greatly aid.

In my experience, hydrotherapy is a great aid in the treatment of disease, and has not the place in therapy it should have.

*Dr. Melville A. Hays, of New York, remarks:*

The more important effects of excessive smoking are:

1. *Throat.* Inflammation of fauces and pharynx, producing a dry, glazed appearance, and accompanied by a short, dry, irritant cough.

2. *Vision.* Amblyopia and amaurosis of varying degree.

3. *Heart.* Cardiac irritability, shown by palpitation, tachycardia, dyspnea, etc.

4. *Gastric.* Coated tongue, impairment of sense of taste, and indigestion.

5. *Nervous system.* Nervous irritability, insomnia, trembling, diminished sexual power, and, in some cases, more or less actual paralysis.

At the beginning of treatment, the use of tobacco in any form is to be absolutely prohibited if success is to be attained. As an antagonist to the effects of tobacco, strychnine is the supreme remedy, the best results being obtained by use of tincture of nux vomica in doses of fifteen to twenty minims three

times a day; this will clear up the ophthalmic, cardiac, and nervous symptoms. For a few days it may be necessary to give an occasional dose of sodium bromide for unusual nervous symptoms. For the gastric symptoms, a combination of the nuxvomica with compound tincture of gentian will be found of great benefit, the bowels being regulated, and the mouth and tongue cleansed daily with a saturated solution of boric acid. For the throat condition it will be necessary to make frequent applications of a strong solution ten to twenty per cent. of silver nitrate and employ an astringent gargle; in most cases, the cough will cease as the inflammation responds to treatment, but in some cases the temporary use of a sedative cough mixture will be found necessary.

It is necessary firmly to impress upon the patient the fact that his distressing symptoms will all return if he again takes up the use of tobacco.

### Therapeutic Notes.

**Intravenous and Intramuscular Administration of Diphtheria Antitoxin.**—Borden S. Veeder, in the *Journal of the Missouri State Medical Association* for April, 1915, calling attention to the pronounced difference in mortality in diphtheria according to the day of the disease on which antitoxin is administered, lays stress on the fact that, for best results, it is necessary to get the remedy into the bloodstream as rapidly as possible in a high degree of concentration. Morgenroth having ascertained that four or five hours after injection there is five to twenty times as much antitoxin in the blood after intramuscular as after subcutaneous injection, the former route is manifestly the one to be preferred. By intravenous or intramuscular injection a high concentration of antitoxin in the bloodstream is soon attained, whereas upon subcutaneous use the maximum effect is not reached for three or four days.

In the past three years the author has used both the former methods extensively in a group of cases selected for their severity, a large percentage being septic or having laryngeal involvement. In nearly all the laryngeal and some of the more severe pharyngeal cases from 2,000 to 5,000 units were given intravenously. An antitoxin of high concentration—1,200 to 1,400 units per c. c.—was used. It was diluted one to four, heated to body temperature, and injected into any available vein with an ordinary glass syringe—in fat babies, directly into the external jugular. A chill and fever followed the injection in a number of instances, but the temperature had always fallen to normal by the next day. The membrane appeared to slough off more rapidly after the intravenous than after the subcutaneous injections. Intramuscular injections into the spinal or gluteal muscles, however, proved almost as effective as the intravenous, and, the reaction being much less severe than with the intravenous route, and the injections apparently no more painful than those given subcutaneously, intramuscular administration was soon adopted as the routine procedure. The author's present practice is to give all patients

with clinical diphtheria antitoxin regardless of whether or not a culture has been taken. In mild or moderately severe cases from 3,000 to 5,000 units are given intramuscularly. In all severe or septic cases, and in cases with laryngeal involvement, 5,000 units are given intravenously. In addition, all cases seen late (fourth day) are given the antitoxin intravenously if the membrane is extensive. From his experience with the procedures referred to, Veeder is convinced that 2,000 to 5,000 units given intramuscularly or intravenously will cure any case of diphtheria in which the lethal dose of toxin has not already been absorbed at the time of injection. Larger doses are unnecessary by these routes, the results when 10,000 units were given as a routine dose having been in no way different from those witnessed after the smaller amounts mentioned.

### Vaccine Treatment of Pyocyanus Infection.

Dalimier and Danysz, in *Bulletin de l'Académie de médecine* for January 12, 1915, it is stated have used with success an autogenous vaccine in the treatment of deep infections by *Bacillus pyocyanus*. Infection by the blue pus bacillus can readily be overcome when limited to surfaces where antiseptics can be applied, but there is frequently difficulty in subduing such infection in cases of deep wounds with hidden, inaccessible foci. In such instances the condition may drag on for weeks and months, and the continued febrile state greatly weakens the patients.

The vaccine used by Dalimier and Danysz was prepared by the latter, and consisted of a twenty to twenty-four hour culture on agar, suspended in distilled water and heated to 60° C. for an hour. The culture is not a pure one, but contains ninety to ninety-nine per cent. of the pyocyanus organism. The nature of the other bacteria present may vary greatly in different cases, and it is therefore important to prepare a special autogenous vaccine for each patient, in order that he may be vaccinated precisely against the species of bacteria infecting his wounds. Seven to eight injections of one c. c. (16 minims) of the vaccine, administered at intervals of two or three days, were observed completely to arrest the pyocyanic infection and cause the temperature to drop to normal.

**Treatment of Diabetes insipidus.**—R. Fitz, in the *Archives of Internal Medicine* for November, 1914, recommends that cases of diabetes insipidus be treated not only for syphilis if it exists, but also by dietetic measures corresponding to the excretory capacity of the kidneys. A bland—though sufficiently nourishing—diet which will not excite a violent polyuria should be ordered. In a case reported by Fitz, the best therapeutic results were obtained by giving the patient food containing relatively small amounts of sodium chloride and nitrogen. The patient had a restricted diet for a considerable period, then was allowed to eat anything he chose for three days. The results of this change of diet were so striking that the patient himself noticed them and asked to be given his previous diet. An acute infection with fever—sometimes beneficial in diabetes insipidus—and a lumbar puncture exerted no favorable action on the symptoms in this case.



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CHARLES E. DE M. SAJOUS, M. D., LL. D., Sc. D.

CLAUDE L. WHEELER, A. B., M. D.

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## UNIMPORTANT CARDIAC PHENOMENA.

Sir James Mackenzie writes to the *British Medical Journal* for October 16, 1915, that because of the number of healthy young men he has seen rejected as recruits by inexperienced medical examiners, he has drawn up, with the approval of the War Office, a memorandum on the subject. We may summarize the memorandum as follows:

It should be understood that the healthy heart in the young can exhibit murmurs, and variations in rate and rhythm, which are perfectly physiological in origin and indicative neither of disease nor of impairment. Before examining the heart, find out the functional efficiency by ascertaining how it responds to effort. This is shown by finding out the amount of exertion the candidate has been accustomed to take in the past in his work or play, and if he can undergo severe bodily exertion without distress.

The physiological murmurs are always systolic in time, and the situation of the greatest intensity may be at the apex, midsternum, or base of the heart. If the candidate's response to effort is normal, and the heart normal in size, the murmur is negligible, for it is manifest that, if the cause which produces the murmur hampers or embarrasses the heart in its work, the size of the embarrassed chamber will increase, and its functional efficiency will be impaired.

There are only two forms of irregularity that need be considered. Irregularities indicating serious mischief will be associated with such diminution of the functional efficiency that the candidate would not seek to recruit—such as the irregularity of auricular fibrillation or of heart block. The most common irregularity is that which occurs in the healthy heart of the young. It is characterized by a lengthening and shortening of the pauses between the beats; it will often be found to vary with the respiration, the beat increasing in rate during inspiration and decreasing during expiration. When it does not have the characteristic respiratory character it can be made to take on the character by getting the candidate to breathe slowly and deeply for a few minutes. It is frequent in perfectly healthy hearts, and is therefore of no importance, and candidates should not be rejected on account of its presence.

In rare cases the pulse may be found intermittent more or less frequently. If the heart is auscultated, two short sharp sounds rapidly following one on the other may be heard during the pause. If this is the only sign present—that is, if the functional efficiency of the heart is good and the size normal—then these extrasystoles are of no significance and the candidate should not be rejected.

Many candidates whose hearts are perfectly healthy suffer from palpitation or excited action of the heart during examination. The beat becomes forcible and rapid and a systolic murmur may be present. If such a candidate is told to lie down and breathe slowly and deeply for a few minutes the heart's action becomes less violent and the rate slows during expiration. With a history of good functional efficiency the candidate may be considered suitable for enlistment.

TREATMENT OF ASPHYXIATING GAS  
POISONING.

Rathery and Michel, in *Paris médical* for October 16, 1915, after detailing the symptoms of the soldiers who came under their care suffering from asphyxiation due to the gases used in the German attack on the French trenches, and writing on the pathology of the condition, describe the treatment. Most of the patients were in need of prompt and energetic measures, and in the most severe cases bleeding was undertaken; cases less urgent were treated with the scarifying cupping glass. At the same time large doses of camphorated and etherized oil were given hypodermically along with strychnine and sparteine sulphates. Subsequently the local treatment comprised cupping and mustard plasters. Excellent results were obtained both as to comfort

of the patients and in checking the symptoms of bronchitis and congestion by application of the cold pack, renewed every three hours. Medicinal agents given in the hope of checking cough were not very satisfactory, but fair results were obtained from belladonna and atropine associated with eucalyptolized inhalations. Atropine, much used by the French in twenty to thirty drop doses for bronchitis, laryngitis, etc., is a product of the action of sodium on a mixture of alcohol and chloroform.

Subcutaneous injections of oxygen proved in the writers' hands the best of remedies. No special apparatus was used, the gas obtained from a rubber balloon being simply filtered through cotton. Injections were made in the region of the hip and the gas was absorbed in from three to six hours. Two or three injections were made daily.

A milk diet was instituted. Adrenaline was injected and capsules of powdered suprarenal extract were exhibited; this treatment proved valuable where the asthenia was marked. Convalescence was usually slow, the patients being pale and suffering from anorexia and general fatigue; they were helped by subcutaneous injections of sodium cacodylate.

#### HAS WAR ANY ADVANTAGES?

The only apparent redeeming feature of the present war is the work of the physicians and nurses; and yet their labor seems pitiful and absurd, for they are engaged in picking out, from the scrap heap of fine body machines, those which are not beyond repair, and in returning to the front as many as possible of these for future destruction.

To those who believe that there is a wise purpose running through the universe, and that everything that happens has a meaning, the phenomenon of war seems to have no place; and yet it is hardly believable that war, with all its horrors, does not serve some purpose in the general scheme of things.

The destruction of fine physique by war has seemed, by all ordinary human standards of measurement, wrong; the preservation of the feeble and sickly, as accomplished by modern medicine, has also, judged by a similar standard, seemed to be bad policy; but, if there is a purpose in it all, both must be for the best. Certainly both tend toward the same end, and if one is good in the long run, the other must be so.

Following this lead, the purpose of war as established by and continued by Nature, would seem to be the production of a race of beings less robust in body, though this does not mean that they are less persistent or short lived, and one in which the bodily energies are directed toward mental develop-

ment. Whether or not war is for this purpose, the development in peaceful pursuits tends in this direction. The inventions of machinery for work and for getting about, are making constantly for sedentariness and diminished muscularity, and mankind takes with apparent readiness to a change in this direction.

If war has any real biological purpose, it must, therefore, be intended for the end of bringing about a new type of man in which the combative qualities that make for war are being gradually done away with, and the elements which make for peace are being steadily brought forward. If there is any theory which will make war a good thing and will reconcile the work of bullet and splint, it would seem to be this. If these two factors are to produce, some day, a type of man who will be so peaceable and so wise as not to care to go to war, but content to settle his differences in milder ways, then we could perhaps become reconciled to the present struggle.

#### SOME EFFECTS OF TYPHOID VACCINATION.

It is a matter of common knowledge that the introduction of antityphoid inoculation into our army was followed by a phenomenal reduction in both morbidity and mortality from typhoid fever. This fact has also been observed in the armies of other nations. The results have been so spectacular and so convincing that many of us have almost been ready to believe that prophylactic inoculation could be regarded as an absolute protection against the disease within certain limits of time. The fact was largely overlooked, however, that these results were secured in a limited class of men and in times of peace, and that other elements, such as sanitation and lack of extensive exposure, might have a decided influence on the results.

Since the outbreak of the European war reports have tended to cast doubt on the absolute efficacy of prophylactic inoculation, for cases are appearing in "protected" men in considerable numbers. The cause for this apparent failure of vaccination in a small proportion of the men is not far to seek, for it is evident that there has been but one essential alteration in the conditions, namely, the fact that exposure to infection has been enormously increased so that there has been much more chance of heavy infection and of the breaking down of partial immunity. That this is the explanation seems to be confirmed by a recent study of the cases of typhoid which occurred in inoculated persons in the civil community in one of our States. It was found that the vast majority of vaccinated persons in whom the disease developed had been engaged in occupations

which exposed them for long periods of time to heavy infection.

We must not draw from these facts the conclusion that prophylactic inoculation is useless or of limited value, but rather that it has proved of very great value in that the numbers of vaccinated persons contracting the disease under conditions of great exposure are relatively so small. It is conceivable that if the practice of protective vaccination were made general and compulsory the likelihood of severe exposure would be almost entirely removed, even under the exacting and abnormal conditions of war.

Another fact which has emerged from the opportunity to study cases of the disease in vaccinated persons is that, while the course is generally much milder than in the unvaccinated, there is a much greater tendency to true relapse among the former group. Again, confirmation is to be found for this statement, for MacGillcuddy, in the *Lancet* for September 25, 1915, observed that the treatment of typhoid fever with vaccines reduced the severity of the disease in many cases, but that in these there was a greatly increased tendency toward relapse. It is gratifying to note that all observers agree that these relapses are usually mild, seldom fatal, and of little serious moment.

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#### PATHOGENESIS OF THE HEMOLYTIC SYNDROME IN THE HEPATIC CIRRHOSIS.

A study of the blood changes in hepatic cirrhosis suggests the following considerations: The icterogenous hemolytic syndrome arising during cirrhosis of the liver is similar to certain forms of intoxication. Consider what takes place when toluenediamin is introduced into the organism. Immediately after a subcutaneous injection of this substance a certain quantity of red blood corpuscles is destroyed, although there is no globular fragility, granular red cells, nor hemolysins; at the same time a slight biliary pleochroism is noted.

The blood soon tends to repair its slight loss and the disease appears to evolve toward cure; but slowly, even in a few days, a second stage of intoxication becomes manifest. The biliary pleochroism increases in vast proportions, icterus is usually evident, and traces of biliary acid are absent. Deglobulization and a decrease in hemoglobin are intense. Fragile and granulos filamentous red cells, and sometimes hemolysins, are met with and hemolytic icterus is installed by a secondary reaction of the organism, the body having acquired hemolytic properties; the toxin has injured the majority of the red cells, but only a small number have been

sufficiently involved to be instantly destroyed. However, the others have lost their vitality, their structure is changed, and they slowly die. Thus the presence of hyperfragile red cells is explained. Let it be remarked that if in the future it can be demonstrated that the red cells have fixed a little of the poison it will have to be admitted that each red cell destroyed liberates this poison and thus poisons the new blood cells. This repeated and massive destruction of the red corpuscles shows the intensity of repair attested by the great number of granular red corpuscles.

Whether or not the hemolysins are the factors or the consequences of hemolysis, it is generally admitted that the lysins attack the normal corpuscles, but it may be quite as logical to admit that the organism manufactures hemolysins in order more quickly to free itself of the diseased blood cells. The hemolysin, no matter how complex, thus appears as a kind of ferment of blood digestion. Consequently, it is the added hemolyzing intoxication which indirectly produces the appearance of the hemolytic icterus in hepatic cirrhosis.

There is no doubt as to the hemolyzing intoxication, because the hemolytic syndrome always occurs at the same time as the serious infection. A special microbe is not in play, but many organisms are capable of realizing the hemolytic syndrome. There is no essential difference between infectious hemolytic icterus and the hemolytic icterus of hepatic cirrhoses. Undoubtedly, in these cases, the pathogenic agent more easily determines the hemolysis because it finds a soil already prepared for its reception. The liver is diseased, the blood already pathogenically changed, while several other viscera, such as the spleen, are seriously involved.

The hemolytic syndrome appears as a fortuitous complication, usually toward the close of the processes, is the result of a septicemia grafted upon the original malady, and is clearly favored by the precarious condition of the viscera, particularly of the spleen.

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#### ABORTION IN CALIFORNIA.

According to the *Southern California Practitioner* for October, 1915, the abortionist will soon have a hard road to travel in that State. Every practitioner is applied to by a woman to have a criminal operation performed. He refuses and a few days later she sends for him and he finds her with a hemorrhage or with an abnormal temperature and probably an offensive discharge. He then finds curettage and careful attention necessary. Who did the criminal work? As a rule he considers that none of his business. Usually he asks no questions, and devotes himself to giving the woman skillful attention.

California is now making it the duty of the ethical



physician to assist in apprehending the abortionist. A graduate nurse with offices in Los Angeles is now employed as State medical inspector for Southern California, to ferret out these cases. She merits the assistance of the medical profession. She will protect the innocent and do all she can to make criminal work dangerous.

### Obituary.

GEORGE MILLER STERNBERG, M. D., LL. D.,  
of Washington, D. C.

Doctor Sternberg, Brigadier General, U. S. A., died on November 3, 1915, at his home in Washington. He was born in Otsego county, N. Y., in June, 1838, and received his preliminary education at Hartwick Seminary. He obtained his M. D. at the College of Physicians and Surgeons (Columbia University) in 1860; and received an honorary LL. D. at the University of Michigan in 1894, and from Brown University in 1896. He was appointed assistant surgeon, U. S. A., in 1861; captain assistant surgeon in 1866; major surgeon in 1875; lieutenant colonel deputy surgeon general in 1891; brigadier general surgeon general in 1893; he retired on June 8, 1902. His service began in the army of the Potomac, and he was later in the department of the Gulf; at the end of the Civil War he was in charge of the U. S. General Hospital at Cleveland. He served through several cholera and yellow fever epidemics; had command of medical service in the war with Spain, in 1898; was secretary of the Havana Yellow Fever Commission in 1879. In 1898 he was president of the American Medical Association. General Sternberg was the author of *Photomicrographs, and How to Make Them*; *Bacteria*; *Malaria and Malarial Diseases*; *Manual of Bacteriology*; *Immunity, Protective Inoculations, and Serum Therapy*; and of many government reports. One of his most noteworthy achievements was the establishment of the Army Medical School at Washington, which has rendered notable service by its special courses and many unique features. During the Spanish war he established general hospitals at Key West, Fort Thomas, Ky., and Fort McPherson, Ga.; Fort Monroe, Va.; Fort Myer, Washington Barracks, and San Francisco, and upon his recommendation two hospital ships were purchased and equipped. All surgeons of volunteers and contract surgeons were appointed under his personal supervision, and he organized the female nurse corps and the corps of dental surgeons. He issued a circular on the danger of typhoid in camps and organized a board of control, with Major Walter Reed as chairman. He created the Yellow Fever Commission of 1900, with Major Reed and Doctor Carroll, Doctor Lazear, and Doctor Agramonte as members.

JOHN HENRY HUDDLESTON, A. M., M. D.,

OF NEW YORK.

Doctor Huddleston died at his home, 145 West Seventy-eighth Street, on October 30th, of pneumonia, in his fifty-second year. He was born in Boston, July 10, 1864, and was educated at Boston

Latin School and at Harvard University, where he took the bachelor's degree in 1886, and the master's in arts, and the doctor's in medicine in 1891. He began practice in New York the following year and in 1895 was captain surgeon in the Seventh Regiment N. G.; in 1902 he was Carpenter lecturer in the Academy of Medicine; in 1903 he was elected secretary of the American committee of the fourteenth International Medical Congress at Madrid. Doctor Huddleston was a director of one of the large life insurance companies, and, owing to his work in the prevention of tuberculosis, was appointed by Governor Hughes a trustee of the State Hospital at Raybrook. Among other hospital appointments, he was visiting physician at Gouverneur and Willard Parker Hospitals and consulting physician at the United Hospital at Port Chester. He was permanent secretary of his class at Harvard, and a member of numerous clubs and medical organizations.

### News Items.

**Changes of Address.**—Dr. Jacob Gutman, to 867 St. Marks Avenue, Brooklyn, N. Y.

**American Relief for Belgian Physicians.**—During the week ending October 30, 1915, Dr. F. F. Simpson, of Pittsburgh, treasurer of the Committee of American Physicians for the Aid of the Belgian Profession, received a contribution of \$5 from Dr. J. Shelton Horsley, of Richmond, which is Doctor Horsley's second contribution to the fund. The total amount received by the committee is \$7,781.84; total disbursements, \$7,310.04, leaving a balance on hand of \$501.80.

**Mississippi Valley Medical Association.**—The following officers were elected at the forty-first annual meeting of this association, held in Lexington, Ky., under the presidency of Dr. Hugh Cabot, of Boston: President, Dr. Willard J. Stone, of Toledo, Ohio; first vice-president, Dr. Channing W. Barrett, of Chicago; second vice-president, Dr. Carl Lewis Wheeler, of Lexington, Ky.; secretary, Dr. Henry Enos Tuley, of Louisville, Ky. (reelected); treasurer, Dr. S. C. Stanton, of Chicago (reelected). Next year's meeting will be held in Indianapolis.

**Faculty Changes at Temple University.**—The following changes in the medical faculty of Temple University, Philadelphia, have been announced: Dr. J. Madison Taylor has been elected professor of pediatrics; Dr. H. Brooker Mills, having resigned as assistant professor of pediatrics in the Medico-Chirurgical College, has been appointed clinical professor of pediatrics at Temple University and pediatricist to the Samaritan and Garretson Hospitals. Dr. L. Norman Grahn and Dr. M. T. Boobe have been appointed instructors in pediatrics.

**Red Cross Hospital Changes Its Name.**—An order has been signed by a justice of the Supreme Court granting the New York Red Cross Hospital, at 100th Street and Central Park West, permission to change its name to the Park Hospital. The president of the hospital board, in presenting the petition, stated that the hospital had been founded in 1894 as a branch of the National Red Cross, but that the institution no longer trained nurses and physicians for service in war time. The former name of the hospital was therefore misleading.

**Doctor Codman Honored.**—A dinner in honor of Dr. C. A. E. Codman, of Philadelphia, president-elect of the Medical Society of the State of Pennsylvania, was given by the West Philadelphia Medical Society on the evening of October 26th. Over one hundred Philadelphia physicians were present. Dr. John Welsh Crokey, president of the West Philadelphia Medical Society, acted as toastmaster, and among those who spoke were Dr. John B. McAllister, of Harrisburg, president of the State society; Dr. E. E. Montgomery, of Philadelphia, president of the Philadelphia County Medical Society, Dr. McCluney Radcliffe, president of the Medical Club, and Dr. Judson Daland.

**The Medical Association of the Southwest** held its tenth annual meeting in Oklahoma City, Okla., on October 11th, 12th, and 13th, under the presidency of Dr. Jefferson D. Griffith, of Kansas City, Mo. The following officers were elected: President, Dr. Joseph D. Beeton, of Greenville, Texas; vice-president, Dr. Edward H. Martin, of Hot Springs, Ark.; secretary-treasurer, Dr. Fred H. Clark, of El Reno, Okla. The next meeting of the association will be held in Fort Smith, Ark.

**New Officers of the Clinical Congress of Surgeons.**—Dr. Fred B. Lund, of Boston, was elected president of the congress at the sixth annual meeting held in Boston last week, and other officers were elected as follows: Dr. Jasper Halpenny, of Winnipeg, Canada, first vice-president; Dr. S. M. D. Clark, of New Orleans, second vice-president; Dr. Franklin H. Martin, of Chicago, reelected secretary; Dr. A. B. Kanavel, of Chicago, reelected treasurer, and Mr. A. D. Ballou reelected general manager. Next year's congress will be held in Philadelphia.

**The Week's Death Rate in New York.**—During the last week of Commissioner Goldwater's administration there were 1,194 deaths in the city of New York, and a death rate of 10.73 per 1,000 of the population, compared with 1,134 deaths and a rate of 10.60 in the corresponding week of 1914, an increase of sixty deaths and of 0.13 point in the rate. According to the health department's statistician, there was a decrease of 50 per cent. in the death rate from diphtheria and croup, and an increase of about 10 per cent. in the acute respiratory diseases. The mortality from the remaining causes was about the same as that of last year.

The death rate from the first of January to date was 13.18 per 1,000 of the population, compared with a rate of 13.59 during the corresponding period in 1915, a decrease of 0.41 point.

**Personal.**—Dr. John F. Anderson has resigned as director of the Hygienic Laboratory of the United States Public Health Service and Dr. George F. McCoy has been appointed to succeed him. Surgeon McCoy, at present stationed at Molokai, Hawaiian Islands, in charge of the government's leprosy investigation station, has been ordered to Washington to assume his new duties immediately.

Dr. Theodore C. Janeway, professor of medicine in the Johns Hopkins University, Baltimore, delivered an address on the Management of Patients with Chronic Renal Disease, at the New York Academy of Medicine, Thursday evening, November 4th.

Dr. John C. Donaldson, of Baltimore, has been appointed instructor in anatomy at the University of Cincinnati. Dr. Edward F. Malone has been advanced to be associate professor of anatomy in the same institution.

Dr. Thomas L. Patterson, for the past three years associate professor of biology and physiology in the University of Maryland, recently assumed the duties of assistant professor of physiology at Queen's University, Kingston, Canada.

**The Sherley Amendment Constitutional.**—The United States District Court for the Eastern District of Pennsylvania, in a case reported in the October 8th issue of *Public Health Reports*, has decided that the Sherley amendment to the United States food and drugs act is constitutional. This amendment makes it unlawful to print on the package or label of any drug false and fraudulent statements regarding its curative or therapeutic effects. In the case reported the defendant was charged with misbranding a proprietary medicine, and with making false and fraudulent statements as to the curative properties of the remedy. The defense denied that the remedy was misbranded or that the label was calculated to mislead purchasers as to the composition or ingredients of the drug. It was also asserted that the statements relative to the curative properties of the drug were honestly made, that they were expressions of opinion, and that the defendant could not be convicted of crime merely because an opinion was expressed regarding the effects of the drug which differed from that of most physicians. The court held that the two questions, 1, whether the name and label were such as to mislead purchasers respecting the composition of the drug, and, 2, whether the statements regarding the curative properties of the drug were false and fraudulent, were both questions of fact which it was the duty of the jury to decide. The jury having decided both questions in the affirmative the conviction of the defendant was sustained.

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Monday, November 8th, Aid Association of the County Medical Society (annual), Samaritan Hospital Clinical Society; Tuesday, November 9th, Union Meeting of Pediatric Societies, Wills Hospital Ophthalmic Society, Medical Examiners' Association; Wednesday, November 10th, County Medical Society, American Association for the Study and Prevention of Infant Mortality (November 10th to 12th); Thursday, November 11th, Polyclinic Ophthalmic Society, Pathological Society; Friday, November 12th, Northern Medical Association, Psychiatric Society.

**American College of Surgeons.**—At the annual convocation, held in Boston, Friday evening, October 29th, about 450 additional surgeons were admitted and honorary fellowships were awarded to Dr. D. W. Cheever, professor emeritus of surgery at Harvard University; Dr. Wilfred T. Grenfell, of Labrador; Dr. Stephen Smith, of the New York State Board of Health, and Dr. Lewis McL. Tiffany, of Baltimore. The officers were all reelected, as follows: Dr. J. M. T. Finney, of Baltimore, president; Dr. W. W. Chipman, of Montreal, first vice-president; Dr. Rudolph Matas, of New Orleans, second vice-president; Dr. Albert J. Ochsner, of Chicago, treasurer; Dr. Franklin H. Martin, of Chicago, secretary; Dr. John G. Bowman, of Chicago, director. About \$100,000 was added to the endowment fund of the college, which now amounts to nearly half a million dollars. It is the purpose of the organization to establish a great medical library and museum, and to raise the standard of surgical training in the medical schools of this country.

**Dr. S. S. Goldwater Retires from the Department of Health.**—After less than two years of intensive and devoted service to the cause of health administration, Dr. S. S. Goldwater has resigned his position as Commissioner of Health to resume the superintendency of Mt. Sinai Hospital. During his all too brief administration, many important reforms have been inaugurated at the department of health, prominent among which may be mentioned:

Placing most of the important supervisory positions on a full time basis, with a corresponding increase in the salary attaching to the positions.

Establishing a Bureau of Public Health Education under a director chosen as the result of an open competitive examination, and insisting on education as an indispensable factor in public health administration.

Establishing a Division of Industrial Hygiene, thereby properly claiming as a health department function, an important but hitherto neglected field of public health activity.

Establishing a Division of Statistical Research, by readjustment of existing positions within the Bureau of Records.

Revision of the Sanitary Code and formulation of a complete set of regulations thereunder.

Advancing the work of school medical inspection by providing that private physicians may make the required physical examinations.

Broadening the application of the dog muzzling ordinance and thereby reducing the prevalence of dog bites and the number of rabid animals in this city.

Waging a persistent campaign against fraudulent patent medicines and securing the adoption of an ordinance providing that the names of the ingredients be printed on the label of all nostrums in this city.

Providing for the regular annual physical examination of all employees of the department of health.

Reorganizing the Bureau of Foods and Drugs and placing at its head a recognized authority in this field, chosen as the result of an open competitive examination.

Inaugurating a campaign of education against the use of alcohol as a beverage.

Insisting on the recognition, as a menace to health, of overcrowding in the street cars, and compelling the street railway companies to provide the service needed to the limit of their capacity.

As a firm disciplinarian, the retiring commissioner held the respect and esteem of all in the department through his democratic spirit, his frankness, the exercise of strict justice, and the recognition on the part of his subordinates of his keen understanding of the problems to be solved.

The *Weekly Bulletin*, from which we take the foregoing, is deeply indebted to the retiring commissioner, not only for many valuable articles from his pen, but also for his interest and unflinching efforts to promote its success. The *Bulletin* hopes that this interest will continue and that it may continue to receive articles from its distinguished contributing editor.

Dr. Haven Emerson, until now Deputy Commissioner and Sanitary Superintendent, who succeeds to the commissionership, is in full accord with the aims and policies of the retiring commissioner and enters on his new duties with the best wishes, not only of the entire department of health, but also with all interested in the cause of public health.

## Pith of Current Literature.

PRESSE MÉDICALE.

August 30, 1915.

## MEDIZINISCHE KLINIK.

September 1, 1915.

**Typhoid Fever**, by Von Hecker and C. Hirsch.

The reduction of the temperature is not the chief indication for treatment as has been thought in the past, and all measures directed toward reducing the temperature are fraught with serious danger of collapse. The enzymatic and absorptive powers of the intestinal tract are reduced; great attention should be given to diet, one which is suitable and readily digestible, and which yet supplies forty calories to the kilogram of body weight daily. Eggs, milk, broths, gruels and cereals should form the chief elements of food. In severe toxic cases, the repeated administration of normal salt solution by hypodermoclysis is of great value. In patients with marked inanition, the administration of relatively large amounts of salt along with the food leads to a rapid gain in weight. It is important in diagnosis to bear in mind that, since the introduction of antityphoid inoculation, there are many cases of typhoid in which it is not possible to obtain positive blood cultures early in the disease. This is probably due to the presence of a sufficient amount of antibodies at that time to keep the blood relatively sterile.

**Paralysis of the Abdominal Muscles in Poliomyelitis**, by Kurt Halbey.—In poliomyelitis there may occur isolated paralysis of one of the abdominal muscles, or paralysis of these muscles associated with muscular paralysis in one or more of the extremities. Paralysis of the abdominal muscles involved either the rectus or the transverse or oblique muscles, or its was restricted to single segments of these muscles. Several segments of the abdominal muscles are separately represented in the segments of the cord. Such abdominal paralyses often produced a condition simulating abdominal hernia, but which was not in the true sense a hernia, being merely a diffuse or restricted bulging of the abdominal wall in the paralyzed region.

**Treatment of Cerebrospinal Meningitis with Large Doses of Serum**, by Marie Kurák.—From 1902 to 1915, seventy-five cases were treated, thirty-two of which received the usual doses of serum. Of those receiving no serum, sixty-nine per cent. died and thirty-one per cent. recovered; only fifteen per cent., however, without symptoms of the disease. Of the injected group, fifty-six per cent. recovered, thirty-nine per cent. without residual lesions. Analyzing twenty cases recently treated with serum injections, it was found that four of seven patients died after treatment with total amounts of serum up to sixty c. c.; two of seven died in the group which received up to 140 c. c. of serum; and all six cases receiving from 160 to 300 c. c. of serum recovered. The conclusion was that the best results were to be secured from the early institution of serum treatment and the administration of three or four consecutive doses of forty c. c. intraspinally as many doses of the same size given simultaneously into the muscles. This method gave both a much lower mortality and a much diminished tendency toward the persistence of residual lesions.

**Dissociated Symptoms in Traumatic Injuries of Large Nerve Trunks**, by MM. Déjerine, Déjerine, and Mouzon.—Most nerve trunk injuries by projectiles give rise to dissociated symptoms because of unequal involvement of the various fibres constituting the nerve at the point injured. The evidences of dissociation oftenest met with include: 1. Inequality of paralysis, noticed when the muscles supplied by the injured nerve are studied one by one in active and passive movement, as well as through palpation during resisted movements; 2, inequality of disturbances of tonicity, frequently revealed by careful observation of the position in which the limb is held by the patient; 3, inequality of the reaction of degeneration, and, 4, the location of the area of greatest sensory impairment, which may be restricted to one or a few of the cutaneous fasciculi of the nerve, comparison being carefully made with the area of greatest sensory impairment commonly observed in complete interruption of the nerve. As for treatment, in partial nerve compression or irritation, the operative indications are the same as in complete compression or irritation, intervention around—and not in—the nerve being alone advisable. In partial nerve interruption, the indications vary with the extent of injury found on exploration and the results of the preliminary functional examination of the nerve. Where but few fasciculi have been spared, the hardened tissues should be excised and the whole nerve sutured. Where the fasciculi presumably in a condition of complete interruption are of but little functional importance, nothing should be done directly to the tissue of the nerve. Where some important fasciculi are interrupted and other important ones unaffected, the keloid tissue at the site of interruption should be enucleated and the interrupted nerve tissue sutured, the unaffected fibres being left intact as a lateral loop.

## RIFORMA MEDICA.

October 9, 1915.

**Quinine Treatment of Febricula**, by G. Rummo and L. Ferrannini.—The success obtained by Queirolo in the treatment of the common polymorphous fevers with quinine cannot be explained by any of the well known properties of the drug such as its antipyretic, nerve, and heart tonic, or specific antimalarial action. The theory that there was produced through antiseptic and antitoxic action a change in the blood unfavorable to the causative organism prompted the writers to test the bactericidal power of solutions of quinine on broth cultures of the more common organisms of the typhoid colon family. They found this action most marked on *Bacillus paratyphoid B* and least marked on the typhoid bacillus. The daily dose of quinine should be one to one and a half gram given hypodermically.

**Pneumococcic Emyema and Peritonitis**, by L. Della Valle.—Many cases of appendicular peritonitis are due to the pneumococcus and are of a high virulence and mortality. A case is reported in a girl of seven years with the rather rare sequence of measles, pneumonia, empyema and pneumococcic



peritonitis, where laparotomy was followed by recovery. The empyema cleared up rapidly after aspiration.

#### ROUSSKY VRATCH.

July 11, 1915.

**Nine Cases of Splenectomy of Displaced Spleen,** by V. P. Zhilinskaja.—The author discusses the question of displacement of the spleen and reports nine cases in which the spleen was removed on account of severe symptoms which the ectopic and enlarged organ produced. In one case the spleen was large and displaced to the right side of the abdomen. It weighed on removal 800 grams. The patient, a woman aged twenty-two years, recovered from the operation, but died two years later from pulmonary tuberculosis. In the second case, the patient, a woman aged forty-two years, suffered from an enlarged spleen with a twisted pedicle. The organ on removal weighed 1,200 grams. In case three, the spleen occupied the entire abdomen. It weighed on removal 2,000 grams. The patient recovered. A still larger spleen was removed from a woman aged thirty years, the organ weighing 2,200 grams. Recovery followed. The other patients were also women, aged thirty, forty-five, thirty-two, twenty, and twenty-five years. The more frequent occurrence of this condition among women is thus emphasized and is attributed to relaxation of abdominal viscera to which this sex is particularly liable.

**Chemotherapy of Fibrinous Pneumonia,** by L. F. Dmitrenko.—The author employed intravenous injections of optoquinine in seventeen cases of croupous pneumonia of moderate severity. Analysis of the results shows that the drug has no immunizing effect on pneumonia, as contended by Morgenroth and Levy. In fact, the crisis appeared later and resolution was slower in the cases treated with the quinine derivative. Added to this is the marked reaction and occasional local necrosis which speak strongly against this remedy.

**Foreign Body in the Bronchi for a Number of Years,** by V. I. Telegi.—The author reports a case of a man, twenty-nine years old, who, while taking a long breath, inhaled a small nut, which found its way into one of the smaller bronchi and was coughed up six years later. On examination, the man was found to be suffering from pulmonary tuberculosis, which eventually caused his death.

July 18, 1915.

**Pathological and Anatomical Changes in Cadavers of Persons Who Succumbed to Asphyxiating Gases,** by I. F. Pozharisky.—The author reports his findings in forty autopsies on soldiers who died from the effects of asphyxiating gases. The anatomical changes, he found, depend on the amount of gas inhaled and the time the victim has survived. Twelve hours after inhalation there is evidence of irritation of the bronchi and bronchioles, marked edema of the lungs and partial atelectasis. Changes are observed in the elements of the blood, particularly the Eizzozzero plates, and also the endothelium of the vessel walls. The changes in the blood lead to an increased coagulability and consequent increased viscosity of the blood, which, in turn, favors the formation of adherent thrombi. The heart is embarrassed, the nutrition of the tissues interfered with, and death results from paralysis of the heart and pul-

monary edema. Frequently punctate hemorrhages occur in the brain. After the third day, the changes observed are due not to the effect of the gas but the secondary complications, such as purulent bronchitis, partial gangrene, pleuritis, and various septic processes. Any diseased condition present at the time, such as pulmonary tuberculosis, is greatly aggravated by the effect of the gas. Even if recovery ensues, chronic invalidism may be the result.

**Neutralization of the Acid Contents in the Stomach and along the Intestinal Tract,** by A. M. Zaitzeff.—The author established experimentally on dogs the fact that the acid chyme is neutralized in the stomach mainly by the alkaline pancreatic juice which enters the stomach. Further neutralization takes place when the acid chyme leaves the stomach and passes along the small intestine. In the upper portion the pancreatic juice acts as a neutralizing agent, while in the middle and lower portions the intestinal juice and mucus tend to neutralize the remaining acidity. When neutralized, the gastric juice is absorbed along the intestinal tract before it reaches the lower portion.

**Treatment of Poisoning with Caustic Substances,** by Ia. G. Dillon.—The author treats poisoning with caustic substances by gastric lavage, morphine hypodermically, and internal administration of olive oil, followed by a diet of eggs, cream and mucilaginous substances as the patient improves. The mouth and throat are kept clean with an antiseptic wash. Of over 120 cases which came under his observation only one ended fatally.

#### SEMANA MÉDICA.

August 5, 1915.

**Arterial Tension in Mitral Disease,** by R. A. Bullrich.—Careful investigations show that in mitral disease there is a marked hypotension caused by narrowing of the orifice. Only the coexistence of a nephritis can produce an elevation of blood pressure in mitral cases.

**Radium Therapy in Ear Diseases,** by D. J. Spinetto.—Most chronic middle and internal ear affections have a characteristic predominating tendency to formation of fibrous connective tissue and new growths. The recognized action of radium on cicatricial tissues prompted its use in these ear conditions, after it had been proved that this agent was capable of producing a retrogression of fibrous tissue, and that it was not detrimental to the sensorial apparatus of the ear. A glass tube containing ten mgm. of radium bromide was covered with black paper and gutta percha and introduced into the external auditory canal in contact with the membrana tympani for a period of ten minutes. The period was lengthened by five minutes at intervals of eight to ten days. Applications lasting one hour were practised with improvement in hearing and beneficial changes in the tympanum. There were no signs of intolerance in the middle ear or tympanum even in one case where the external dermatitis of the auricle was produced. Further investigations will reveal whether it is possible to improve Eustachian tube conditions in the same way.

**Serotherapy of Bubonic Plague,** by J. Moreno.—Intensive massive intravenous injections

serum in plague were first practised by Penna in Argentina. He showed that the intravenous route is the best and that it is not necessary to dissect out the vein in adults. The dose should be in proportion to the intensity of the infection, usually from eighty to 100 c. c. followed by fifty c. c. every twelve or twenty-four hours. The results are comparable with those obtained in the serum treatment of diphtheria. The unfavorable features are rare and not dangerous enough to influence the scope of the treatment.

#### BRITISH MEDICAL JOURNAL

(October 5, 1905.)

**Value of Hypochlorous Acid in Gas Gangrene,** by John Fraser.—A five tenth per cent. solution of hypochlorous acid, prepared with the addition of boric acid according to the formula of Lorrain Smith, who named the solution *eusol*, was employed. In addition, eupad, a mixture of finely powdered bleaching powder and boric acid, was also used in some cases. When the case was diagnosed as gas gangrene, the local wound was opened freely at once and all blood clot was removed. Incisions about two inches long were also made through the subcutaneous tissues over all areas of emphysema. The wounds were then thoroughly irrigated with *eusol*, and if deep the solution was injected under some pressure. Grossly infected tissues were removed and the wound was lightly filled with gauze soaked in *eusol*. Often a medium sized drainage tube with many lateral openings was inserted and the gauze filled in about it. *Eusol* was then frequently injected through the tube to keep the gauze soaked. A thin layer of gauze wrung out of *eusol* was placed over the wound and for a considerable distance beyond it. The dressing was changed every four hours for the first two days, every eight hours for another two days. At the end of that time the wounds were granulating well and eupad was dusted on the wound to stimulate the granulation and hasten the separation of the slough. After the seventh day the wound was immersed for four hours daily in a bath of hypertonic salt solution to clean up parts and further hasten granulation. Under such treatment, the foul odor was observed to disappear in the first twenty-four hours and the discharge changed to a lymph like secretion. This secretion decreased after the third day and granulation then began. The sloughs separated very rapidly and healing was completed in a remarkably short time. No irritation or pain was observed from the use of *eusol*, but eupad often caused some burning for about half an hour after its fresh application. The details of nine cases treated in this manner are given, all ending in recovery although many were extremely severe.

**Acute Renal Disease among Troops,** by R. G. Abercrombie.—Ninety-five cases were observed occurring among the soldiers in France. The picture was that of acute nephritis with edema, albuminous urine containing granular casts, fever, and often uremic symptoms. Edema of the face, especially of the eyelids, was among the first symptoms, and was usually associated with headache and pains in the extremities and back. Cough and bronchitis, or diarrhea, abdominal pain and vomiting were common in

others. Dyspnea was frequent. All cases showed some degree of edema which usually lasted for one or two weeks. In three cases there were convulsions and blindness; headache was often intense. The urine was usually much diminished and was suppressed entirely in several cases. Albumin varied from a trace to such as made the urine boil nearly solid. Granular casts were constant in the acute stage, but they and the albumin tended to disappear under treatment. Red blood cells were found in the urine in the majority of cases. Blood pressure was usually high in the acute period. The prognosis of this disease was extremely good, there being no deaths among the entire series, but whether or not the condition will lead to chronic renal disease cannot yet be determined. Treatment comprised bodily warmth, fluid diet, administration of large amounts of fluid, a daily morning purge with saline, and the occasional use of hot packs. The cause of the disease was not known, but it seemed to be infection with some definite organism.

**Acute Actinomycosis of the Parotid Gland,** by E. D. Telford.—Although infection by the ray fungus usually runs a chronic course without much local or systemic disturbance, cases occasionally arise in which the course is acute and the local lesion of rapid progression. Two such cases occurred, both involving the parotid gland. In both the outline of the gland and the socia parotidis soon became very distinct and within one week the disease had broken through the capsule. With the rupture through the capsule there resulted a very acute cellulitis, which was extensive. There was marked constitutional disturbance. Incision yielded only a sanious material and the cut surfaces were a dirty gray and infiltrated with yellowish spots. Incision alone will not cure the condition, but with it there should be given large doses of potassium iodide and a ten per cent. solution of iodipin may be injected into the region of the lesion. Irrigation of the incisions and sinuses with diluted tincture of iodine is also of value. Both cases were treated in this manner and recovery was fairly prompt with little scarring.

#### LANCET.

(October 6, 1905.)

**Spasmodic Symptoms in Rheumatism,** by F. J. Poynton.—Vascular spasms and transitory nervous phenomena are now well recognized as early disturbances in cases of arthritis deformans and it seems that similar manifestations are frequently to be discovered in rheumatism preceding the development of the typical symptoms of the disease or occurring at a later stage. The rheumatic child and young adult are commonly very sensitive and nervously unstable. These phenomena seem to be the direct result of the action of the rheumatic poison. Severe migraine is common in these patients and is probably a manifestation of localized vascular spasm. Other typical vasomotor phenomena are paroxysmal attacks of cold and blue hands with pain and discomfort or a sensation of the hand being dead. Muscular spasms may occur in the hands, arms, feet, legs or neck in rheumatism as well as in arthritis deformans. In both diseases the occurrence of paresthesias in the form of numbness and tingling of the hands or feet is common. Severe at-

tacks of neuralgia are not infrequent in the rheumatic subject as well as in the subject of arthritis deformans. In both diseases attacks of angina are also occasionally encountered and when continued they may end in sudden death from typical angina pectoris. The fact that these various vasomotor and spasmodic phenomena are common to arthritis deformans and to rheumatism, together with the commonly accepted belief that both diseases are due to infection serve to link them together so closely as to make their separate classification a matter of serious doubt. The precise mechanism of the causation of the phenomena is not understood, but it would seem probable that in both some toxin was at work.

**Intestinal Drainage in Septic Peritonitis**, by Arthur J. Nyulasy.—Intestinal paralysis is the common feature of septic peritonitis and is due either to inflammation of the intestinal peritoneum, or to an action of toxic peritoneal fluid on the intestinal nerves. Death is due largely to the absorption of toxic materials from the lumen of the paralyzed intestine and the rational treatment should be to prevent this absorption. This seems to have been accomplished by intestinal drainage carried out through a colostomy opening. Six very severe cases have been treated in this way with recovery in all.

**Significance of Pulsus alternans**, by A. E. Carver.—This phenomenon has been observed in two classes of cases: One showing cardiac symptoms and clinical evidence of heart disease, the other without symptoms or signs of cardiac disease but recovering from some form of toxemia. The only common feature was that all the patients had suffered from some form of severe strain, either physical or toxic. In the former group there were four patients, all males, and only one is still living. The latter group comprised five patients, three of whom were women, and all are still living. In the first group one was a business man fifty-four years old who died in twenty months; another, a country gentleman, seventy-four years old, died in two months; the third man died one year after the first evidence of alternation, and the fourth, a neurotic, overwrought business man showed pulsus alternans for a short time, but has since recovered and has no clinical evidence of heart disease. Among the toxic group one of the patients was six weeks convalescent from severe pneumonia, a woman convalescing from severe influenza, another woman convalescing from a brief febrile attack, a boy of seventeen recovering from measles, a normal healthy man recovering from an anesthetic, and the last a woman who had recently had a staphylococcal tonsillitis. In none of these patients did pulsus alternans persist long and in none was it of any serious significance. Either we do not yet have a clear understanding of the significance of this type of pulse, or else the phenomenon here observed was not a true pulsus alternans in the sense in which we have come to regard it.

#### BOSTON MEDICAL AND SURGICAL JOURNAL

October 21, 1915.

**The Syphilis We See but Do Not Recognize**, by Henry Farnum Stoll.—The late symptoms of syphilis often are vague. Chronic rheumatism and chronic headache mean syphilis in many cases. The

physician who does not avail himself of all the newer tests before making these diagnoses assumes a grave responsibility. Some evidence of syphilis may be detected by studying other members of the family when nothing can be discovered in the patient himself. The problem is one to be solved by the family physician, not by a specialist. We must not lose all sense of perspective and become blind worshippers at the shrine of Wassermann. Admitting that this is the most valuable laboratory test yet discovered, it is not infallible. Positive in nearly all early cases of syphilis, it is often negative in the late, especially in adults with a prenatal infection, and even when positive does not prove absolutely that the lesion in question is due to syphilis. It should supplement, not supplant, the complete history and careful examination.

**Acute Otitis media in Infancy and Early Childhood**, by William R. P. Emerson.—Measures should be taken to keep the nasopharynx clear and maintain drainage through the Eustachian tube in every case of contagious disease and of affections of the respiratory tract in children, and the ear drums should be inspected by the physician at every visit to his patient. When the membrane begins to show congestion along the handle of the malleus, a mixture of four drops of adrenaline solution, one to 5,000, and cocaine one half of one per cent. should be allowed to flow through the nostril on the affected side back into the throat, followed in a few minutes by a few drops of a twenty per cent. solution of argyrol. This should be repeated in three hours if there is pain. If the condition does not improve, the drum should be incised, preferably by an otologist, otherwise by the physician, without waiting for bulging or pus. Repeated incisions may be made, if necessary, and the other ear watched with special care. After the attack, the child should be examined and treated by a specialist.

**Can the Speech Present a Sign of Congenital Syphilis?** by Walter B. Swift.—Three cases are presented from which the writer concludes that there is a voice sign in congenital syphilis which manifests itself in a harsh, rasping, monotonous, low pitched voice that is only slightly, if at all, amenable to treatment. He proposes as a name for this sign scaphoid vocal cords and spirochetotic harshness.

#### JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

October 21, 1915.

**Efficacy of Various Antityphoid Vaccines**, by Wilbur A. Sawyer.—Statistics of the civil population of California were collected to test the efficacy of prophylactic inoculation against typhoid with several types of vaccines commonly used. A total of 8,124 persons received the inoculation and thirteen different vaccines were employed. In the whole number of vaccinated persons, there were forty-one instances of true failure, that is, forty-one persons developed typhoid in the interval between one month and two and a half years after inoculation. These failures were studied; in practically every instance the patients had been living under conditions of great exposure for a considerable time, most being hospital nurses, physicians, or members of families in which there was one or more cases of typhoid.



Under such conditions, the use of vaccine seemed to give an inadequate protection, but where exposure was less intense, its protection seemed to be considerable. Little difference, as regards severity of reaction and degree of protection was discovered between the sensitized and the unsensitized vaccines. A polyvalent, sensitized vaccine supplied by the board of health seemed to give slightly better protection than other vaccines. The more widespread prophylactic use of antityphoid inoculation should lead to a marked diminution in the incidence and mortality of typhoid and should render exposure less frequent.

**Choice and Technic of the Anesthetic**, by Arthur Dean Bevan.—Analysis of fourteen anesthetics was made. Some of the more important conclusions reached are the following: Ether, given by the open drop method, is the safest general anesthetic for prolonged anesthesia and should be the standard method. Its discomfort can be reduced to a minimum by skillful use, or by the preliminary use of gas. The closed methods of using ether are less satisfactory, less safe, and require more or less complicated pieces of apparatus. Nitrous oxide is the safest of all general anesthetics for short anesthetics and should be widely used in that class, but it is unsatisfactory for prolonged use. Spinal anesthesia should have no place in surgical practice on account of its great dangers. Nerve blocking by intraganglionic or intraneural injections has a very limited field and should be restricted almost entirely to cases in which nerves are exposed in the fields of operation. Local infiltration anesthesia with solutions of one half to one quarter per cent. of novocaine with or without epinephrine in small amounts is safe and satisfactory in a large number of cases. Intravenous anesthesia with ether or other general anesthetic, local intravenous anesthesia by Bier's method, and intrarectal anesthesia are either too dangerous or have too little advantage to warrant their use. Intratracheal anesthesia is too dangerous and too complicated for use. Intrapharyngeal anesthesia has a limited field in head operations. Mixtures of anesthetics and the use of warmed ether have no advantages. Anociassociation does not rest on a sound physiological basis.

#### MEDICAL RECORD.

*Oct. 10, 25, 1915.*

**Pancreas Stone Colic**, by Max Einhorn.—Pancreatic calculi are rare but more frequent than was formerly thought. Two cases are reported by Einhorn, one in a man of forty-four years and the other in a woman of thirty-seven years. Colic occurring periodically in the epigastrium associated with a transient glycosuria is probably caused by pancreatic stone. The sudden disappearance of the symptoms usually means that the stone has been passed and the finding of a calculus in the feces consisting of calcium carbonate and phosphate without either cholesterol or bile pigment points to the pancreatic origin of the stone. The occurrence of sugar in the urine while of great importance is not essential for the diagnosis of such a stone. The treatment consists mainly of rest in bed with hot applications to the abdomen and opium or atropine for the pain. After the attack frequent small meals

and the drinking of alkaline waters are indicated. If the attacks become more frequent or more severe, especially with slight fever, operation should be advised. If a stone is found it should be removed; if not, then the gallbladder should be drained. Drainage of the gallbladder exerts a beneficial effect on pancreatitis.

**Intelligent Treatment of Skin Diseases**, by William S. Walsh.—In the treatment of chronic skin disease a thorough physical examination of the patient is indispensable as well as a chemical examination of the body secretions and excretions. Acne frequently, forty per cent. of all cases, is associated with acidity of the stomach and clears up rapidly when this disorder is corrected. Diseased tonsils can produce erythema and acne which are rebellious until tonsillectomy has been performed. The coexistence of Riggs's disease and psoriasis seems to show some common origin and the use of emetine has been successful in both conditions. Urticaria is due mostly to the products of the decomposition of protein foods in the intestinal tract, and although adrenaline hypodermically will relieve the acute attack, it is very important to abstain from albuminous foods for two weeks. Eczema constituting thirty to forty per cent. of skin diseases is frequently associated with and influenced by disturbance of gastric acidity.

**Cerebral Hemorrhage and Thrombotic Softening**, by G. Burke and J. Nuzum.—In a woman of sixty-six years with coma, the presence of high blood pressure with high tension pulse, conjugate deviation of the eyes and head, elevated temperature, albumin in the urine—all these findings seemed to make the diagnosis of cerebral hemorrhage easy. However post mortem examination showed brain softening due to thrombosis of the right middle cerebral artery, thus showing that the differential diagnosis is in many cases impossible.

#### ANNALS OF SURGERY.

*August, 1915.*

**Splenectomy**, by H. Z. Griffin.—The series of fifty-eight cases from the Mayo Clinic includes twenty-seven of splenic anemia, seven of pernicious anemia, two of hemolytic jaundice, five of secondary infections or septic splenomegaly, two of an unclassified type of hemolytic anemia with marked splenomegaly, two of syphilis, three of sarcoma or lymphoma, two of wandering spleen and one each of myelocytic leukemia, cirrhosis of the liver and tuberculosis of the spleen. In addition, it includes one case of acute febrile not septic splenomegaly which is analogous in its clinical course to Egyptian splenomegaly, and one case in which splenomegaly was associated with an extremely high eosinophilia. Splenic anemia is most favorable for surgical treatment. The operative risk is relatively low and the prospect for a return to normal health excellent. Three of the seven patients with pernicious anemia have shown temporary improvement up to nine months after splenectomy. Removal of the spleen in nongummatous splenomegaly associated with syphilis has been attended with excellent results in two instances.

**Gallstone Disease**, by J. B. Deaver.—Gallbladder disease is preeminently a disease of the middle

aged woman, but is by no means confined to that age and sex. The early diagnosis can be made only by familiarity with a different symptomatology than that found in the textbooks. The lighter grades of dyspepsia with localizing signs, however slight, in the epigastrium or right hypochondrium must be regarded as signs of the beginning of gallstone disease. Gallstones are merely the last stage and by no means the uniform accompaniment of the most dangerous factor involved in gallstone disease. Infection as the cause not only of gallstones, but of the local and systemic damage of the disease, is the essential thing to recognize and treat. The x ray in diagnosis is dangerous therefore, not only because it fails to show many stones, but because it emphasizes the importance of the calculous element of the disease, and if allowed to serve as an indication for operation, will deprive many patients of the early treatment which alone is safe and efficacious. Cholecystectomy is the operation of choice in obviously diseased gallbladders, with drainage of the common duct in practically all cases, but particularly in those giving evidence of cholangitis or pancreatic involvement.

**Paget's Disease of the Nipple**, by J. H. Jopson and J. Speese.—Paget's disease of the nipple is a primary affection beginning in the cells of the rete malpighii, potentially malignant, although lacking the ordinary characteristics of malignant disease. It is identical with Paget's disease occurring in other regions. It is commonly, although not invariably, followed by glandular carcinoma in the underlying breast tissue. It is precancerous in the sense that it induces epithelial changes in the superficial milk ducts and acini, which are followed by carcinoma. Occasionally, although rarely, it is followed by squamous cell carcinoma of the nipple. The disease is characterized by edema and vacuolization of the prickle cells, thickening of the rete and active mitosis, also by inflammatory reaction in the corium and secondary hyperplasia in the milk ducts. It is sharply differentiated from true eczema and scirrhous carcinoma ulcerating at the nipple, and should not be confounded with superficial metastases of diffuse cancer situated near the skin. The resulting tumors of the breast and the regional metastases resemble the type of breast cancer usually encountered. When the tumor originates in the skin, it infiltrates and metastasizes in the form of squamous carcinoma. The common association of cancer in the breast and Paget's disease demands the radical operation which is practised in breast cancers in general.

#### ARCHIVES OF INTERNAL MEDICINE.

August, 1915

**Potassium Poisoning in Nephritis**, by W. G. Smillie.—On the basis of Bunge's observation that an increased intake of potassium salts causes an increased sodium salt excretion, an attempt was made to secure such increased sodium salt excretion by clinical administration of five or ten grams of potassium chloride daily in cases of nephritis in which decreased ability of the kidneys to eliminate sodium chloride had been proved to exist. While in some instances the desired effect was secured, in one case a sudden attack of cyanosis, marked prostration, oliguria, and hemoglobinuria was produced by the medication. Experiments in rabbits showed that in

uranium nephritis ingestion of one gram of potassium chloride may produce sudden death. The acute poisoning is ascribed to the fact that the salt, which is normally very rapidly excreted, is not excreted in nephritis, thus reaching a concentration in the blood which suffices markedly to depress the heart muscle.

**Blood Flow in the Hands and Feet in Certain Nervous Diseases**, by G. N. Stewart.—In early unilateral brachial neuritis the blood flow in the affected hand was found to be distinctly greater than in the normal hand, but in long standing cases with decided muscular atrophy, the blood flow was found less than on the normal side. In hemiplegia a marked deficiency in blood flow was generally detected in the paralyzed limbs, and in tabes dorsalis the blood flow in the hands and feet was subnormal and the vasomotor reflexes were feeble. In lead poisoning a tendency to reflex vasoconstriction and in alcoholic intoxication a tendency to marked reflex vasodilatation were conspicuous.

#### ARCHIVES OF RADIOLOGY AND ELECTROTHERAPY.

October, 1915

**Gastropotosis**, by Arthur F. Hertz.—Whether ptosis exists when the patient is standing, whether it exists when the patient is lying down, whether it gives rise to duodenal kinking, and, if so, to what degree this gives rise to stasis, constitutes diagnosis. Orthostatic gastropotosis is present when the lesser curvature of the stomach is seen by means of the x rays after a standard barium meal below the umbilicus, in the erect posture, with the greater curvature above the umbilicus in the horizontal posture. Complete gastropotosis is present when the greater curvature also reaches below the umbilicus in the horizontal position. Gastropotosis does not of itself lead to kinking of the pylorus. It is well to note the position of the duodenum. If the upper end is not at least an inch above the umbilicus, duodenal ptosis is present. The power of the stomach to evacuate its contents in a normal manner is also of importance. If the duodenum drops with the stomach the passage of food out of the stomach and through the duodenum is generally normal in rate. If the ptosis is well marked, the food may pass without difficulty from the stomach into the first part of the duodenum, but there is delay in the passage beyond this point. Similar observations should also be made with the patient lying down. Six hours after the taking of a meal, during which time the patient should not lie down but should follow his normal occupation, the stomach should be empty. If food is still present at the end of this time, gastric stasis exists. In order to determine whether ptosis is the sole cause of the stasis, and no organic obstruction exists, a second meal is given on another day and the patient should lie on his right side during the two examinations. At the end of six hours the stomach will be found empty if the ptosis is the sole cause of the stasis.

**Electrical Burn Successfully Treated by Ionization**, by Alastair MacGregor.—These burns are usually sluggish in their healing. Two cases are reported in which treatment was carried out by applying the positive electrode to the ulcerated area which had previously been swabbed with a one per cent.

solution of zinc sulphate in one case and a one per cent solution each of iodine and potassium iodide in the other case. The negative electrode was placed at a short distance—in the one case over the forearm, the hand being the seat of the ulceration. The current was gradually increased to ten milliamperes and the treatment kept up for about twenty minutes. Both cases showed rapid improvement.

**Röntgen Diagnosis of Fracture of the Skull,** by W. H. Luckett and W. H. Stewart.—The authors are of the opinion that if a systematic examination of all injuries of the head, whether direct or indirect, was made, it would show that the relative frequency of fractures of the skull is greater than statistics record. Most fractures of the skull are not diagnosed as such and remain undiscovered. The skulls of children fracture very easily but there is little injury to the brain and bloodvessels as a result. In children the base is very seldom involved whereas in adults eighty per cent. of linear fractures of the vault extend to the base. Every examination should cover the frontal, parietotemporal, occipital and basilar regions. The high vacuum tube should be used and the exposure should be from three to five seconds depending on the part of the skull examined.

#### SURGERY, GYNECOLOGY, AND OBSTETRICS.

August, 1915.

**Tumors of the Bladder,** by E. L. Keyes.—Tumors of the bladder must be classified as benign or malignant in accordance with their clinical characteristics, especially their reaction to the desiccation treatment. The clinical characteristics of malignancy are hardness of the tumor, intractable cystitis, and sloughing or ulceration of the tumor. Multiplicity and size of the tumor militate against the success of any form of treatment. The surgeon will have to decide from his own experience which cases are to be selected for desiccation, and which submitted to operation and desiccation afterward. Multiple tumors usually recur and should be carefully watched after operation. To assure a cure in a given case, cystoscopy should be done over a period of at least three years at varying intervals.

**Undescended Testicle,** by A. C. Wood.—As the majority of detained testes reach the scrotum by the time of puberty, in the absence of complications that demand relief it seems wise to postpone operations for transplanting the testis in the scrotum until ample time has been given the organ to descend naturally. When operation is undertaken for any reason, an effort should be made to trace the vas, and if it is found not to be connected with the testis, an anastomosis may be performed, particularly if spermatozoa are present.

#### NEW ORLEANS MEDICAL AND SURGICAL JOURNAL.

October, 1915.

**Infantile Diarrhea,** by Charles J. Boom.—The writer presents the results of his observations while working as a clinical pathologist aboard the Boston Floating Hospital in 1914. *Bacillus dysenteriae* Flexner was the organism found in most cases, though *Bacillus welchii*, streptococci, and typhoid and paratyphoid bacilli also were found. Sixteen out of twenty-five patients were under one year old, eight between one and two years, only one over

twenty-four months. The younger the child the more grave the prognosis. The nationalities were Irish-American, American and Italian; the resistance of the Italian children was superior to that of the others. Ten of the twelve who died had been fed previously on breast milk alone or in combination. The average illness lasted twenty-three days, most that died did so under twenty days. All patients in whom ruddy red lips contrasted with the anemia died. Vomiting was present in twenty-one of the twenty-five cases. Mucus was noted in the diarrhea of all cases, blood in eighty per cent., pus in forty-eight per cent. The greatest loss of weight in one day was one pound seven ounces; in two days, two pounds and six ounces. Each patient averaged ten days of fever while in the hospital, the maximum temperature ranging from 100° to 106° F. All that had a temperature of over 104° F., died. The maximum respiration varied from thirty to seventy a minute, and all patients who did not recover had a respiration of over thirty. The pulse varied from 120 to 190. Over 160 is generally a bad symptom. A slow pulse with a high temperature was noted in cases caused by *Bacillus dysenteriae* of Flexner.

#### Proceedings of Societies.

##### MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.

*Sixty-fifth Annual Meeting, Held at Philadelphia, September 20-25, 1915.*

The Retiring President, Dr. EDWARD B. HECKEL, of Pittsburgh, in the Chair.

(Continued from page 925.)

**Operative Treatment of Strabismus.**—Dr. H. F. HANSELL, of Philadelphia, said that the most interesting form of strabismus was the internal. Between the binocular and the monocular there was a wide difference. In the one the fault lay in the refraction which induced muscular incoordination; in the other the fusion force was in abeyance and was not to be brought into normal activity by training, glasses, or operation. To correct concomitant strabismus, advancement of each external rectus should be made. In the monocular form the object of operation was not the securing of monocular fixation, but the correction of the deformity. In cases of inorganic divergent strabismus, advancement, either single or double according to the degree of the squint, was the operation.

**New Method of Treating Gonococcic Virulent Conjunctivitis by Iced Normal Salt Solution.**—Dr. EDWARD B. HECKEL, of Pittsburgh, said that ice pads had long been used in treating this malady on the theory that cold would inhibit bacterial growth. In view of this and the assumption that gonococci were found only in superficial tissues, he had used iced normal salt solution in a few cases and firmly believed that he had in it a specific in the treatment of gonococcal conjunctivitis. It was a harmless, effective germicide, easily applied, and well borne by the patients.

**Bronchiectasis Due to Foreign Bodies.**—Dr. CHEVALIER JACKSON, of Pittsburgh, reported six



cases in which all the symptoms of bronchiectasis were due to the presence of foreign bodies in the lung. These were opaque to the Röntgen ray, otherwise they would not have been discovered. He advocated radiography in every case of bronchiectasis, and, because of the possibility of some foreign bodies not showing in a radiograph, bronchoscopy also. Not only was bronchoscopy useful, but, in cases associated with stricture of the bronchus, no foreign body being present, bronchoscopic dilatation might be curative.

**Role of the Rhinologist in Hypophyseal Surgery.**—Dr. LANDON H. LANDON, of Philadelphia, had carried out in some fifteen cases the Hirsch operation of transsphenoidal hypophysectomy. The operation was performed with the patient sitting under local anesthesia reinforced by morphine or atropine hypodermically. While unusually large turbinates required removal, he had never found this necessary. The almost complete absence of hemorrhage was remarkable. In his cases the results had certainly been encouraging when one considered the almost hopeless character of the affection. There had been three fatalities and, while this seemed rather high, it was low compared with other methods.

**The Public and the Profession; a Square Deal.**—Dr. HENRY A. FAVILL, of Chicago, said that within the last few years the relation of the medical profession to the public had been undergoing radical change. Formerly the relation was essentially individual. The physician had a definite service to perform in behalf of his patient and the small group related thereto. Important as that was, it was hedged about by restriction as to breadth of view, both for the physician and his clientele, that was hampering to full development. Misconception as to the true values in medical service had led to such pettiness and superficiality as to give basis for hostile criticism. Medical science had arisen almost wholly within the last half century. It was marvelous that its spirit and its method were as widely prevalent as it was in consideration of the fact that scientific teaching had been general only in the last twenty-five years. The profession was rapidly adapting itself to its more weighty function. It was dawning upon the public consciousness that the big thing in social affairs was the preservation of health. The place to focus attention was upon health, not sickness. With the advance in science, the possibilities of curing disease once established were comparatively limited. It was imperative that the medical profession see its opportunity and its obligation. The public had a right to expect leadership in this direction from physicians. The public, however, needed education as to what it meant, what could be done, and how. It must cooperate intelligently and strenuously. If the medical profession was to devote itself to the public well with the energy and self sacrifice that it had shown as practitioners, it must be met by the public with recognition of its integrity of purpose and of the paramount importance of the issue.

**Foreign Bodies in Air Passages of Children.**—Dr. HENRY T. PRICE, of Pittsburgh, believed that the accident of foreign bodies being drawn into the respiratory tract was not sufficiently considered and that too much stress was placed upon Nature's

ability to remove such offending substance. Reference was made to the possibility of relief given by the endoscopist and to the following points in diagnosis: 1. History; 2, indirect examination of the larynx; examination of the throat and nasopharynx; 3, radiography; 4, physical examination by an internist; 5, endoscopy. Physical findings he classed as: 1. Immediate effect of operation; 2, secondary effect; 3, remote effect, when the development of gross pathological lesions had eliminated all thought of foreign bodies. History was the most important element in diagnosis; radiography, invaluable. If the presence of the foreign body was overlooked, a mistaken diagnosis might readily be made of laryngitis, diphtheritic croup, pertussis, asthma, laryngismus stridulus, or edema of the larynx. So called tuberculosis, bronchiectasis, abscess, empyema, and pneumothorax were mentioned as remote effects of foreign body in the lung. So definite were these conditions, apparently, that the possibility of their being secondary to a foreign body was not usually considered.

Dr. CHEVALIER JACKSON, of Pittsburgh, emphasized that a radiograph should be taken in every case. There were many cases in which the history of a foreign body accident had been ridiculed or ignored by the practitioner first seeing the patient. It was possible that a foreign body might be in the lung without causing symptoms for a number of weeks before the onset of vague symptoms occurred. While many cases of supposed or actual bronchiectasis, tuberculosis, or pulmonary abscess had been due to foreign body, this seemed to be the last possibility suggested to the mind of the practitioner. The mortality of removal of the body by bronchoscopy through the mouth was so slight that when the diagnostic methods stated by Doctor Price left the matter in doubt, a diagnostic bronchoscopy should be done.

**Pyelitis in Infancy and Childhood.**—Dr. FRED E. ROSS, of Erie, defined this condition as an acute infection of the urinary tract which might become chronic and was almost always protracted. Its apparent infrequency he attributed to its nonrecognition. The infecting organism was most often the colon bacillus. While the route of infection was not known in all cases, the direct route from the ascending colon to the right kidney by way of a chain of lymphatics was suggested. Diagnosis rested upon microscopical examination of the centrifugated sediment of urine or upon a series of such examinations. While most cases were uninfluenced by treatment, he used either alkaline diuretics to render the urine alkaline, or preferably large doses of hexamethylenamine. Albumin was found in the urine in fifty per cent. of his cases; he used for collecting the urine a wide mouthed tablet bottle and adhesive plaster.

Dr. GEORGE E. HOLTZAPPLE, of York, said that the condition should be borne in mind in children with irregular, obscure fever, general debility with pallor, loss of appetite, and gastrointestinal disturbances. Pain in pyelitis might simulate appendicitis and he had seen such a case brought for operation. He regarded it as of paramount importance to discover the pyuria and determine the nature of the infection. The pediatricist should be alert lest a possible case of the condition be overlooked.

**The Heart of the Athlete: Its Prospects and Protection.**—DR. ROBERT N. WILLSON, of Philadelphia, said that two vital questions involved in college and schoolboy competitive athletics were, 1, the ultimate (postgraduate) result of public competitive athletics upon the health and lives of the participants; 2, the possibility of determining the genuine physical integrity of the proposed participant or his lack of it, especially with respect to his heart. He knew of no instance of recovery from a major infectious disease in an athlete, except in the typhoid epidemic at Easton, where a number of undergraduates—probably not then shorn of their resisting forces—had made a successful fight and recovered. It was to be remembered that the normal heart would not tolerate repeated insults without loss of recuperative power. Latent athletic injuries seemed to explain the tendency of the strong and robust to die when the less powerful won out against infectious disease. A still more radical evil was the encouragement offered by college and university to the schoolboy to emulate his college brother in competitive athletics. He stopped short of advising against active competition as the Germans had, but pointed rather to sign boards written in bold letters. Trainers should be taught the meaning of the collapse of today in the future of the athlete. He believed that some day college authorities must of necessity conclude that no form of athletic event was sane which demanded of the participants the semiconscious state of heart exhaustion at its conclusion.

DR. N. A. STAUFFER, of Philadelphia, believed in competitive sports for the same reason that he favored competition in other professions. He referred to the fact that all of the University of Pennsylvania football team were in excellent health and observed that records of athletes compiled by other authors did not bear out Doctor Willson's statement that competitive sports were harmful, except in the unprepared.

DR. JUDSON DALAND, of Philadelphia, suggested that the late results in athletes apparently due to excessive work might be due to excesses in alcohol, tobacco, or in other directions. In changing also from an active life to a quiet one, cardiovascular incompetency was much more marked.

Doctor WILLSON stated that he was not opposed to competitive athletics if they could be rendered sane. The point he had raised was the action of the athlete's heart in the presence of systemic, especially infectious disease. He believed it time to safeguard the hearts, vessels, and lives of the school and college boys.

**Some Criteria Underlying Prognosis in Certain Forms of Cardiac Insufficiency.**—DR. JAMES E. TALLEY, of Philadelphia, said that the average patient of middle life with symptoms suggesting beginning cardiac insufficiency would probably have: 1, Primary, chronic, endocardial and myocardial disease, usually rheumatic; 2, primary endocardial or myocardial disease with secondary nephritis; 3, primary renal disease with a secondary myocardial and vascular disease; 4, primary arterial or arteriocapillary sclerosis with secondary cardiac and renal disease; 5, syphilitic cardiovascular disease. Groups 2, 3, and 4 were groups of special interest because of their frequency and association with pathological elevation of blood pressure, and because their study

had tended away from the conception of renal disease being solely responsible for hypertension and toward the renewal of the old conception of primary arteriolar capillary fibrosis. The underlying criteria in prognosis were to be found in symptoms and objective signs. Periodical early morning headache meant a uremic death for a large number and an apoplectic death for a somewhat smaller number. Although all three groups were doomed, the one with the vastly impaired elimination would have a renal death, and probably earlier than the other two.

Dr. JOSEPH SAILER, of Philadelphia, said that the differential diagnosis here was in degree rather than in kind and that in such diagnosis Doctor Talley had most properly laid stress upon blood pressure, colorimetric tests of the functional capacity of the kidneys, and the graphic methods of recording the action of the heart. These methods, however, were not absolute. The increase or decrease in the functional capacity of the kidneys, the rise or fall of arterial tension, and possibly the modification of the heart tracing were far more significant than any single observation.

Dr. H. B. ALLYN, of Philadelphia, regarded the cause of the disease as of much importance in prognosis. He had seen within a few days a patient left with aortic insufficiency from scarlet fever when three years old who was now approaching fifty and whose heart for the last fifteen years had needed very little attention. On the other hand, in the presence of a myocardial degeneration, prognosis was very much worse. Dyspnea—its degree and the readiness with which it was induced—was often of more value in prognosis than any physical sign.

Dr. H. A. HARE, of Philadelphia, believed that the more experience they had in cardiovascular disease the more cautious they became in prognosis. While pulsus alternans was of grave import, it was by no means unusual to see a patient with this symptom live over a course of several years. As to prognosis in cardiac disease, the patient should be studied as a whole and not alone from examinations of the heart, even though such examinations were made with instruments of precision.

Dr. ROBERT N. WILLSON, of Philadelphia, remarked upon the difficulty of determining the degree of muscular cardiac disease in a given case. The tests so vaunted were to his mind of little value, and many a heart tested in the office and pronounced sound was not competent.

**The Significance of Cardiac Pain.**—DR. DAVID RIESMAN, of Philadelphia, classified the causes of pain in the region of the heart as cardiac and exocardiac. Among the latter dyspepsia, herpes zoster, pleurisy, and pleurodynia were the most common. Of the cardiac causes, myocardial weakness was of great practical importance as it might be overlooked because murmurs were often absent. Additional causes of cardiac pain were angina pectoris and aortitis.

Dr. LAWRENCE LITCHFIELD, of Pittsburgh, said that of two patients of whom he had knowledge, one had been attended by the best men in the country and had died from an anginoid attack without ever having been told that the cardiac pain was grave. The other case was of the type presenting pain in both arms. The cardiac disease was not regarded

as serious, but the man had died within a month in an anginoid attack.

Dr. JAMES E. TALLEY, of Philadelphia, remarked, apropos of the cases cited by Doctor Litchfield, that in cases in which angina pectoris was suspected, the less found wrong with the heart upon examination, the more certain might they be of the diagnosis. In a series of 500 cardiovascular and cardiorenal cases there were thirty-five cases of genuine angina pectoris. One third had succumbed to an acute anginal attack, and two thirds to gradual cardiac death.

Dr. SOLOMON SOLIS COHEN, of Philadelphia, called attention to the importance of syphilitic aortitis and so called pseudoangina in that syphilitic aortitis was often mistaken for angina, the syphilitic nature of the condition overlooked, and the patient, therefore, allowed to get into a much worse state than he otherwise might. He had observed many cases of so called pseudoangina in which pain occurred without structural lesions in the myocardium, coronary arteries, or the aorta, in which upon proper recognition and treatment the pain had disappeared and the patient lived, as in one case under his observation at the time, for more than twenty-five years.

Dr. ROBERT N. WILLSON, of Philadelphia, said there were two distinct types of true cardiac pain—the dull heavy pain of distention and dilatation, and the sharp cutting pain of aortic valve and aortic disease. He regarded it as questionable whether angina might be properly included under cardiac pain; certainly such inclusion had not been demonstrated. He believed there was no such entity as pseudoangina pectoris. The cardiac nervous mechanism, including the ganglia of the auricles and of the coronary sinus under the influence of nicotine, showed definite signs of disease, and here he believed eventually would be found the real seat of angina. Should this be so, it would again be permissible to speak of angina as cardiac pain.

Doctor RIESMAN concluded by saying that by cardiac pain he meant pain in the cardiac region. The crux of the matter was involved in the question whether angina pectoris was a disease or a symptom. To be borne in mind was the fact that there could be very sharp pains, paroxysmal in character, that were not associated with the dread prognosis accompanying the disease called angina pectoris.

**Treatment of Myocarditis.**—Dr. JAMES M. ANDERS, of Philadelphia, considered the treatment of acute myocarditis due to the acute infections including rheumatism and rarely syphilis. When antirheumatic measures were indicated, the heart was to be carefully guarded by stimulants, and modification of this treatment might be necessary because of cardiac weakness. Digitalis was warned against when the myocardium was the seat of acute inflammatory degeneration. In all forms of severe acute myocarditis prolonged absolute rest was enjoined. In chronic myocarditis the exclusion of chronic valvulitis was exceedingly difficult in the presence of murmurs. In the stage of compensation exercise must not be such that would tax the reserve force. In chronic myocarditis due to lues, salvarsan should not be administered intravenously. In diet, a low protein content was indicated with a mini-

mum of flesh foods, strong stock soups and legumes, and elimination of all articles causing intestinal fermentation. Suitable changes of air were beneficial, as were also carbonated baths in appropriate cases. In the stage of insufficiency, physical and mental rest were imperative and in some cases cardiac stimulants were necessary. The effect of prolonged rest might be minimized by resistance exercises.

(To be continued.)

## Letters to the Editors.

### HEMADENOLOGY.

CLEVELAND, OHIO, November 6, 1914.

To Dr. Charles E. De M. Sajous, Senior Editor:

With much interest and profit, I am reading your articles in the NEW YORK MEDICAL JOURNAL on Hemadenology and am quite pleased to note your suggestion that the enlarged thymus gland may be a cause of adenoids, enlarged tonsils, etc.

The presence of an enlarged thymus as a cause for tonsillar ring, and other engorgements and hypertrophies, admits as you have shown of diagnostic demonstration by percussion, by x ray, or by fluoroscopic examination, but let it not lead away from the broader explanation, that any engorgement, hypertrophy, or hyperplasia of the contents of the cranial cavity or of the chest can be due to cardiac overaction from any cause. For instance, constipation, acute or chronic, enteroptosis, or other cause for vascular stenosis, below the level of the cardiac apparatus, if of sufficient extent, demands of the heart a greater force to overcome such stenosis than the normal nutritional requirements of the cranial or thoracic cavities, and this increase of blood supply, if localized, may lead to increased growth or size of tissues, organs, or structures supplied.

With the same force, the relative flow of the same liquid in tubes is as the square of the diameter; the narrowing by one half, of a bloodvessel, by pressure or by a drag or kinking requires four times the force to cause the same flow. This increased force (as in feeling the pulse), may be secured through the vasomotors, but when they are not in tone or inadequate, the heart is forced to overwork.

In my article, Enteroptosis, read before the Cleveland Medical Society, February, 1900, I said (Cleveland Medical Journal, May-June, 1900): "If there is a drag upon the abdominal aorta, a narrowing or functional stenosis occurs with resultant compensatory action of the left ventricle in response to demand for sufficient blood below the stenosis, while as a result of the increased force exerted, a more than adequate supply must be pumped into the thoracic and cranial cavities, with in turn local hypertrophies, provided there is locally anywhere greater adaptability to receive increased blood supply, or if not, a possible greater general growth, if each bloodvessel above the stenosis receives its equal share. Hypertrophies will perhaps be especially formed where the vascular supply is richest and there is the least resistance to growth in empty space, as in the tongue, tonsils, thyroids, etc. Headaches can be traced to the same cause and the quick relief following a purgative may often be accounted for by the rapid cessation of the vascular tension (cranial) or release of the abdominal weight, relieving the heart, instead of through the removal of toxic products." (A much slower process.)

The rapid decrease in size of engorged tonsils following a purge will demonstrate constipation as its cause, whereas by correction of the enteroptosis I have seen some enlarged tonsils and marked symptoms of adenoids permanently but slowly disappear; this is also true of some thyroids. Even where there is a large goitre and breathing is embarrassed thereby, a thorough purge will often give temporary relief by relieving the excessive engorgement. (Pulmonary congestions are also relieved quickly by purgatives.)

The reduction of goitres effected by iodides is not in tissue but in reduction of engorgement of the vascular spaces through lessened viscosity of the blood, and therefore never results in complete reduction. Many periods and occasions occur in life, favoring an increasing active or



...the vascular supply to the thyroid and other organs, such as violent exercise during play, running, hill or mountain climbing, beginning adolescence, menstruation, pregnancy, worry, fright, and other shocks, overlifting in men, fright and flight in animals, all leading to increased violent heart action, without perfect vasomotor control, with resultant overgrowth, oversecretion, etc., in those whom vascular supply permits of greater relative increase, in some also resulting in increased or perverted glandular secretion as well as growth, yet, all in all, it seems to me explained by cardiac overaction, modified though it may be by inner-

NATHAN ROSENWATER, M. D.

### Book Reviews.

The publication of this book is welcomed, but we cannot add to the commendation to receive them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

**On Pharmaco-Therapy and Preventive Inoculation.** Applied to Pneumonia in the African Native. With a Discourse on the Logical Methods which ought to be Employed in the Evaluation of Therapeutic Agents. By Sir ALMROTH E. WRIGHT, M. D., F. R. S. New York: Paul B. Hoeber, 1915. Pp. xii-124. (Price, \$2.)

This is a report of an investigation undertaken in Africa with the hope of discovering some method of reducing the ravages of pneumonia among the native laborers in the Rand mines. The first part comprises chapters dealing with the pharmacotherapy of the disease, mainly from an experimental point of view. An attempt is made in it to determine the value of Morgenroth's synthetic, ethylhydrocuprein—optochin—chiefly by means of animal and test tube experiments. The conclusion reached is that these experiments warrant the assertion that it is specific against the pneumococcus and that it should be effective in this regard *in vivo*. A discussion is also introduced in this section of the respective values of the statistical and experimental methods of evaluation of therapeutic experiments. Wright offers sharp criticism of an unfavorable nature of the statistical method and adduces evidence to support his contention that the best results can be obtained from the experimental method. Part II deals with the questions of the methods and results of prophylactic inoculation against pneumonia. The preparation of the vaccines as well as some generalizations as to their *modus operandi* occupy considerable space. This is followed by an account of the laboratory work which was undertaken in the solution of this problem and a general survey of the results secured from the use of the vaccine. The conclusion is that much reduction in the incidence and mortality of pneumonia can be secured by the prophylactic use of large doses of the vaccines. The volume is fairly interesting, but the mode of presentation of the subject is somewhat tedious and difficult to follow. It may not be altogether germane to a review to condemn an act of the publishers of a book, but it is no more germane to a book itself for the publishers to insert in it an advertisement of vaccines which is equal in volume to one half of the real subject matter of the book. Two dollars is the price of this volume of 124 pages, of text and 15 pages of advertisement. How is the price determined?

**From Field to Home: Inoculation, Hygiene, and Remedies.** (Illustrated by Diagrams.) By JAMES G. DUDLEY, A. B., Graduate of the University of New York. Part I. Hygiene. (1914, 1915.) Part II. Remedies. (1915, 28 pp.) New York: John C. Rankin Company, 1915.

Everyone who has to travel in the present subway will at once concede that the provisions now existing for ventilation are wholly inadequate for the purpose, and there are few who would contend that there is not room for great improvement. The pamphlet prepared by Dudley should be of considerable interest, therefore, to the traveling community, for it is evident that he has handled the subject in a thorough and comprehensive manner. In the first part he sets forth the principles of the various ventilation systems, and in the second part he discusses the various methods of ventilation.

total failure. In the second part he offers a plan which, on paper, seems to us who are not engineers to be at once both economical and entirely efficient. In brief, he suggests that ventilation be carried out on the air lock plan. To accomplish this all existing openings into the air must be closed and certain stations must be provided with air lock rotary doors so as to prevent the entrance of air at such points. In the kiosks of "locked" stations suitable exhaust fans should be installed, capable of completely exhausting the air of the section to the nearest open station in either direction once every twenty minutes or half hour. By this method of dividing the subway into sections it would be possible to change the air in each section completely in the prescribed time, and this would be accomplished in a positive and independent way, having no regard to the movement of trains. The system should be installed with its own separate and independent power supply so that it might continue in operation in the face of short circuits such as those which occurred recently and caused the suffocation of many passengers and the death of one through lack of ventilation.

### Interclinical Notes.

An interesting article in the *Survey* for October 30, 1915, is the comment on Elizabeth Greene's suggestion as to further use of the hospital records made of each patient. Miss Greene is connected with Barnes Hospital, St. Louis, and is impressed with the possible value of such records for municipal research in matters pertaining to public health and welfare. Hospitals might become civic units for the scientific investigation of disease, its cause and prevention. In the case of arrest of a criminal, a past hospital record might disclose pathological reason for a crime. Some day, perhaps, a pathological condition will be looked for in all criminal histories.

\* \* \*

Theodore H. Price, editor of *Commerce and Finance*, remarks in the *Outlook* for October 30, 1915: "I wish that I might say something that would convince those who habitually refuse to employ a man because he is no longer young of the injustice and short sightedness of their policy. I have often thought that it was the expression of a paternal desire to 'bring up young men.' Certainly the men who bear the heaviest responsibilities of the world today, from Wilson, Joffre, Asquith, and Kitchener down, are well over fifty. The corporations are chiefly responsible for the barrier which has been erected against men over fifty years old; but, for the most part, the heads of these corporations are themselves well past the meridian of life, and their rule is a negation of their own efficiency. I appeal to them to give their contemporaries a chance, for there are many men of fifty and over today out of work who are the superiors of youth in accuracy, judgment, and dependability. For such, unemployment is a denial of hope that hastens death and makes existence, while it lasts, a hell on earth."

\* \* \*

Dr. William Brady discourses on feet and their troubles in a handsomely illustrated article in the November *Nurse*. Other medical contributors are Dr. Thompson Frazer on tuberculosis, Dr. Donald McCaskey on the railroad surgeon, Dr. Anne E. Perkins on nursing in Italy, and Dr. George Dow Scott on diet in sickness and health. Beside numerous articles of value not only to the nurse, but to the open minded practitioner, there are special contributions on what might be called nursing side lines, like the disposal of flowers in the sick room, the use of door hushers, the economy of uniforms, etc., which show keenness and activity of mind in the editorial staff.

\* \* \*

Charles A. Doremus has an admirable article in the *Outlook* for October 27th on American Contributions to Chemistry, in which he pays the high tribute to the Chemists' Club of New York that it affords American chemists facilities unknown in Europe. It is perhaps not generally known that to an American chemist is due the invention of the oxyhydrogen blowpipe, also that of the electric furnace, without which chemistry would have stayed about where it was in 1840. Some comments of John L. Sullivan on

our careless consumption of alcoholic beverages form the basis of editorial comment in this issue of the *Outlook*.

**Current Opinion** for October covers the usual ground, taking the entire world for its stage and all its activities for the *mise en scène*. We find that America is finally to be introduced to the ballet as a form of art new to it, not to be confounded with musical comedy, an amorphous and degenerate activity of our theatre. The meaning of the cult of wrong notes is a capital discussion from the *Musical Quarterly*, which leads us to ponder on the sanity of some recent composers. Three delusions of war is another stimulating article, while plagiarism among artists will make generally known a crime or peccadillo, familiarity with which has hitherto been confined to a few multilinguists of artistic proclivities.

## Meetings of Local Medical Societies.

**MONDAY, November 5th.**—New York Ophthalmological Society; Society of Medical Jurisprudence, New York; Roswell Park Medical Club, Buffalo (annual); Association of Alumni of St. Mary's Hospital, Brooklyn; Williamsburg Medical Society, Brooklyn; New Rochelle, N. Y., Medical Society (annual).

**TUESDAY, November 9th.**—New York Academy of Medicine (Section in Neurology and Psychiatry); Federation of Medical Economic Leagues of New York; Medical Society of the County of Wyoming (annual); Ontario County Medical Society (annual); Medical Society of the County of Schenectady; Medical Society of the County of Rensselaer; Buffalo Academy of Medicine (Section in Medicine); Medical Society of the County of Oneida.

**WEDNESDAY, November 10th.**—New York Pathological Society; New York Surgical Society; Schenectady Academy of Medicine; Medical Society of the Borough of the Bronx; Richmond County Medical Society; Dunkirk and Fredonia Medical Society; Rochester Academy of Medicine; Medical Society of the County of Montgomery; Medical Society of the County of Dutchess (annual).

**THURSDAY, November 11th.**—New York Academy of Medicine (Section in Pediatrics); Gloversville and Johnstown Medical Association; Physicians' Club of Middletown; West Side Clinical Society, New York; Brooklyn Pathological Society; Blackwell Medical Society of Rochester; Jenkins Medical Association, Yonkers; Society of Sanitary and Moral Prophylaxis, New York; Buffalo Ophthalmological Club; Jamestown Medical Society; Society of Physicians of the Village of Canandaigua; Medical Society of the County of Alleghany (annual).

**FRIDAY, November 12th.**—New York Academy of Medicine (Section in Otolaryngology); Society of Ex-Interns of the German Hospital in Brooklyn; Flatbush Medical Society, Brooklyn; Eastern Medical Society of the City of New York; Society of Alumni of St. Luke's Hospital.

## Official News.

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending October 27, 1915:*

**Austin, H. W.,** Senior Surgeon. Granted one month's leave of absence from October 23, 1915. **Bahrenburg, L. P. H.,** Surgeon. Granted five days' leave of absence on account of sickness from October 12, 1915. **Carter, H. R.,** Assistant Surgeon General. Ordered to proceed to San Juan, P. R., on special temporary duty. **Christian, S. L.,** Assistant Surgeon. Granted sixteen days' leave of absence from November 1, 1915. **Cox, Ora H.,** Assistant Surgeon. Relieved from duty on Coast Guard Cutter *Androscoogin*, and ordered to report at the Marine Hospital, Boston, Mass., for temporary duty.

**Crohurst, E. R.,** Sanitary Engineer. Directed to proceed to Peoria, Ill., for collection of data necessary to studies of industrial wastes. **Currie, Donald H.,** Surgeon. Relieved from duty at San Francisco, Cal., and ordered to proceed to Honolulu, Hawaii, for duty as director of the Leprosy Investigation Station. **Derivaux, R. C.,** Assistant Surgeon. Relieved from duty at the Hygienic Laboratory, and ordered to report for duty in investigations of malaria at New Orleans. **De Saussure, R. L.,** Assistant Surgeon. Relieved from duty at the Hygienic Laboratory, Washington, D. C., and ordered to proceed to the Marine Hospital, Baltimore, Md., for duty. **Frost, W. H.,** Passed Assistant Surgeon. Directed to proceed to Columbus, Ohio, for conference with the State health officer relative to water supplies from interstate carriers in Ohio. **Hughes, T. E.,** Assistant Surgeon. Ordered to report to Surgeon W. W. King at San Juan, P. R., for temporary duty. **Hurley, J. R.,** Passed Assistant Surgeon. Granted seven days' leave of absence en route to station. **Kearney, R. A.,** Passed Assistant Surgeon. Relieved from duty in connection with plague eradication measures at New Orleans, and ordered to report to the director of the Hygienic Laboratory, Washington, D. C., for temporary duty. **Laughlin, J. B.,** Assistant Surgeon. Relieved from duty at the Hygienic Laboratory, and ordered to proceed to New Orleans, La., for special temporary duty in plague eradication measures. **Lloyd, B. J.,** Surgeon. Directed to travel within the North Pacific Interstate Sanitary District for the collection of water samples and sanitary survey of watersheds. **MacCaffry, W. B.,** Acting Assistant Surgeon. Granted seven days' additional leave of absence from October 26, 1915. **McCoy, G. W.,** Surgeon. Relieved as director of the Leprosy Investigation Station, and detailed as director of the Hygienic Laboratory. **Michel, Carl,** Assistant Surgeon. Relieved at Ellis Island, N. Y., and Fort Trumbull, Connecticut, and ordered to report to the commanding officer of the Coast Guard Cutter *Itasca*, South Baltimore, Md., for duty. **Nydegger, J. A.,** Surgeon. Detailed by the secretary of the treasury as a member of a Coast Guard Retiring Board convened at the Marine Hospital, Baltimore, Md., October 27, 1915. **Phelps, E. B.,** Professor. Continued on duty with the International Joint Commission without interference of other official duty. **Preble, Paul,** Passed Assistant Surgeon. Granted four days' leave of absence on account of sickness, from September 29, 1915; granted twelve days' leave of absence from October 26, 1915. **Stewart, P. M.,** Assistant Surgeon. Relieved from duty at Baltimore, Md., and ordered to proceed to Ellis Island, N. Y., for duty. **Sutton, Don C.,** Assistant Surgeon. Relieved from duty at New Orleans, La., and ordered to report to the commanding officer of the United States Coast Guard Cutter *Androscoogin*, at Boston, Mass., for duty. **Sydenstricker, Edgar,** Statistician. Detailed to present an address at the meeting of the National Association for the Study of Pellagra at Columbia, S. C., October 21, 1915. **Vogel, C. W.,** Surgeon. Detailed by the secretary of the treasury as a member of a Coast Guard Retiring Board convened at the Marine Hospital, Baltimore, Md., October 27, 1915. **Weldon, Lon O.,** Assistant Surgeon. Granted five days' leave of absence en route to Ellis Island, N. Y. **Wrightson, W. D.,** Sanitary Engineer. Relieved from duty at New Orleans, La., and ordered to proceed to Seattle, Wash., for duty in plague eradication measures. **Wynne, R. E.,** Assistant Surgeon. Granted fifteen days' leave of absence from November 1, 1915, and upon termination of leave, ordered to report at the Hygienic Laboratory, Washington, D. C., for temporary duty.

### Boards Convened.

Boards of commissioned medical officers convened for the examination of applicants for appointment as assistant surgeons, November 1, 1915, as follows: Marine Hospital, San Francisco, Cal.; Detail for the board, Surgeon L. L. Williams, chairman; Surgeon J. M. Holt, recorder. Marine Hospital, Chicago, Ill.; Detail for the board, Surgeon J. O. Cobb, chairman; Assistant Surgeon C. L. Williams, recorder. Marine Hospital, New Orleans, La.; Detail for the board, Surgeon R. H. von Ezdorf, chairman; Assistant Surgeon S. L. Christian, recorder. Marine Hospital, St. Louis, Mo.; Detail for the board, Surgeon M. J. White,

Assistant Surgeon H. C. Gody, recorder. **Saltzman**, First Sergeant, New Mexico. Detail for the board. Surgeon F. C. Smith, chairman; Passed Assistant Surgeon F. H. McKee, recorder.

### United States Army Intelligence:

*Eighty-third list of changes in the status and duties of officers serving in the Medical Corps of the United States Army for the week ending October 23, 1915:*

**Bartlett**, William H., Captain, Medical Corps. Relieved from duty at Fort Ethan Allen, Vt., to take effect on relief from treatment at the Walter Reed General Hospital, Washington, D. C., and then to proceed to Fort Totten, N. Y., for station and duty. **Bull**, Raymond C., First Lieutenant, Medical Corps. Granted six months' leave of absence on surgeon's certificate of disability. **Chilton**, Frank N., Captain, Medical Corps. Reports arrival in United States, October 12th, and on two months' leave of absence, with address, Harrisonville, Mo. **Davenport**, Walter P., First Lieutenant, Medical Corps. Ordered to proceed to San Francisco, Cal., and take the first available transport to Manila, P. I. **Ellis**, W. W., First Lieutenant, Medical Reserve Corps. Will remain on duty at Fort Du Pont, Delaware, until the return of Captain John S. Coulter to that post for duty. **Ford**, Joseph H., Major. Upon completion of present duties will proceed to Fort Hamilton, New York, for duty. **Fuller**, Leigh A., Major, Medical Corps. Has been granted a further extension of twenty-one days to leave of absence previously granted. **Hall**, James F., Major, Medical Corps. Will make not to exceed two visits of instruction prior to December 31, 1915, to sanitary organizations of organized militia, located in Norway and Waterville, Me.; Concord, N. H.; Burlington, Vt.; Bridgeport, New Haven, Hartford, and Waterbury, Conn.; Providence, R. I.; and Springfield, Fitchburg, Charlestown, Cambridge, and Salem, Mass., and upon completion of each tour, to return to his proper station, Boston, Mass. **Hanson**, L. H., Captain. Granted eighteen days' leave of absence, effective on or about November 15, 1915. **Huggins**, John B., Captain. Relieved from duty in the Southern Department, and ordered to proceed to Fort Robinson, Nebraska, for duty. **Keene**, T. B. V., First Lieutenant, Medical Reserve Corps. Ordered to duty for one day to conduct the annual physical examination of officers of the United States Army. **McAfee**, Leary B., Captain, Medical Corps. Reports departure from Honolulu, H. T., on commercial liner for United States; under orders to Fort Riley, Kansas, for station and duty. **Mabee**, James I., Captain, Medical Corps. Ordered to report on or about November 1, 1915, to the commanding officer at Fort Ontario, New York, for temporary duty. **Metcalf**, Albert W., Jr., First Lieutenant, Medical Reserve Corps. Ordered to proceed to Fort Washington, Maryland, for duty with coast defenses of the Potomac River. **Munson**, Edward L., Lieutenant Colonel, Medical Corps. Reports on one month's leave of absence from October 14th, address 113 Whitney Avenue, New Haven, Conn. **Orear**, W. B., First Lieutenant, Medical Reserve Corps. Reports relief from Fort Screven, Georgia, and from active duty in the Medical Reserve Corps. **Proxmire**, Theodore S., First Lieutenant, Medical Reserve Corps. Reports relief from active duty and return to his home, Lake Forrest, Ill. **Rich**, Edwin W., Major, Medical Corps. Will return to his proper station, Fort Clark, Texas, when his services are no longer required at the Medical Supply Depot, Port of Embarkation, Galveston, Texas. **Robertson**, James A., First Lieutenant, Medical Reserve Corps. Reports relief from active duty in that corps and from duty at Fort Thomas, Kentucky. **Robinson**, James L., Captain, Medical Corps. Granted two months' leave of absence.

### Married.

**Allen—Briggs**.—In Lawrence, Mass., on Wednesday, October 20th, Dr. Harold N. Allen, of Norway, Me., and Miss Emily Briggs. **Barkan—Bunker**.—In Berkeley, Cal., on Wednesday, October 20th, Dr. Hans Barkan, of San Francisco, and Miss Phoebe Bunker. **Blackwell—Jackson**.—In Richmond, Va., on Wednesday, October 27th, Dr. J. Heyward Blackwell, Jr., and Miss Charlotte Virginia Jackson. **Duston—Perkins**.—In Kingston, Mass., on Saturday, October 16th, Dr. Frank A. Duston, of St. Stephen, N. B., and Miss Rachel E. Perkins. **Hennessey—Miller**.—In Allston, Mass., on Wednesday, October 27th, Dr. T. Hennessey, of Lynn, and Miss Gertrude Miller. **Hyman—Davis**.—In New York, on Thursday, October 28th, Dr. Abraham Hyman and Miss Belle Davis. **Leard—Earnshaw**.—In Chicago, Ill., on Tuesday, October 26th, Dr. John H. S. Leard, of Jamaica Plain, Mass., and Miss Isabelle H. Earnshaw. **McKim—Jackson**.—In Boston, Mass., on Tuesday, October 12th, Dr. W. Duncan McKim, of Washington, D. C., and Miss Leonora Jackson. **Robinson—Clarke**.—In Milford, Conn., on Saturday, October 16th, Dr. Fred William Robinson, of Sturgis, Mich., and Miss Mildred Leonora Clarke. **Wanamaker—Allmond**.—In Seattle, Wash., on Wednesday, October 20th, Dr. Allison Wanamaker and Miss Mary Helen Allmond.

### Died.

**Abbott**.—In Philadelphia, on Monday, October 25th, Dr. Harvey N. Abbott, aged fifty-nine years. **Beska**.—In Passaic, N. J., on Monday, October 25th, Dr. Victor G. Beska, aged thirty-four years. **Brown**.—In San Diego, Cal., on Monday, October 18th, Dr. Henry N. Brown, of Worcester, Mass. **Dyer**.—In Boston, Mass., on Monday, October 18th, Dr. Willard Knowlton Dyer, aged sixty-four years. **Frizzell**.—In Kansas City, Mo., on Monday, October 18th, Dr. Lloyd N. Frizzell, aged forty-four years. **Gooding**.—In Bristol, R. I., on Sunday, October 24th, Dr. Gertrude Gooding, aged sixty years. **Grove**.—In Carlisle, Pa., on Saturday, October 23d, Dr. Eugene A. Grove, aged sixty-five years. **Huddleston**.—In New York, on Saturday, October 30th, Dr. John Henry Huddleston, aged fifty-one years. **Jones**.—In Saranac Lake, N. Y., on Saturday, October 23d, Dr. Amzi Jones, aged forty-one years. **Kimball**.—In Huntington, Mass., on Wednesday, October 20th, Dr. W. G. Kimball, aged sixty-eight years. **Knowlton**.—In San Diego, Cal., on Sunday, October 24th, Dr. Herbert E. Knowlton, aged forty-eight years. **Leisenring**.—In San Diego, Cal., on Friday, October 15th, Dr. Peter S. Leisenring, aged eighty-five years. **McBaine**.—In St. Louis, Mo., on Sunday, October 17th, Dr. Richard McBaine, aged thirty-two years. **McClellan**.—In Xenia, Ohio, on Sunday, October 17th, Dr. Harvey R. McClellan, aged eighty-nine years. **McGuigan**.—In Philadelphia, on Thursday, October 21st, Dr. James A. McGuigan, aged eighty years. **McKim**.—In New York, on Thursday, October 21st, Dr. Robert V. McKim, aged seventy-four years. **Norton**.—In New York, on Thursday, October 28th, Dr. Horace G. Norton, aged fifty-seven years. **O'Daniel**.—In Macon, Ga., on Friday, October 15th, Dr. Mark H. O'Daniel. **Parker**.—In Philadelphia, on Thursday, October 21st, Dr. Joseph B. Parker, aged seventy-four years. **Perry**.—In Los Angeles, Cal., on Wednesday, October 20th, Dr. Alexander Perry, aged thirty-five years. **Regan**.—In Brooklyn, N. Y., on Wednesday, October 27th, Dr. Timothy J. Regan, aged fifty-three years. **Scott**.—In McKeesport, Pa., on Monday, October 18th, Dr. Joel F. Scott, of Wilson, Pa., aged sixty-two years. **Scott**.—In Brooklyn, N. Y., on Wednesday, October 27th, Dr. William H. Scott, aged eighty-three years. **Syphers**.—In Portland, Me., on Monday, October 25th, Dr. James H. Syphers, aged seventy-eight years. **Tupper**.—In Lima, Ohio, on Thursday, October 21st, Dr. Eugene L. Tupper, aged forty-two years. **Williams**.—In Clay City, Ky., on Wednesday, October 13th, Dr. J. A. Williams, aged sixty-eight years. **Wright**.—In Newark, N. J., on Sunday, October 17th, Dr. James H. Wright, of Natick, Mass.

### Births, Marriages, and Deaths.

#### Born.

**Klein**.—In Brooklyn, N. Y., on Wednesday, October 27th, to Dr. and Mrs. Louis Klein, a son. **Tunick**.—In New York, on Saturday, October 23d, to Dr. and Mrs. Isadore S. Tunick, a son.



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### Original Communications.

#### PERITONITIS.\*

BY JOHN B. DEEVER, M. D.,  
Philadelphia,  
AND DAMON B. PFEIFFER, M. D.,  
Philadelphia.

The word peritonitis, so glibly spoken, is deceptive unless we keep constantly in mind that it is not so much a disease *per se* as it is a complication of other diseases, and varies most remarkably in its character and course according to its origin, its situation, its bacteriology, and its treatment or lack of treatment. A proper understanding of peritonitis implies a thorough familiarity, not only with the peritoneum, its anatomy, pathological physiology and bacteriology, but also with the diseases that give rise to it, and successful treatment can be based only on the most thorough understanding, for there is no rule of thumb which can be applied to such a protean condition.

#### PATHOLOGY.

The outstanding features of the peritoneum in relation to inflammation of that membrane are:

1. Its great extent and tortuous reduplications.
2. The importance of its endothelium.
3. The phenomena of exudation and absorption.

It has been determined that the total area of the peritoneum on the average approximates 17,500 square inches, which is about equal to that of the skin. Its fields, fossae, and convolutions have important clinical bearings. The peritoneal cavity remains a cavity only by virtue of the single layer of delicate flat endothelial cells by which the peritoneum is covered. Whenever this endothelial covering is permanently destroyed at any point, granulation tissue springs up and attaches itself to adjacent structures, forming adhesions which interfere with that free mobility so essential to the functions of the alimentary tract. The peritoneum, however, has the power of forming adhesions which are of a temporary nature and are in the highest degree important and protective. This is accomplished by its property of exudation, which with its converse, absorption, are the special properties of the peritoneum that demand close study and appreciation in order to enable us to formulate a rational therapy for the inflamed membrane.

Normally the peritoneum is merely moist with a lubricating film of lymph. Such balance between

exudation and absorption exists that at no time under normal circumstances is there any excess of fluid. So true is this that when we find but a small amount of free serous fluid on opening the peritoneal cavity, it apprises us of the existence of some pathological state of one or more of the viscera contained therein.

The phenomena of exudation are at bottom entirely protective in nature. The insulted peritoneum weeps and by its tears it defends itself. The insults to which the peritoneum is exposed result from the intrusion of bacteria. Clinically and practically speaking, all peritonitis is infective. We formerly heard much of idiopathic and chemical peritonitis. Today both terms are dropped from the nomenclature. The only trace of so called idiopathic peritonitis is to be found in the very occasional case in which we cannot demonstrate the source of the infection in a diseased viscus and are forced to resort to the hypothesis of lymphatic or hemic infection. As for chemical peritonitis, it is obvious that poisonous or irritating substances, if they found their way into the peritoneum, would set up an inflammatory reaction in that membrane. Experimental and clinical work have shown that practically any foreign body in the peritoneal cavity will excite more or less reaction. Recent work by students in the University of Pennsylvania in the laboratory of experimental surgery under the direction of Sweet, has revealed that such bland substances as vegetable or paraffin oils, which have been recommended for the prevention of adhesions, are capable of causing a mild inflammation which tends to produce adhesions. Blood, bile, and urine, even in the absence of microorganisms, excite an inflammatory reaction on the part of the peritoneum. Blood is the least irritating, but when it is present for any considerable length of time in the form of clots, it generates adhesions, as in the well known pelvic hematocele. Bile and urine are more intensely irritating and not only set up an irritative peritonitis, but so interfere with the functions of the intestine and the integrity of its wall that in a short time bacteria make their way into the peritoneal cavity. In certain instances the bile and urine, from perforation of their containing viscera, are already infected and a combined infective and irritative peritonitis results. This also is seen in perforation of the stomach, duodenum, and upper portions of the intestinal tract in which the bile and activated pancreatic juice which are there present add materially to the effects of simple infection. From the lower intestinal tract and pelvis of the female we get peritonitis, which is most often infective or bacterial in nature. This form of peritonitis results from the

\*Read before The Eastern Medical Society of the City of New York, October 8, 1915; for a discussion of this communication, see page 1019.

toxic effects of bacteria and their metabolic products which have found their way into unaccustomed direct contact with the peritoneum.

In all these eventualities there is set in motion at once an increase of the peritoneal properties of exudation and absorption with a disturbance of their normal equality. Inert and nonirritating particles may be rapidly removed by absorption into the subperitoneal lymphatics. Unless the factor of irritation is present, exudation will be slight or absent. When irritation is induced, as is always the case under clinical conditions, exudation preponderates, and while the rate of absorption in all probability is accelerated, there is an accumulation of extravasated fluid and of the mobile cells of the body.

The capacity of absorption possessed by the peritoneum is astonishing. Wenger found that the dog in one hour can absorb an amount of fluid equal to from three to eight per cent. of its body weight. The rapidity with which the peritoneum can exude fluids is also remarkable, as can be appreciated by anyone who has seen the large amount which may be present in the peritoneal cavity a few hours after perforation of the stomach or intestine.

Not all the phenomena of absorption and exudation are as yet clear, yet much important information has been gleaned. It should be noted that absorption may take place through the lymphatics and the blood stream. Doubtless both are important. Experimental work shows that finely divided material or minute particles, such as carbon, chicken corpuscles, and bacteria find their way into the subperitoneal lymphatics and are transported a considerable distance to the regional nodes with great rapidity. According to Poirier and Cuneo, the penetrating endomysial tracts from the abdominal to the pleural surface of the diaphragm communicate with nodes on that surface, consisting of two small middle lateral groups and several small anterior groups, including the costophrenic glands of Sappey; afferent tracts extend to these groups from the liver and efferent tracts lead to the retrosternal lymphoid tissue.

Duxton and Torrey showed that particles injected into the upper peritoneum could be detected within five minutes in the retrosternal lymph nodes. Woolsey maintains also that foreign particles reach these nodes in equally brief time when the material was introduced into the pelvis. In general, however, experimental evidence and clinical experience point to a more rapid absorption by the upper and diaphragmatic peritoneum than by that of the lower and pelvic portions of the membrane. Just how bacteria and other particles make their way through the endothelial surface and into the lymph vessels is not known to a certainty. The stomata formerly thought to exist between the endothelial cells, have been shown by Muscatello, MacCallum, and Kolosow, to have been artifacts. That the phenomenon does occur, however, there is no doubt, and that the lymphatics are particularly charged with the removal of foreign particles also cannot be questioned. In the case of soluble substances, particularly crystalloids, however, it is probable that the blood stream plays quite as important a role if not more important than the lymphatics. The experiments of Dandy and Rowntree

with the absorption of phenolsulphonephthalein from various areas of the peritoneum, showed clearly that the blood was chiefly concerned in the absorption of this substance at least, and it is a fair inference that the soluble products of bacterial activity may follow the same route. Their experiments, moreover, showed that in the case of this substance there was no great difference between the absorptive power of the upper and lower peritoneum, though such difference as did exist was in favor of the greater activity of the diaphragmatic peritoneum, as hitherto believed.

From these facts it is readily seen that the entrance of bacteria into the abdominal cavity is followed practically at once by local and systemic effects. By lymphatic and hemic absorption bacteria and their products are taken up and distributed to the lymphatic tract and to the general circulation, while in the peritoneum the membrane responds by pouring forth a serous exudate. The outcome of the process depends upon the virulence and amount of the infection and the energy of the local and general resistance. In the most favorable cases the bacteria are promptly absorbed or placed *hors de combat* by the immune bodies of the lymph. In more severe cases the bacteria persist, multiply, and inflict increasing damage upon the exposed peritoneum, which in turn calls to its assistance, not only the lymph, but the wandering protective cells of the body, the phagocytic leucocytes. In this light the turbid leucocyte laden fluid of the early stages of peritonitis is seen to be a protective fluid, not to be dreaded and roughly wiped or irrigated away as was the former practice now almost generally abandoned. If the damage to the peritoneum continues after the stages of serous and seropurulent exudate, the membrane loses its lustre, and over its surface is laid down a deposit of fibrinous material rich in leucocytes. This may become very thick and tenacious. It accomplishes a twofold purpose. First, it limits absorption by cofferdamming the lymph and bloodvessels. Secondly, it acts as a mortar by which the adjacent peritoneal structures become bound together, thus shutting off and isolating areas of tissues which are so virulently infected as to defy absorption or the immediate bactericidal action of the peritoneal fluid exuded. Within this wall the infective process may go on, while the general cavity remains protected from its spread.

Since it is never certain in dealing with diffuse peritonitis just how virulent it may be or how great its capacity to spread and become generalized, it is most important to favor such localization and plastic isolation of its point of origin by every means in our power and, *per contra*, to avoid any fancied therapeutic measure which tends to favor diffusion of the infectious process. Naturally the best means of preventing diffusion of infection, when it can be done, is the immediate removal or repair of the source of the infection. This is the philosophy of the early operation in appendicitis and perforative accidents of the bowel, the application of which has met with such brilliant success.

Unfortunately it is not always possible, and when possible it does not always happen, that surgical aid is employed in the nick of time, and many cases first come to the surgeon in much more advanced stages

of the disease. It is high time that it is generally and thoroughly understood that the majority of such cases reach their deplorable state through a current misconception of the origin and course of peritonitis and the nonoperative measures which are most effective in its control. It would seem that enough had been said in emphasis of the dangers of delay in the surgical treatment of appendicitis and other intraabdominal diseases which are prone to be complicated by peritonitis to impress any man who is capable of receiving an impression and acting upon it. It may do some good, therefore, if we point out to the congenital delayer that if he abandoned some of his present practices, he would at least send his patient to the surgeon when it becomes obvious that he must do so, in a much more favorable condition for operative recovery. I have in mind particularly the prevalent practice of purging in all abdominal diseases. If it is rational to hope for isolation of an infected focus which does not subside spontaneously, it is not rational to set up a violent peristalsis which will oppose or prevent such plastic isolation. If the physician is so bold as to attempt the medical treatment of peritonitis until it becomes evident that he has failed, he should at least give his patient the benefit of the measures which have been shown by abdominal surgeons the world over to be most efficacious in the nonoperative treatment of the disease. Pfeiffer has recently tabulated sixty-three cases of acute peritonitis with regard to their preliminary treatment. The following table shows how little the lesson has been taken to heart.

SIXTY-THREE CASES OF APPENDICITIS COMPLICATED BY PERITONITIS

|                             |      |   |
|-----------------------------|------|---|
| Localized abscess           | 43   | <div style="display: inline-block; vertical-align: middle;">           Cured 19<br/>           Fatal 2         </div> |
| Diffuse peritonitis         | 24   | <div style="display: inline-block; vertical-align: middle;">           Fatal 2<br/>           Cured 19         </div> |
| Purged before admission     | 36   | <div style="display: inline-block; vertical-align: middle;">           Fatal 2<br/>           Cured 19         </div> |
| Not purged before admission | 7    | <div style="display: inline-block; vertical-align: middle;">           Cured 6<br/>           Fatal 1         </div>  |
| Opiates before admission    | 32   | <div style="display: inline-block; vertical-align: middle;">           Fatal 4<br/>           Cured 18         </div> |
| No opiates before admission | 44   | <div style="display: inline-block; vertical-align: middle;">           Fatal 1<br/>           Cured 43         </div> |
| Food or fluid by mouth      | 1    | <div style="display: inline-block; vertical-align: middle;">           Fatal 1<br/>           Cured 0         </div>  |
| Enteroclysis                | None |   |
| Fowler or sitting position  | None |   |

The proper field for the foregoing measures, as we shall see, is postoperative, when the source of the peritoneal infection has been dealt with, but their efficacy has often been tested in severe cases before operation, and that they are great aids in controlling the spread and causing the localization of peritoneal inflammation, cannot be doubted. The only reason why they are not in more general use is because the level of practice is always a decade behind advanced special knowledge. We are convinced that if cases of peritonitis were given the benefit of proper preliminary treatment by the physician in charge, practically the only mortality would be in the few cases that were denied the obvious need of surgical drainage of pus collections and those unfortunate enough to be subjects of a type of infection that no resources of medicine or surgery can control.

The bacteriology of peritonitis has much to do with its outcome. The possible infecting microorganisms almost run the gamut of the pathogenic bacteria. Most dreaded is the streptococcus. Not all cases of streptococcal peritonitis end fatally, since this organism varies widely in its pathogenicity and virulence, but too frequently the streptococcus causes a spreading, nonexudative, nonlocalizing peritonitis,

that runs a course uninfluenced by treatment, much like the well known fatal cases of streptococcal cellulitis of the surface of the body. Fortunately it is not common. It may be suspected in fulminating cases, when the peritoneum is relatively dry, but highly inflamed and shows little tendency toward the formation of fibrinous exudate. The more common streptococcal infections of the pelvis, usually complicating some stage of the child bearing state, as Murphy has pointed out, are more often subperitoneal streptococcal cellulitis than true peritonitis. These may be quite as fatal in themselves or may give rise to true spreading peritonitis within the cavity, but in some instances also they remain localized in the cellular tissues of the pelvis. Operation in such cases is likely to convert them into a true peritonitis with fatal outcome.

Pneumococcal peritonitis is closely akin to the streptococcal variety, but is peculiar in that in the majority of cases the portal of entry cannot be found. In that sense it may be called a primary peritonitis which we have come to recognize as one of the greatest rarities. It is at present undecided whether the organisms enter the peritoneum from the blood or lymph streams, whether they make their way through the wall of the intestine or up the Fallopian tube in the female. It is more common in children, sets in with stormy abruptness, and presents for diagnosis merely the picture of severe generalizing peritonitis. A septicemic condition often accompanies the peritonitis and pneumonia is a frequent complication. The diagnosis is rarely possible before operation, when it may be suspected by the lack of an evident primary focus, and the presence of widely disseminated, nonodoriferous, flaky, and slightly greenish pus.

It is frankly doubtful just what benefit operation has in such cases since the only relief afforded is the lessening of tension and evacuation of a portion of the pus, measures which are correspondingly offset by the disadvantages to the patient of the operative manipulations and the anesthesia. Some cases end in recovery with operation, but the majority are fatal. Some cases terminate favorably without operation, but usually present one or more loculated collections of pus which must be relieved by incision and drainage. In view of the difficulties attending preoperative diagnosis, we could not counsel delay in operation since the affection is relatively so rare that we should be more likely to miss operating in a case that needed it than to diagnosticate correctly the true condition. However, in the presence of a typical case with evident general involvement of the peritoneum, I should not hesitate to delay operation and use the nonoperative measures designed to cause subsidence and localization, and we should feel particularly fortified in this plan of action since it is our general practice to delay operation in the toxic cases of generalized peritonitis. Whatever the bacteriology of the infection, our position then is simply this—that when there is adequate reason to suspect pneumococcal peritonitis we should the more willingly delay operation until the stormy symptoms subside, if they do subside, and in the light of operative results in the same group of cases, a fatal outcome would not cause us to regret not having operated precipitately.



By far the greatest number of cases of peritonitis take their bacteriology from the flora of the intestines, owing to the fact that peritonitis usually arises from disease of the alimentary tract. There are some differences in the type of peritonitis according to the section of the bowel from which it arises. It is well known that the stomach and upper intestine are frequently sterile or nearly so, owing to the bactericidal action of the secretions of the stomach and upper intestine with its derivatives, the liver and pancreas. The further down the tract we go, the greater the number of bacteria, until, in the lower ileum and particularly in the colon, the bacteria are innumerable. The bacterial content of the intestinal exudations in peritonitis from the upper and lower intestinal tract will be found to vary accordingly. We have frequently seen the picture of diffuse general peritonitis with marked seropurulent exudation in cases of perforated ulcer of the stomach or duodenum, yet without bacterial growth being obtained by culture of the fluid or intestinal wall. In other cases a few staphylococci or diplococci were found. Rarely in the early stages is the colon bacillus present. Doubtless extravasation of the intensely irritating secretions of the stomach and duodenum is capable of setting up a nonbacterial peritonitis which, however, does not remain sterile for more than a few hours. To this fact, more than to any other one feature, do we ascribe the almost uniform success of operations upon perforated gastric or duodenal ulcer when done within the first twelve hours, before the microorganisms have multiplied to a degree that breaks down the defensive forces of the body.

In peritonitis secondary to appendicitis, diverticulitis, perforated typhoid ulcer, or other disease of the lower intestine, it is a rare occurrence to fail to obtain a growth by culture of the fluid or the fibrinous deposit upon the intestinal wall, and often in smears of the exudate enormous numbers of organisms are found. The most common bacterium recovered by culture is the colon bacillus, and in the majority of cases this is the only organism found. In our opinion this does not mean that the colon bacillus is responsible for so much mischief as would appear to be the case. This bacillus is found so commonly for three chief reasons: First, it is present in the lower intestine in great numbers as an apparently normal inhabitant, and any lesion of that portion of the bowel could hardly fail of contamination with it. Secondly, it evidently has the power to pass readily through the intestine, from whatever cause devitalized, without obvious necrosis of the wall. We see this in colon bacillus invasion of the abdominal fluid in intestinal obstruction, which is at first sterile, but later when relief of the obstruction is not effected, becomes infected with the bacillus and converted into a peritonitis. Thirdly, the colon bacillus in culture has the property of overgrowing and choking out most other organisms. We have examined many smears from abdominal pus in which cocci and other bacilli could be seen, but by culture only the colon bacillus was recovered. Taking all the facts into consideration, it is questionable whether the colon bacillus is not in many instances a protective organism, overgrowing and killing within the body other organisms of greater

pathogenicity, just as it does *in vitro*. Certainly we do not regard with the same dread cases in which the pus is frankly of the peculiar stinking colon odor as those which lack it. This must, of course, be qualified by our knowledge that the colon bacillus is pyogenic and pathogenic, and extensive infection with this organism alone is serious and may be fatal.

The Germans and French have worked considerably over the anaerobes in peritonitis. Certain anaerobes commonly found in the bowel naturally find their way into the peritoneum in perforative or gangrenous conditions of the intestinal wall. As yet, however, we know no form of peritonitis which is due to infection with purely anaerobic bacteria. Whether they increase the virulence of other infections we do not know; in short, their precise role is as yet unknown.

The surgeon must usually do his work in more or less ignorance of the important factors of the type and pathogenicity of the organism or organisms which are responsible for the peritonitis which he sees. He must, however, derive some idea of all these matters from the source of the infection, the extent and degree of the irritation, the character of the exudate, and the systemic reaction. His conclusions will properly influence him in the extent of the surgery which should be carried out and the type of drainage necessary, or in the decision whether drainage is necessary.

Clinically considered, peritonitis arises in almost every instance from one of four regions, the appendix, the pelvic organs, the pyloric region, and the gallbladder. Many special causes exist, but if we confine ourselves to the organs mentioned, we shall have considered the major portion of the subject. The recognition of peritonitis secondary to disease of one of these organs, is not often a matter of great difficulty if we go to the trouble to make a careful examination. Everyone is familiar with the classical picture of peritonitis, but in this, as in so many other conditions, we are still shackled by the great but ancient masters of clinical description. That which counts in peritonitis is early recognition, and the classical picture is not that of an early, but an advanced stage of the disease. The sign which has served us best is rigidity. We are always suspicious of increased tension of a portion of the abdominal musculature. If definite rigidity, spasm, and tenderness are present, it is pretty safe to assume that some disease is present which has gone so far as to involve the peritoneum. The existence of symptoms indicating that an inflammatory process is going on within the body, such as fever, increased pulse rate, and leucocytosis, is helpful, but not essential.

If there are characteristic symptoms of a certain condition, such as appendicitis which is commonly known to cause peritonitis, the diagnosis is much strengthened, but again, this is not necessary. More or less pain is always present, but is often due to the disease causing infection of the peritoneum rather than to the peritonitis itself, which is often not especially painful.

As the disease progresses, the picture approaches more and more nearly to that known to Hippocrates. How unfortunate that he could not stand at the

operating table today and portray in deathless words the early picture as he did the terminal stage.

#### PROGNOSIS.

The prognosis in peritonitis is influenced chiefly by:

1. The type and degree of the infection.
2. The situation of the infection.
3. The time of operation.
4. The operation itself.
5. The preoperative treatment.
6. The postoperative treatment.

As we have seen, infections exist which doom the patient from the start. However early the diagnosis, however skillful the general and operative treatment, the factor of prime importance is that the patient may have the resistance necessary to overcome whatever infection is present and irremovable by operation. This consideration is therefore negligible so far as it affects our general line of treatment. Certain patients die, with or without operation and irrespective of the time or method. They figure as a small percentage in our mortality, as a disaster so far insurmountable by any means in our possession.

At the other extreme we see infections of such exceeding mildness as scarcely to cause symptoms. The inflammation excited is of a fleeting and temporary nature, which may subside with or without treatment of any kind and with or without gross traces of its presence. In the majority of instances some thickenings of tissue remain, and often adhesions are formed which are later absorbed by nature or are left as evidences of the process. It is beyond our diagnostic power to say at the outset of any peritoneal infection whether or not it belongs to either of these extremes in the intermediate group.

Closely related to the type of infection is the degree of infection. While the peritoneum can care for small amounts of moderately virulent organisms, the same organism in larger numbers may be able to establish a footing and set up a dangerous peritonitis. Perforations and gangrene, therefore, as is well known, are apt to cause a dangerous peritonitis, while the migration of a few of the same organisms through an inflamed intestinal wall would scarcely excite a peritoneal reaction. The living pathology, therefore, is at bottom, the factor of prime importance, and if any man can read aright the lessons of living pathology without throwing open the abdomen to the light of day by means of the aseptic scalpel, we are willing to sit at his feet and learn how to recognize the cases which are going to end in recovery without the knife and operate only in those which would be fatal if let alone.

This is the kernel of the early operation. All patients who are in danger must be operated on in order to save the greatest number. Statistics might be cited almost *ad infinitum* to show that surgical mortality in these cases is due more to the state of the patient when operated on than to any other one factor. This is so well known as to require no further comment.

The site of the infection has a marked influence upon prognosis. Infections of the lower abdomen and pelvis are less serious than those of the upper abdomen, and those which involve the margins of

the cavity are less dangerous than the centrally situated infections involving the coils of the small bowel. The reduplications of the peritoneum and mesenteries play a part in directing the spread of peritonitis and in limiting it to definite areas. By far the greatest protective agent of this sort is the great omentum, which has been named the abdominal policeman or the abdominal scavenger. To my mind it seems more like a fireman who hears the first alarm and hastens to the scene armed with the necessary means to smother the flames. It wraps itself around inflamed areas, protects against slow perforation, walls off purulent collections, and aids in absorption and exudation.

Certain other normal folds act chiefly by their location. Box, in an article on the Watersheds of the Peritoneum, has drawn special attention to the compartments of the peritoneum formed by the mesenteries and peritoneal reflections as well as by the bony landmarks. With the body in the recumbent position, two bony prominences present themselves on the posterior wall, the vertebral column, and the brim of the true pelvis. Three depressions are thereby created, the pelvic and two lateral, which may be called the renal pouches or wells. These again are subdivided by the mesentery extending from the duodenojejunal junction diagonally downward and to the right to the ileocolic junction. An upper compartment is separated from the lower abdomen by the transverse mesocolon. The ascending and descending colon each presents attachments to the posterior abdominal wall which divide the renal pouches in a longitudinal direction. The depressions to the outer and inner side of these portions of the colon are known, respectively, as the external and internal paracolic grooves. Naturally these depressions and cavities are at all times occupied by intestines or omentum, but spreading fluid is nevertheless given a direction by their confines. Thus the inflammatory exudate of perforated duodenal ulcer passes to the right kidney well and down along the external paracolic groove to the right iliac fossa, causing in many instances an erroneous diagnosis of appendicitis. Intraabdominal abscesses enlarging pass in the direction of least resistance. Therefore appendicular collections usually spread to the pelvis or up beneath the liver rather than around the mesentery to the left side. Close study will reveal much that is worthy of consideration in the influence of the topography of the peritoneum upon its infectious processes, but space will not permit elaboration.

#### OPERATION.

As to the operation itself, the first function of the surgeon is to decide whether and when it should be done. As Doctor Agnew once said, "it often requires more judgment to decide when not to than when to." It is at this point that physicians and surgeons should meet. The prevalent practice of calling the surgeon when it is decided that operation should be performed, has many disadvantages. It causes delay in cases that should be operated in promptly and, on the other hand, we have had some embarrassing experiences dodging operations that physicians had concluded to be necessary and so informed the patient, which our experience had taught us were useless or worse. More surgical consulta-

ness without the necessary inference of operation would improve many of our results.

It is impossible to lay down a general rule in all cases, but it may be said that it is seldom possible to act too quickly in peritonitis caused by the appendix or a perforated gastric or duodenal ulcer, while, in peritonitis of pelvic origin, delay should be the rule. Peritonitis of rapid spreading character seldom comes from the gallbladder. When present, it is usually due to perforation and demands quick action. In the more common type limited to the adjacent structures, the mortality and results of operation are better if time is allowed for subsidence of the acute condition.

Another important rule in the presence of acute peritonitis is to do the least consistent with the ends of operation and in the shortest time compatible with good work. We should like to refer to one apparent exception to this rule which we regard as important, namely, the performance of a gastroenterostomy at the same time as the closure of a perforated gastric or duodenal ulcer. To one accustomed to the work, a gastroenterostomy should not require more than an additional ten or fifteen minutes. We have already referred to the fact that in the early stages, in spite of abundant exudate, we are working in an almost aseptic field. We believe that the drainage and relief of tension upon the ulcerated viscus is an important aid to immediate recovery, while the ultimate results are better owing to the curative operation being combined. And, finally, we point to recoveries in these cases as a final and complete justification of this procedure in the face of any theoretical objections. In short, our plan of procedure in such perforations is closure of the leak, gastroenterostomy, pelvic drainage through a suprapubic stab. Never do we irrigate. It is unnecessary if nothing more can be said against it. It takes time, which is a disadvantage, and our experience in passing through the stage of irrigating peritonitis has convinced us that it disseminates infection in certain cases. The cases that are cured with irrigation would be cured without it, and some that would be cured without it end fatally because of it.

Another exception to be noted occurs in connection with appendicular peritonitis. Early operation is the rule. Still there is a small percentage of cases in which immediate operation profits the patient nothing, but does add to his toxemia, depresses his resistance, and is, in certain cases, the immediate cause of death. I refer to cases usually of more than forty hours' duration, which exhibit the signs of diffuse peritonitis with marked systemic toxemia. Commonly the appendix is the least of such a patient's troubles. The peritonitis, though consequent upon disease of the appendix, has far outrun the confines of the right iliac fossa and is spreading in all directions.

On the other hand, the forces of exudation, absorption, and immune bodies and phagocytic cells are contesting that advance. The appendix is frequently buried in a mass of inflamed surrounding intestine and omentum, and is no longer capable of furnishing renewed infection to the peritoneal cavity. The peritonitis is on an independent footing. The match lies smouldering, but the house is

in flames. How absurd to devote our attention to the match! As for a spreading peritonitis not yet general the physiological treatment is better than the operative. We know of no surgical treatment for general peritonitis. All the victims die, with only the exceptions that prove the rule. Similarly, for acute spreading peritonitis of the type that we have depicted, it is fallacious to suppose that incision and drainage will limit its advance. By operation we never reach the areas in which the real struggle is being waged. We may remove the appendix, which is no longer dangerous in comparison, but we inflict anesthesia, trauma, and depreciation of vital powers that may cause a loss of the real battle between the advancing inflammation and the resisting powers of the patient. On the other hand, it is exceptional to lose such a case if we put the intestinal tract at rest by withholding everything by mouth, placing the patient in the sitting posture to favor gravitation of the infective fluids to the pelvis, and give him constant enteroclysis to supply the fluid so badly needed by the body for its laboratory of immunology, its circulatory stimulation, and its excretory functions. When the outlying inflammation subsides and centres about the appendix, it is time to operate upon the patient, who is then in condition to endure removal of the infected appendix or of the pus that may have formed about it.

#### DRAINAGE.

The question of drainage may occupy our attention for a moment. It is not necessary or wise to drain early in cases which show a limited amount of nonodorous turbid fluid. True pus should always be drained. Tubes are the only reliable drains. A glass tube is best for the pelvis, rubber tubes are best elsewhere. A cigarette drain is excellent when there is nothing to drain, or where it is merely designed to connect a point of doubtful vitality with the surface and wall it off from the general cavity. Drains exercise a drainage function for only a few hours so far as the general cavity is concerned. Gauze as a drain is inefficient, or may be an obstacle by acting as an impervious plug. It is excellent to excite adhesions that will isolate a doubtful point from the general cavity or to keep an incision from closing over an infected area. It should be packed into an abscess cavity gently, never tightly. Once in, it should be allowed to remain until it practically falls out of itself or separates as a slough from the granulations which at first grow into its meshes. Rubber tissue or protective may be used alone with satisfaction in many cases in which cigarette drains are advocated, and it may be used as a partial cover for gauze in order to lessen the density of the peritoneal adhesions excited by gauze alone. Drainage requires individual adaptation to the case, and its mastery demands experience, knowledge, and judgment.

#### AFTER OPERATION.

Of the postoperative treatment our slogan is "let him get well." If the operation is properly timed and well executed there will be little to do, and the less done the better. A sharp watch must be kept for complications, and symptomatic treatment given for individual conditions as they may arise, but of



routine measures there is little to say. The sitting posture, enterocolysis, nothing by mouth, and careful nursing are the important factors. Water, hot or cold, or cracked ice is started when peristalsis begins as evidenced by the passage of flatus or staining of the fluid in the enterocolysis reservoir. Nausea, vomiting, and persistent regurgitation, or excessive upper abdominal distention or tympany calls for the stomach tube. We have never seen a case of acute dilatation of the stomach. An enema is given and the enterocolysis discontinued when evidence of a return of peristalsis presents itself. Morphine is given only for shock or for the definite indications of pain or restlessness uncontrollable by a tactful nurse. Albumen water, buttermilk, broth, tea, toast, eggs, and the ordinary soft hospital diet are begun and continued in the usual manner of food experimentation after it is apparent that water is tolerated.

Finally, I am reminded of a saying of Osler that if a man knows syphilis he knows medicine. Certainly if a man knows peritonitis he knows abdominal surgery.

1634 WALNUT STREET.

### THE INDIGOCARMIN TEST.\*

BY CHARLES GREENE CUMSTON, M. D.  
Geneva, Switzerland,

Privat-Dozent, Faculty of Medicine, University of Geneva; Etc.

Methylene blue has the great disadvantage that it is not always eliminated in the form of blue. When it passes into the urine in the chromogenous state it does not color it, and if it is to be detected the urine must be heated after the addition of acetic acid, evidently a serious technical defect. On the other hand, indigocarmin or indigosulphate of sodium, a perfectly harmless substance for the organism, has the very important advantage that it is exclusively eliminated in its blue color and only by the urine. It does not enter the perspiration, the saliva, or bile. It rapidly makes its appearance, usually in eight or ten minutes after an injection of ten to fifteen cgm. into the gluteal region, so that cystoscopy may be resorted to at once, in order to ascertain which ureter first ejaculates colored urine.

This test was first employed by Volcker and Joseph, in 1903, for the purpose of discovering the ureteral orifices with the cystoscope in cases of ulceration of the bladder, or when the capacity of the viscus was small, or its walls were covered with mucus, to which the term of chromocystoscopy has been given. Albarran employed methylene blue for the same purpose, but when Achard and Castaigne had demonstrated what might occur to the blue color in the examination of the renal functions, Volcker and Joseph proposed the use of indigocarmin in its stead in order to realize the same test with exactitude.

Roth has pointed out that certain coloring matters have been employed for the study of the renal functions for over forty years, and says that the starting point of the use of indigocarmin dates back to Heidenhain's experiments. He gave intravenous in-

jections of a saturated solution of the drug to rabbits, and after killing the animals transferred the kidneys to absolute alcohol. Microscopically he found the glomerulæ colorless, the epithelium of the tubuli contorti stained in a diffuse manner with distinctly stained nuclei. Complementary researches showed that the living nuclei did not stain, and for this reason and some others, it would appear that Heidenhain's experiments did not have the value of a post mortem examination.

In living animals which have received a subcutaneous injection, the results are most contradictory and difficult of interpretation. Roth and Schneider undertook some experiments, employing ten per cent. of indigocarmin in physiological salt solution. They simply obtained a slight, diffuse epithelial stain and came to the conclusion that indigocarmin produces no visible change in the epithelia and that it is eliminated by the glomerulæ.

As I have said, Volcker and Joseph were the first to use indigocarmin in practice and they maintained that from a kidney presenting a surgical lesion the drug is eliminated with much greater difficulty than from an intact organ. Roth decided to verify these findings and combined the investigation with bilateral ureteral catheterization. The injection was made in the gluteal region.

Indigocarmin has an advantage over phloridzin in that it requires no particular caution in its preparation. For clinical use Volcker had tablets made according to the following formula:

|                        |       |
|------------------------|-------|
| Indigocarmin, .....    | 0.08; |
| Sodium chloride, ..... | 0.10. |

One tablet is dissolved in 20 c. c. of water.

In a healthy kidney with this dose, elimination begins in ninety-three per cent. of the patients in from four to ten minutes; while in seven per cent. it begins in from eleven to thirteen minutes. The maximum of color is reached in fifteen minutes in sixty-five per cent. of the cases, while in thirty-five per cent. it requires from fifteen minutes to a half hour. The duration of the elimination is from fifteen to eighteen hours. With a dose of 0.008, the elimination usually begins in nine to eleven minutes, its maximum of intensity in seventeen to twenty-two minutes, and the duration is from two and a half to three and a half hours.

To appreciate the functional value of the kidney, the intensity of the color is the most important point. According to Roth, when elimination of the coloring matter does not take place, it must always be assumed that there are advanced changes in the kidney. Sometimes, however, these changes are purely functional. In the first case the operation will be the removal of a useless organ; in the second case we operate to save a diseased kidney from further destruction.

When the test gives almost identical results on both sides, there is a slight though real difference, but of little clinical importance. Great weight is to be given to a delay of from fifteen to twenty minutes in the elimination. Inversely, we may have, in an abnormal kidney, a normal elimination as far as the beginning and duration of the test are concerned. Thus the test fails sometimes completely in renal tuberculosis and in these cases good diagnostic results may be looked for by the method of Casper

\*Written especially for the NEW YORK MEDICAL JOURNAL.

and Richter, which consists in searching for the  $\Delta$  and making the phloridzin test. Apropos of this, Roth remarks that usually the disturbances in the elimination are equalled by those of the elimination of sugar.

It has been maintained that it is impossible to appreciate the blue color in purulent urine, but this is inexact because by rest the urine clears and the color appears in the upper portion. Relative to this, we should note the difference often existing between the results obtained by ureteral catheterization and chromocystoscopy, one being negative, the other positive.

As far as chromocystoscopy is concerned, Roth makes the following restrictions: It often fails when ureteral catheterization has failed; when positive, it is not always conclusive. If negative, it is likewise not always conclusive, because the color cannot be seen in the urinary jet in cases where it is weak and without force. Lastly, it may very well happen that a distinct difference cannot be made out between the right and left jets. At all events the cystoscopic examination should be maintained for at least three quarters of an hour in order to detect a difference, consequently, the bladder must be filled a second time, which is unpleasant for both surgeon and patient.

For these reasons Roth concludes that chromocystoscopy cannot replace ureteral catheterization, but that it can give useful data when the two methods are employed. It must be admitted, however, that in certain difficult cases where catheterization cannot be employed, chromocystoscopy is the only test that will help the diagnosis.

I shall now consider the technic, advantages, and disadvantages of the indigocarmin test, the technic being that of Jeanbrau. The following formula is employed, the coloring matter being in suspension.

Indigocarmin, ..... 0.16;  
Artificial serum, ..... 4 c. c.

This is contained in sealed glass tubes, sterilized, and injected into the gluteal region, if possible on the side of the healthy kidney, because it is on this side that the patient lies during the operation, if one is undertaken. Before injecting, the tube is heated in a water bath to render the suspension homogeneous, as well as to raise the temperature of the injection to body heat.

The injection is not painful and in only one case was it followed by any complication. In this patient a painful induration at the point of injection remained for a week, but there was no pus formation.

As soon as the injection is made, the exact time is noted in writing; the bladder is emptied by a catheter and is prepared for cystoscopy. If this alone is to be done, the cystoscope should not be introduced before the eighth or ninth minute after the injection, as the colored jet of urine will not make its appearance sooner. If the prism of the cystoscope faces the ureteral orifice, the latter will be seen to open, the borders prolapse, and the jet is ejaculated rapidly. If the prism is raised too high or held too low, we merely observe a blue tint in the water, showing that the ejaculation has taken place near by.

The indigocarmin test is excellent for the dis-

covery of the ureteral orifices in diseased bladders whose walls are coated with mucus; when ulcers are present they may simulate an ulcerated ureteral orifice.

As to the elimination test, it is necessary, in order to compare the functions of both kidneys, to combine it with ureteral catheterization or intravesical separation of the urine. But since all the indigocarmin is eliminated within two hours, and as it is most important to seize upon the beginning of the apparition of the blue color in the urine, these examinations must be done immediately. The following is a practical way of carrying out this examination:

After having cystoscoped to verify the condition of the bladder and ureteral orifices, Luys's segregator is introduced seven minutes after the injection has been given, and is left in place for from half an hour to forty minutes. The exact time of the appearance of the blue in the urine from each side is noted, and two samples are successively taken, one of the fifteen minute urine from each kidney, the second that of the urine voided ten or fifteen minutes later. Before segregation of the urine, two glasses of a diuretic decoction or Vittel or Evian water are taken by the patient. A polyuria of short duration is thus produced, which, although not having the precision of Albarran's method, has a certain value, because, even after a few moments, the healthy kidney reacts to the injection of water by secreting more actively.

There now only remains a microscopical, bacteriological, and chemical examination of the urine thus collected in order to compare the functioning of each gland.

By combining in a single examination, 1, chromocystoscopy; 2, intravesical separation of the urine, which allows one to make a microscopical and bacteriological examination of the urine from each kidney; 3, the research of the renal permeability by indigocarmin, and, 4, Albarran's experimental polyuria test, we obtain easily with a minimum amount of trouble, sufficiently exact results. This procedure is rapid, the technic is relatively easy, and several data are obtained which exercise mutual control.

As to the rapidity of the combined test, I would say that often it is done in forty minutes, and when this short time is compared with the four hours necessary to collect the urine by ureteral catheterization and the twenty-four hours required for Achard's test, the advantage is evident.

The technical simplicity of this examination is not less real. Alone, segregation of the urine in the male, particularly when the bladder is greatly diseased, presents difficulties which only experience can overcome. But if ureteral catheterization and segregation are compared, the technic of the latter is undoubtedly the more easily acquired.

The data furnished by this examination are numerous and control one another. They concern: 1. The condition of the bladder and ureteral orifices; 2, the presence of a hematuria, unilateral pyuria or the absence of urinary secretion on one side; 3, the eliminative capacity of indigocarmin of each kidney; 4, the increased secretory activity which each kidney possesses after the ingestion of a certain quantity of liquid; 5, the quantity of excre-

mental material (urea and especially chlorides) eliminated by the kidneys.

I have said that these data complete themselves, because in the cases under my observation, each time that a kidney eliminates the coloring matter more tardily than its fellow, it is this same kidney that furnishes the least urea and albumin in larger quantity.

Chromocystoscopy employed alone cannot suffice to decide legitimately the propriety of resorting to nephrectomy, and in spite of the eloquent pleadings of Thelon and Suter, we should not be content with this examination to propose and perform nephrectomy.

For that matter, it is a general principle of renal surgery that no single test should be relied on, such as methylene blue, phloridzin glycosuria, or indigo-carmin because, taken individually, each one of these tests may be faulty. Kidneys have been removed where neither the blue nor sugar was eliminated, and which, nevertheless, did not present renal insufficiency. On the other hand, mistakes have been committed in the other direction.

Taken by itself, chromocystoscopy has no value, but when followed by the collection of the urine by bilateral ureteral catheterization or intravesical segregation, the indigo-carmin test has a significance quite as important as methylene blue or phloridzin.

3 RUE BELLOT.

## CANCER TREATED WITH AUTOLYSIN.

*Notes Concerning Over 750 Cases,*

BY HENRY SMITH WILLIAMS, M. D., LL. D.,  
New York.

In the preceding article of this series (NEW YORK MEDICAL JOURNAL, October 2nd and 9th) a somewhat detailed examination was made of the practical action of autolysin as used by Dr. Silas P. Beebe, of New York, and associated physicians in 176 cases of malignant neoplasms, comprising epitheliomas, carcinomas, and sarcomas of many types, all inoperable and mostly postoperative recurrences, and including a large number that had previously been subjected unsuccessfully to treatment with x ray or radium or both.

Autolysin, it will be recalled, is the convenient name given to a saline aqueous extract of twelve different vegetable agents (named in Doctor Beebe's papers of May 15th and October 2nd) selected by Dr. Alexander S. Horowitz, of Budapest and New York, as the culmination of a long series of experiments. The extract contains vegetable proteins, chlorophyll, chromophyll, certain vegetable extractives of ill defined chemical character, and lipoids, but no alkaloid or other agent known directly to affect the vital processes. It must be given hypodermically, being inert if taken by the mouth, its organic constituents being decomposed in the digestive tract.

Seven different medical men are directly represented in the symposium of October 2nd and 9th, each bearing testimony from his own point of view and experience to a certain measure of efficacy of the autolysin treatment. An account was also given, in the issue of October 2nd, of the theory of action

that seems to explain, in part at least, the observed therapeutic effects of the remedy.

In Doctor Beebe's paper it was stated that the cases reported by him were treated with the cooperation of Dr. J. Wallace Beveridge. It may be added that eight other New York physicians have actually engaged in carrying out the treatment under their direction, the individual treatment of more than 300 cases at one time making such aid obviously necessary. Every one of these men is enthusiastic as to the results achieved. In addition to the evidence of these ten New York physicians, we have the testimony of about fifty physicians outside New York, situated in various parts of the United States, from Maine to California, and from North Dakota to Texas, all men of the highest professional standing, who have used autolysin in private practice for a long enough period to attain definite results, and who have reported these results. Reports by most of these men received by wire on the morning when this summary is being written bring the status of their cases up to date.

The present summary, then, represents the findings not alone of Doctor Beebe, but of about sixty other regularly qualified practitioners who have had personal experience of autolysin in inoperable cases of cancer. Nor is this quite the whole story, for there are more than three hundred other physicians of corresponding standing in various parts of the country (practically every State being represented) who have tested autolysin on at least one patient, tentative reports from a large number of whom are available. All told, the total number of patients having inoperable cancer under treatment by this method in the United States and Canada up to October 20th, by an aggregate of 371 physicians, is more than 1,000. No operable cases have hitherto been treated with autolysin.

The chief purpose of the present paper is to summarize the aggregate experience thus accumulated in a statistical report that will show the present status of the autolysin treatment. First, I shall recapitulate the findings of the writers of this symposium, as already published in the NEW YORK MEDICAL JOURNAL for October 2nd and 9th, including also the cases reported by Doctor Beebe in the original paper of May 15, 1915; passing then to a consideration of the cases not hitherto reported, and concluding with a summary of the total number of cases treated long enough to get somewhat definite results, numbering not far from 600. The remaining 400 patients have been treated for too short a period to furnish definite material for the statistical summary, although interesting and characteristic preliminary reports regarding many of them are in hand.

### A SUMMARY OF 404 CASES.

The cases reported specifically by Dr. Andrew Wilson, Dr. Hugh Nicholson, Dr. Curran Pope, and Dr. E. H. Williams (see this JOURNAL for October 9th) number fifty-eight. They include all the cases treated by these several physicians up to the date when their respective reports were written. If the reader will refer to the individual reports, he will find that, in general terms, the following may be taken as a summary of the results attained with the



forty-eight cases of which case histories are given. Of Doctor Pope's thirteen cases, ten are not reported in detail; he does, however, give an intimation of the condition of all of them in the statement that "six gained flesh, two lost a pound, and five remained *in statu quo*." Of the forty-eight patients whose case histories are given, thirteen died; five were reported as making slight or doubtful progress; and thirty have progressed favorably, two having attained a stage of clinical recovery, and the prognosis being considered favorable in about nine cases.

I am now able to supplement this list with the statement that the four physicians in question at the moment of present writing (October 5th) are treating or have treated, all told, 118 patients, of whom twenty have died, seventeen have shown no improvement, and seventy-five are progressing favorably, several of them having reached a stage that justifies a favorable prognosis, while six have already attained to clinical recovery.

Without exception, the cases thus treated independently by these four physicians were inoperable cases of cancer in late stages; hence "hopeless" and "incurable" according to conventional estimates of the medical profession. That eighty out of the 118 patients, or sixty-seven per cent., are not only living, but in distinctly improved condition, is a tribute to the efficacy of autolysin that cannot be ignored.

The cases that show very marked improvement, comprise epitheliomas, carcinomas, and sarcomas, situated in almost every region of the body, including the brain, mouth and throat, esophagus, stomach, uterus, and rectum. In a considerable proportion of cases the diagnosis was confirmed by sectional examination.

Turning now to Doctor Beebe's paper of October 2nd, it will appear that, in addition to its general features in which the treatment is detailed, it contains three lists of cases, as follows:

1. A list of cases first reported in the preceding account of this new method of treatment, in the *NEW YORK MEDICAL JOURNAL* for May 15, 1915, and now reported as to their progress in the interval. This includes six cases of clinical recovery, in none of which has there been any apparent tendency to recurrence; including three cases of epithelioma of the face, two carcinomas of the breast, and a case of hypernephroma of the left groin, which continues to evidence apparent recovery, the patient now showing no symptoms of disease and being no longer under treatment.

2. A list of ten cases not hitherto reported, in all of which there is marked improvement, amounting in five cases to clinical recovery; these cases including cancers of the throat, jaw, neck, skin, and rectum and bladder.

3. One hundred additional cases summarized with sufficient detail to give a clear notion of their progress. These are cases that have been under treatment for a minimum period of two months. They include no cases that are included in any of the other lists. The number one hundred was selected simply for its obvious convenience in estimating percentages; and the results attained in these one hundred cases of inoperable cancer may be summarized thus: Twenty-one ended fatally; seven

failed to improve; seventy-two show very marked improvement, amounting in fifteen cases to clinical recovery. The cases classed as clinically well include six superficial epitheliomas, four carcinomas of the breast, two carcinomas of the uterus, two carcinomas of the mucous membrane of mouth and throat, and one sarcoma.

Thus the total cases reported specifically by Doctor Beebe number 128 (including the eighteen reported in the original paper, May 15, 1915), of which twenty-eight ended fatally, ten were unimproved, and ninety showed marked improvement, amounting in twenty-five cases to clinical recovery. It has been stated that Doctor Beebe gave the list of 100 as representative, but including no patients treated less than two months. I wish now to supplement the list with a record of additional cases treated by him mostly for shorter periods, yet long enough to gain intimations of the reaction to autolysin in each case.

The number of these supplementary cases now first reported by Doctor Beebe is 238. Of these, according to the case records as collated on October 5th, thirty-three were fatal; sixty-three are unimproved; forty-one are markedly improved; and thirty-six have improved so consistently that a favorable prognosis seems justified; and—notwithstanding the short time that most of the cases have been under treatment—eighteen are clinically cured.

To complete the record of the cases treated in New York up to the present, a group of patients treated independently in his own practice by Dr. W. Homer Axford, one of Doctor Beebe's regular associates, must be presented. These cases, now summarized through Doctor Axford's courtesy, number twenty. All were hospital cases, mostly of desperate character, including six carcinomas of the stomach, four carcinomas of uterus and rectum, four carcinomas of neck and sternum, three epitheliomas of lip and nose, and two sarcomas. Of the twenty cases, four ended fatally, five are unimproved, eight are greatly improved, and three are clinically cured. The cases listed as greatly improved or as clinically cured include carcinomas of uterus, rectum, stomach, breast, and neck; epitheliomas of lip and nose; and two sarcomas.

If now we aggregate the cases, by way of recapitulation, the following may be given as an epitome: The cases reported in Doctor Beebe's paper of October 2nd number 128; the cases reported by Doctor Wilson, Doctor Nicholson, Doctor Pope, and Doctor Williams, as reported October 9th, supplemented by their more recent lists, number 118; Doctor Axford's cases number twenty; and Doctor Beebe's newly reported group comprise 238; making a total of 494. All of these were in the beginning diagnosed by physicians other than those who applied the autolysin treatment as being hopeless and inoperable cases; mostly postoperative recurrences, many of which had been treated unsuccessfully with x ray or radium or both.

Of these unpromising cases, when treated solely with autolysin (by ten physicians working in direct cooperation with Doctor Beebe, and five working independently in different cities), eighty-five were fatal; ninety made no improvement; fifty-eight improved slightly; and 261 showed very marked im-

provement, fifty of these having already attained clinical cure.

#### MORE DETAILED ANALYSIS OF 494 CASES.

As we are dealing here with a group of cases for which the fullest possible records are available, and as the numbers are large enough to be somewhat trustworthy, it is worth while to scrutinize the results attained up to the present with these 494 cases somewhat more attentively; and to attempt to judge the stage of progress of the various groups of cases somewhat more accurately than is permitted by the mere words "unimproved" or "improved."

In so doing we are of course dependent upon personal judgment as to the estimated progress of all cases except those that terminated unfavorably. This is obviously unavoidable; and I can only say that the estimates are made in accordance with the best judgment of competent observers of wide medical experience.

It will not be forgotten, of course, that the reports regarding the great majority of the 494 cases about to be summarized are tentative. The cases have been under treatment for relatively short periods—the longest little more than a year; the shortest only a term of weeks. But it must also be recalled that inoperable cancer in its later stages ordinarily progresses very rapidly. Many of the cases under discussion were so close to a fatal termination that physicians had estimated the tenure of life at from a few days to three months. A large proportion of the patients that died were positively moribund at the time when treatment was begun; in proof of which it may be noted that death occurred within one week of the time of beginning treatment in about thirty per cent. of the fatal cases. Inasmuch as the nontoxic quality of autolysin has been demonstrated by the administration of many thousands of doses, it cannot fairly be suggested that its administration had anything to do with hastening the death of the very small proportion of cases that passed to a fatal termination. On the contrary, we are justified in assuming that in a good many of these cases life was somewhat prolonged, and just as unquestionably the distress of the patient was alleviated by the remedy, although the vitality of the patient had sunk so low before treatment was begun that an effective response of the organism was not possible.

Setting aside the small number of cases that were in such desperate condition that no expectation was entertained that anything of importance could be done for them, it may be said unqualifiedly that a more or less pronounced specific action on the malignant neoplasm has been observed as a practically uniform sequel of the administration of autolysin. Speaking in general terms, it may be said to be the rule that cases in which the most unfavorable progress has been made, even cases in which the attending physician had declared that life must terminate within a term of weeks, and which were seemingly steadily progressing toward the fulfillment of the prophecy—even such cases as these have been observed to change rapidly under the treatment, a marked alleviation of the unfavorable symptoms being noted, so that we are forced to feel that the treatment is "doing something" for the case,

even though we could make no prediction as to how far the betterment might go. A treatment that does anything whatever in the average case of inoperable cancer, is well worthy of the careful consideration of the physician; for by common consent (after radium and x ray have failed) there has hitherto been no treatment known that could stay the progress of the malady or do more than palliate the painful symptoms with brain disturbing narcotics.

If, for purposes of vivid presentation, we ask what are the possible results of a treatment of a malady at a given period, we may perhaps fairly summarize them under the following alternative categories: 1. The patient may die; 2, he may live but be in worse condition than when the treatment began; 3, he may remain unchanged; 4, he may be somewhat improved; 5, he may be markedly improved but the case still of doubtful prognosis; 6, he may be so greatly improved that a favorable prognosis seems justified; 7, he may be seemingly out of danger, still have symptoms that make it doubtful whether the malady has been entirely eradicated; 8, he may have made a complete clinical recovery.

Let us now make application of these alternative possibilities in the 494 cases of inoperable cancer under discussion. In so doing we must bear in mind that we are fully justified, in the light of statistics, in assuming that 100 per cent. of these cases would have been in one or another of the first three categories given above, had they not received this treatment—that is to say, the 494 patients in question would have been either, 1, dead, or, 2, deteriorated, or, 3, unchanged. The major part of them would have fallen in the second category, with a very considerable proportion, however, in the first. The list of "unchanged" would have been very small indeed.

When, however, we examine the 494 cases treated with autolysin, we find that, instead of 494 or 100 per cent. falling in the list of unchanged or deteriorated or dead, only 175, or 35.4 per cent., fall in these groups. Specifically, of the 494: 1, Eighty-five, or 17.2 per cent., are dead; 2, thirty-four, or 6.8 per cent., are estimated to be worse than at the beginning of treatment; 3, fifty-six, or 11.3 per cent., unchanged.

There remain, then, 319 of our 494 cases that are not to be classified in the unfavorable category in which, we must assume, all of them would have been found if untreated. These 319 cases, then, or 64.6 per cent. of the whole number, have seemingly to some extent benefited by the treatment. As to just how much they have benefited up to date, according to the best judgment that we are able to give, the summarizing of results of individual cases gives us the following:

Category 4 (somewhat but not greatly improved) includes fifty-eight cases or eleven per cent. of the total number treated.

Category 5 (greatly improved but prognosis still doubtful) includes 103 cases or 20.8 per cent. of the total number treated.

Category 6 (greatly improved and of favorable prognosis) includes sixty-five cases or thirteen per cent. of the total number treated.

Category 7 (seemingly out of danger but with certain sequelæ, such as fibrous nodules, or the like, which may



or may not be equivalent to scar tissue) includes forty-three cases or 8.7 per cent. of the total number treated.

Clinical recoveries (tumor gone, general condition practically normal so far as the effects of the neoplasm are concerned) includes fifty cases or ten per cent. of the total treated.

TABLE I. SUMMARY REPORT OF AMERICAN TREATMENT IN 474 CASES OF INOPERABLE CANCER, TREATED BY DOCTOR BEER AND HIS IMMEDIATE ASSISTANTS, AND BY DOCTOR WILLIAMS, DOCTOR NICHOLSON, DOCTOR POPE, AND DOCTOR E. H. WILLIAMS.

|   | Beers                 | Williams              | Nicholson             | Pope                   | Williams               |
|---|-----------------------|-----------------------|-----------------------|------------------------|------------------------|
|   | at least 100 cases.   | at least 100 cases.   | at least 100 cases.   | at least 100 cases.    | Total, 494 cases.      |
| 1. Died                                     | 25, or 3.3 per cent.  | 43, or 14.4 per cent. | 24, or 17.4 per cent. | 85, or 17.2 per cent.  | 85, or 17.2 per cent.  |
| 2. Markedly improved                        | 3, or 0.3 per cent.   | 24, or 9.2 per cent.  | 9, or 6.5 per cent.   | 34, or 6.8 per cent.   | 34, or 6.8 per cent.   |
| 3. Seemingly out of danger but with certain | 4, or 0.3 per cent.   | 42, or 18.4 per cent. | 15, or 7.2 per cent.  | 56, or 11.3 per cent.  | 56, or 11.3 per cent.  |
| 4. Recoveries                               | 0, or 0 per cent.     | 99, or 42 per cent.   | 43, or 17.1 per cent. | 175, or 35.4 per cent. | 175, or 35.4 per cent. |
| 5. Markedly improved                        | 21, or 9.1 per cent.  | 29, or 12.9 per cent. | 18, or 13 per cent.   | 58, or 11.7 per cent.  | 58, or 11.7 per cent.  |
| 6. Seemingly out of danger but with certain | 17, or 14.4 per cent. | 41, or 17.9 per cent. | 45, or 32.6 per cent. | 103, or 20.8 per cent. | 103, or 20.8 per cent. |
| 7. Recoveries                               | 15, or 13.3 per cent. | 36, or 11.4 per cent. | 14, or 9.4 per cent.  | 65, or 13.1 per cent.  | 65, or 13.1 per cent.  |
| 8. Recoveries                               | 13, or 12.7 per cent. | 18, or 7.9 per cent.  | 15, or 7.2 per cent.  | 43, or 8.7 per cent.   | 43, or 8.7 per cent.   |
| 9. Recoveries                               | 23, or 11 per cent.   | 18, or 7.9 per cent.  | 9, or 6.5 per cent.   | 50, or 10 per cent.    | 50, or 10 per cent.    |
| 10. Recoveries                              | 82, or 69.4 per cent. | 142, or 58 per cent.  | 95, or 68.8 per cent. | 319, or 64.6 per cent. | 319, or 64.6 per cent. |

While the summary is thus presented in its entirety for the sake of completeness to avoid any possible implication of evasion, I would again urge my full appreciation of the fact that the results must be taken as tentative and the entire presentation as having the value of general suggestiveness rather than of finality. The two categories that might to casual inspection seem the most important, namely, the list of deaths and the list of recoveries, should, in reality, be considered of subordinate importance. For, on one hand, as already pointed out, a fair proportion of the patients that died were virtually moribund when treatment was begun; and, on the other hand, it must freely be admitted that, inasmuch as more than half of the 494 cases recorded have been under treatment less than two months, a large part of them would not have terminated fatally up to date, even if untreated. And as to recoveries, by the same token, the brief time obviously makes it permissible to assume that a considerable number of the cases that are progressing favorably will presently find a place in the list of clinical cures. Stated otherwise, this is a report that has to do with cases still under treatment, and can pretend to no finality either as regards deaths or recoveries. Ultimately, it may be assumed, all cases will fall into one or the other of these categories. Cancer is a malady that knows no middle course.

To be sure, the record of fifty clinical cures, or ten per cent. of the cases treated, as applied to a "hopelessly incurable" malady, is not without significance. But the full importance of the foregoing summary and its suggestive bearings are to be found rather in consideration of the intermediate categories. These show us that 206 cases or seventy-five per cent. of the total 350 that were not fatal or clinically cured now manifest a greater or less measure of improvement under the autolysin treatment. The aggregate amelioration of suffering represented in this improvement is very notable. The specific effect in reducing or annulling the pain of the cancer sufferer; in bettering general health and increasing mental buoyancy—these are effects of the autolysin treatment that are too pronounced and too obvious in a vast majority of cases to be overlooked by any observer, whether casual or critical, and I think I am not oversanguine in saying that even if

the autolysin treatment had nothing but this to offer—if it did not in any case extend life by a single hour—it would still constitute a very great boon to cancer sufferers in general. I hope, however, that it has been made to appear in the preceding

pages that autolysin has something far beyond this to offer. In a very considerable proportion of cases it offers the prospect of elimination of the neoplasm and restoration of the patient to seeming health.

#### A LARGE AGGREGATE EXTENSION OF LIFE.

Recalling that without the autolysin treatment every one of these cases—in the nature of the disease at the stage actually present—must have deteriorated more or less steadily; and that a high percentage of them would almost certainly have ended unfavorably before now, it appears that even the most calmly critical judgment must pronounce the record a remarkable one. Such is the opinion of all the medical men who conducted the treatment, and of a considerable body of disinterested medical spectators who from time to time examined the cases—which at all times, it may be added, have been available for such examination to any qualified practitioner of medicine who chose to investigate. Several score of physicians from various cities of the United States have come in person to make such investigation, and have personally examined from a few to several score of cases, talking with the patients themselves, examining their neoplasms, and watching the administration of the remedy. So far as I am aware, not one of these physicians has failed to express his conviction that something out of ordinary is being done; and not a few physicians of unquestioned standing have expressed themselves in far more enthusiastic terms than any writer of the present symposium has seen fit to use.

In these papers we have, of course, been concerned not so much with opinions as with matters of fact. The autolysin treatment must be judged by its results, not by what any one says about it. Yet, after all, the results of any treatment are, in the last analysis, matters of opinion. Since the same patient cannot at the same time get well and die, we can never know positively in any given case that a patient who recovers under a given treatment might not have recovered without that treatment. This is a truism of medicine. Hence the resort to the statistical method, and the confidence that men of medicine have come to repose in it. There is, indeed, no other resource. One case of any kind proves little or nothing. A dozen or even a hundred cases taken by themselves prove little or nothing.



But fortunately, in the present instance, we are not obliged to take these cases by themselves. We may consider them in the light of a comparison with any number of cases of inoperable cancer treated by any number of other methods. The lists available for such comparison are almost endless in extent, for cancer is unhappily a very common malady. It is credited with causing the death of one woman in eight and one man in eleven of all that reach middle life. Something like 100,000 persons die of it each year in the United States; it is universally admitted that once a case has passed beyond reach of surgical aid, more or less steady deterioration and relatively early death must be expected.

In other words, malignant neoplasms of the inoperable type are everywhere recognized by the profession as being in the small list of incurable maladies that tend to terminate the life of the patient within a limited period of time—usually within a few months from the time when the presence of the neoplasm in an inoperable stage is detected.

In recent years there have been hopes that the x ray and radium would prove effective in staying the fatal progress of inoperable cancer, and doubtless in some cases these hopes have been realized. It would lie far afield from my present purpose to discuss the evidence as to this. Suffice it that a very considerable proportion of the patients that have received the autolysin treatment, and hence that are under consideration in the present symposium, had used the x ray and radium unavailingly before they came under our observation.

In the present discussion, then, we are dealing with a company of patients of the most "hopeless" character possible. Each and every one of them was seemingly doomed to an early death before he or she came under the autolysin treatment; and this treatment was sought by the patient and his friends (usually at the instance of his physician) as a last resort.

We are therefore justified in believing that if the cancer cases under discussion had not been treated with autolysin, their histories would have been pitifully uniform; almost every case would have gone from bad to worse, and at the time of present writing a considerable proportion of the 494 patients whose cases are summarized above would not be living. That 82.8 per cent. of them are living is therefore in itself a tribute to the autolysin treatment. That 64.6 per cent. of the original total are getting better according to expert testimony, is still more notable. That ten per cent. have so far departed from the traditions of the disease as to make clinical recoveries, is so remarkable a circumstance that were the statement of this fact made without full and unequivocal demonstration by competent witnesses, it would arouse skepticism justifiably extending to positive unbelief.

But in point of fact the reports given are based on expert opinions of a very large number of physicians (who diagnosed the cases and made the hopeless prognoses before autolysin treatment was undertaken, and mostly did so without knowing of the existence of such a treatment) and on the statements of a group of clinicians working quite independently, each on his own isolated group of cases.

That the different results are in accord is the final point of demonstration that something more than personal bias or opinion is involved.

TABLE II. RESULTS OF THE USE OF AUTOLYSIN IN INOPERABLE CANCER, COMPARISON WITH OTHER METHODS. RESULTS HAVE BEEN CASE BY CASE, FROM THE FOLLOWING:

| Group A.   | Under autolysin treatment. |             | If not treated.   |
|--|----------------------------|-------------|---|
|  | Number.                    | Percentage. |   |
| 1. Dead.   | 87, or 17.2%               |             | This group is the average of cases treated by other methods.  |
| 2. Deteriorated.   | 41, or 8.3%                |             |   |
| 3. Unchanged.  | 22, or 4.5%                |             |   |
| Unimproved.  | 150, or 30.0%              |             | 191, or 38.7%   |
| Group B.   |                            |             |   |
| 4. Slight improvement only.  | 8, or 1.6%                 |             | There is no probability that a single case would have qualified for Group B, if not treated with autolysin. |
| 5. Greatly improved, but prognosis still doubtful.   | 103, or 20.8%              |             |   |
| 6. Greatly improved, and of favorable prognosis.   | 67, or 13.5%               |             |   |
| 7. Seemingly out of danger, but with certain sequelae, such as fibrous nodules, which may or may not be equivalent to scar tissue. | 43, or 8.7%                |             |   |
| 8. Clinically cured.   | 56, or 11.3%               |             |   |
| Improved.  | 319, or 64.6%              |             | None.   |

Net result: 319 of the 494 patients, or 64.6 per cent., are better off than could have been expected without autolysin treatment. A large aggregate extension of life has been accomplished.

It thus appears that 64.6 per cent., or in round numbers two thirds of all the 494 inoperable and supposedly hopeless cases are improved or clinically cured. To pretend to doubt that autolysin has done something out of the ordinary for a large proportion of these "hopeless" inoperable cancer cases, in the light of the evidence, would be to carry conservatism to the point of absurd affectation. It is impossible for any competent and unprejudiced physician to view the evidence in its totality at first hand and entertain any such doubt.

#### OTHER GROUPS OF CASES.

It remains to be said that the actual evidence that may be marshalled in support of the proposition that autolysin has a specific effect on the progress of malignant neoplasms is even more comprehensive than has been made to appear in the aggregate of the presentation of cases. For there is recognized power in numbers; and the totality of the evidence already in hand concerns far larger numbers than those hitherto brought forward. It seemed best to present the evidence for autolysin in a synthetic manner—beginning with detailed individual cases: passing on to a summary of 100 selected cases, then to present the experience of a few observers, each working independently; following with a general summary of the experience of the chief pioneers in the use of autolysin; concluding with a general summary, in which the totality of cases available should be passed in review, to the end that the full force of the statistical presentation might be gained, and the reader placed in the best possible position to review the evidence and draw a fair conclusion as to what may justly be maintained for the new treatment at the present stage of its development.

In so doing we draw on the experience not merely of Doctor Beebe himself and his ten immediate associates and of the six other independent contributors to the present symposium, but also on the personal experience of 138 physicians, situated in widely separated regions, and mostly not personally known to one another, who have tested the autolysin treatment in their own

practice. Some of these men have treated only one or two cases, others several or many cases. A few have dealt with moribund patients that died promptly without being demonstrably affected by the autolysin treatment one way or another. But in the main, the experience of these men has been strikingly corroborative of that obtained in New York, and by the physicians who report in the present symposium. The few cases treated by each individual, whether progressing favorably or otherwise, could not by themselves constitute important evidence; yet they obviously have weight when summarized in connection with a large number of other cases.

As typical of the reports of those among the independent users of autolysin who have tested it most widely, I may cite the experience of a prominent New Jersey physician who has been using the remedy for almost two months. He tells of the treatment of eight highly unpromising cases, of which one was fatal, one is unimproved, three are markedly improved, and three are clinically cured.

It is interesting to add that the physician making this report was an avowed skeptic when he began the use of autolysin. He made the tests out of personal friendship for Doctor Beebe, stating in advance that he expected nothing of them. But on the day on which he made the report just cited, he

the technic of the method, but none of whom had other practical experience of its application, forty-one, or 10.5 per cent., are reported as dead; sixty-one, or 10.5 per cent., as unimproved; and 170, or 62.5 per cent., as markedly improved; such improvement already amounting in three cases to clinical recovery.

As most of the patients in question have been under treatment for periods of only from two weeks to two months; and as by far the greater majority of them were in very desperate state at the time when the treatment was undertaken, it must be admitted that this is a gratifying showing. It is perhaps unnecessary to add that, despite the favorable showing, most of these cases are not as yet at a stage where prediction can be made as to the ultimate outcome.

Let me summarize the data just presented in a table, in which the familiar method of the life insurance actuary is adopted. We cannot say precisely what would have happened in any one of these cases if not treated with autolysin, any more than we can say just when any individual in any walk of life will die; but we can predict with some confidence in dealing with the 625 cases as a whole, just as the life insurance actuary predicts with confidence the expectations of years for a man at any

TABLE III. RESULTS IN THE TREATMENT OF 272 CASES OF INOPERABLE CANCER WITH AUTOLYSIN BY 138 INDEPENDENT PHYSICIANS, AS COMPARED WITH THE RESULTS IN 494 CASES PREVIOUSLY TABULATED.

|                                       | Died                   | Unimproved             | Improved or clinically well. |
|---------------------------------------|------------------------|------------------------|------------------------------|
| 272 cases by 138 different physicians | 11, or 15 per cent.    | 61, or 22.5 per cent.  | 179, or 64 per cent.         |
| 494 cases previously tabulated        | 85, or 17.2 per cent.  | 90, or 18.3 per cent.  | 319, or 64.6 per cent.       |
| Cases treated by 132 physicians       | 126, or 16.5 per cent. | 151, or 10.5 per cent. | 489, or 64 per cent.         |

The 272 cases having on the average been treated for a shorter period show lower rate of death on one hand and of clinical recovery on the other. The results on the whole, however, are gratifyingly uniform.

stated in a conversation with a patient who had sought his advice, that if his own wife were afflicted with cancer he would instantly administer to her the autolysin treatment. Experience had changed him from skepticism to full confidence.

As much may be said of a large number of other physicians, in all parts of the United States, who have had personal experience in recent weeks of the use of autolysin in the treatment of cases of inoperable cancer in their private practice. The total number of physicians away from New York, in addition to the investigators already named, who have used autolysin up to the present is 357. The aggregate number of patients treated by them is not less than 375, and at the moment of writing is probably nearer 400. But new cases are being added day by day, and it is not possible to give the exact total. A good many of the physicians have begun the treatment so recently that they have not yet reported on their cases. Reports are, however, available from nearly all the physicians who have used the method for more than one month, and these reveal yet another group of patients that may advantageously be summarized. As already stated, telegraphic reports were received from about twenty-five of these physicians on the day when this report was being written, and reports recently received by mail bring the aggregate up to 138 physicians, and the cases definitely reported as to their present status to 272.

Of these 272 patients treated by 138 physicians, some of whom have visited New York to study

age. Such an estimate gives us the results shown in the following table:

TABLE IV: SUMMARY OF ACTUAL RESULTS IN 766 CASES OF INOPERABLE CANCER TREATED WITH AUTOLYSIN, COMPARED WITH THE PROBABLE RESULTS HAD NOT THE TREATMENT BEEN UNDERTAKEN.

|   | A                                      |  | B |
|---|--|--|---|
|   | Dead, deteriorated, at best unchanged. | Somewhat improved, greatly improved, or clinically cured |   |
| Expectation as to probable progress of 766 cases of inoperable cancer if not treated during a period ranging from one year to one month | 766, or 100 per cent.                  | None   |   |
| Actual state of 766 cases treated solely with autolysin within the past year  | 277, or 30 per cent.                   | 489 or 64 per cent.                                      |   |

Table IV shows that life was prolonged or disease favorably modified or brought to clinical recovery by autolysin treatment (exclusively) in 489 cases out of 766; that is to say, in 64 per cent. or nearly two thirds of all cases. "Improvement," as above interpreted, may mean, 1, cessation of pain; 2, amelioration of unfavorable symptoms in general; 3, disappearance of malodor and modification of offensive discharge, or, 4, regression of the neoplasm. In the great majority of cases it implies favorable progress as to several or all of these conditions.

The conclusion seems unavoidable that autolysin tends to stimulate or produce a systematic condition unfavorable to malignant neoplasms of every type, and hence favorable to the patient, and that in cases that have not progressed too far before the treatment is undertaken, the attack made upon the neoplasm in response to the action of autolysin is so vigorous as to result in its complete regression and the elimination of its hydrolyzed product from the body; together with the coincident restoration of the patient to a condition of seeming health.

Even where the malady is too far advanced to

permit recovery, there may be great amelioration. Witness this telegram from a physician in Falmouth, Mass., among the reports summarized above:

One case fatal after three months' treatment. Too far advanced. Autolysin undoubtedly prolonged life two months and kept patient comfortable without morphine.

#### PRELIMINARY NOTE ON 200 RECENT CASES.

To complete the record of the present status of the autolysin treatment, we must bear in mind, as supplementing the record of 766 cases already presented, the remaining group of cases, numbering between 200 and 300, that have been placed under treatment in various parts of the country, in the hands of about 200 physicians, in very recent weeks. Preliminary reports from many of these are highly interesting.

It is evidence of the specific action of autolysin that it sometimes operates so expeditiously that the attending physician watches the case with astonishment and is hopeful almost from the start. He can see the case progress day by day. There are times, to be sure, where such is not the case; some times a case is very stubborn at first, seeming not to react, and yet ultimately appearing to get a cumulative effect from the remedy and to respond actively and in the most gratifying way. Dr. E. H. Williams reports such a case, where after a few doses there was slight progress, and then seeming stasis; the tumor (of the uterus) even appearing to increase in size, although becoming somewhat softer. This condition was maintained for about forty treatments and then of a sudden the tumor began to regress, and has continued to regress with such rapidity as to justify the expectation that it will disappear altogether.

Illustrations of the rapidity with which results may sometimes be attained are given in various letters that have come to us recently from physicians who have undertaken the treatment within recent weeks. I may be permitted to quote two or three of these. Here, for example, is a letter from Dr. R. E. Rhodes, of Oklahoma, who is visiting Dr. George G. Eitel, of the Eitel Hospital, Minneapolis, which says:

Doctor Eitel, is now treating a patient with autolysin. This patient has been treated by Doctor Maertz, of Lidgerwood, N. Dakota, for five weeks, and I never saw a more miraculous improvement in any disease in my life. He himself is certainly a firm believer.

Regarding the same patient, Doctor Eitel himself writes under date of September 30th:

The patient, I am pleased to report, has improved seventy-five per cent. While not cured, it does certainly seem to me as though he is going to make a complete recovery.

Here is a report from Dr. Charles C. Rothfuchs, of Boston, which may best be given in a series of quotations, with dates. Under date of September 9th:

The patient is suffering from cancer of the throat, an inoperable case, consequently like a drowning man grasping for a straw, with hopes of relief if not a cure, would like to try the new remedy, autolysin.

September 17th: The supply of autolysin (12 ampoules) for use in this case was received today in good condition. Yesterday I advised Dr. George L. Vogel, of the Boston City Hospital (nose and throat department). Had him examine the patient's throat and make careful note of his condition. We stopped all treatment and I shall give autolysin a thorough trial, and have him examined from time to time by Doctor Vogel.

September 23d: The first dose (1 c. c.) given produced no reaction; the second dose (1.5 c. c.) none; the third dose (2 c. c.) after several hours' headache, pulse 100, temperature 99.6° F. Since the third dose, he has had three daily doses of 2 c. c. There has been no marked chill, once only a chilly sensation. During the first three days there were no appreciable results, and Doctor Vogel reported no change in the appearance of the throat. The last three days the patient states that his throat felt easier and today, the first time in several weeks, he was able to swallow solid food without discomfort. Doctor Vogel reports today, after examining the throat, a decided and unmistakable improvement. The swelling in the vicinity of the vocal cords being noticeably reduced.

September 28th: The improvement in the patient's condition has been so marked that I am anxious to follow out the treatment without a break until a cure is effected. Considering what it has accomplished in his case so quickly, I have hopes and confidence in its ability to produce a cure.

September 30th, thirteen days after treatment was begun: Today I went with the patient to Doctor Vogel. The improvement is indeed marked. The ulceration in the throat is clean and appears to be healing. Doctor Vogel is so pleased with the result, so far, in this case, that he has advised one of his patients to undergo the autolysin treatment for a similar condition. As regards the dose in this case; the first day I injected one c. c. (one half contents of one ampoule); the second day, 1.5 c. c.; the third day and each day since 2 c. c. (the full contents of one ampoule).

Here, then, we see the favorable progress effected in less than two weeks' treatment in a case regarded as beyond the reach of any other remedy. Without making any prediction whatever as to future progress, it seems difficult to avoid the conclusion that autolysin has affected the malignant neoplasm in this case in a very definite and tangible way. I repeat that such results are not attained in every case; but corresponding results are attained in a very large proportion of cases; the precise proportion varying with the stage of the disease, the condition of the patient, and the particular type of neoplasm. It may be recalled, however, that carcinomas of the tongue and throat were named by Doctor Beebe as being in general more resistant than carcinomas of the breast and of the uterus—a reflection that gives added force to the report just cited. The chief interest of such a case as this, however, is in its illustration that results of a very definite kind may be attained by a physician using autolysin for the first time with no previous demonstration of its method of administration.

Reports are coming in daily that show that such experiences as the foregoing are by no means exceptional—they may rather be regarded as typical. I have quoted these particular cases because they involved the judgment in each case of more than one physician. Many similar reports might be quoted, if space permitted.

#### GENERAL VIEW OF OVER 750 CASES TREATED WITH AUTOLYSIN.

For the most part the recent cases, chiefly in the hands of general practitioners who have never seen the treatment administered except by themselves, appear to be progressing in gratifying accordance with the expectations based on our own observations of the effects of autolysin as summarized in the 766 cases presented in the foregoing tables. All told, then, at the moment of present writing, we have under special and general review upward of 1000 cases hitherto treated with autolysin or now under treatment.



As to the exact proportion of cases in which a hopeful termination may be expected; and as to whether the seeming recovery is an actual and permanent recovery—these are matters regarding which I shall at the moment offer no definite estimate or prediction. If, as above shown, we have been able to achieve clinical cure in a considerable number of cases of a "hopeless" malady, taken at a late stage, it seems fair to hope that a very much higher proportion of clinical cures will be attained when we come to deal with malignant neoplasms at an earlier stage of progress. That, however, is a matter for future observation to determine.

Obviously there must come a time in the history of every case of cancer at which the patient's vitality reaches so low an ebb that there can be no hope that any treatment will stimulate the system to effective response. A very large proportion of our earlier cases were at least verging toward this point, and some had certainly passed it. With a good many of them, treatment was undertaken without the slightest expectation that anything beyond an amelioration of suffering would be attained. What has been done for these desperate cases certainly justifies us in taking the next step, which involves the application of the autolysin treatment in cases of cancer that are still distinctly this side the stage of approaching mortality.

I greatly mistake if it does not become routine practice with the cautious surgeon in the near future to give autolysin before and after all operations for the removal of cancer; before the operation to stimulate the enzyme-forming blood corpuscles, and after the operation to search out involved glands and metastases and thus prevent danger of recurrence.

Setting prophecy aside, however, and giving heed only to the results already attained with the use of autolysin as a forlorn hope, we may say that these results are nothing less than inspiring. They justify the belief that the era is at hand, and the remedy at least partially developed, that will see cancer placed in the category of maladies that are within the range of the armamentarium of the physician. Diphtheria antitoxin does not *always* cure diphtheria; Jennerian vaccination does not *always* prevent smallpox; the antityphoid vaccine does not work effectively in 100 per cent. of cases; salvarsan has not eliminated syphilis; the best use of aseptics does not absolutely abolish suppurative and gangrene. Such being the case, no one will expect that autolysin, or any modification thereof, will avail absolutely to banish cancer. But that the new treatment will ultimately place malignant neoplasms within the category of manageable maladies—even of maladies that in general are curable—is a forecast seemingly justified by the critical observation of over 750 cases on which it has hitherto been tested, or is now being tested, with results on the whole so striking and so gratifyingly suggestive.

#### SUMMARY AND DISCUSSION, WITH ADDED DATA ON THE PRACTICAL USE OF AUTOLYSIN.

The object of these papers being to bring the autolysin treatment to the attention of the profession, in the interest of the tens of thousands of cancer patients in the United States who are so urgently in

need of its benefactions, it may be well in conclusion, not only to summarize the methods of application of the new treatment, but to give added hints as to its practical use. I shall attempt to do so in concise form as follows:

1. Autolysin is a preparation containing chlorophyll and chromophyll in suspension and vegetable proteins and a variety of organic salts, extractive material, and lipoids in sterile aqueous solution, for hypodermic administration in the treatment of malignant neoplasms. It is prepared according to the formula and methods of Dr. Alexander S. Horowitz, of Budapest and New York, and Dr. Silas P. Beebe, recently professor of experimental therapeutics at Cornell University College, as first published in the *NEW YORK MEDICAL JOURNAL* for May 15, 1915.

2. Autolysin is distributed solely through the medical profession, in sealed ampoules of one c. c. and two c. c. respectively for hypodermic administration. It may be secured by any legally qualified practitioner, and will be supplied in any quantity for the treatment of charity cases absolutely without charge. It is prepared under the direct supervision of Doctor Horowitz, with laboratories in New York.

3. The ampoules should be kept at room temperature. The contents are rendered inert (through coagulation of the proteins) by boiling or by freezing. Place the ampoules in water at about 100° F. for a few minutes or in hot (not boiling) water for a few seconds before using to bring contents to body temperature. Shake well before opening the ampoule, to ensure smooth emulsification of the contents.

4. Autolysin must be given hypodermically. It has no recognized therapeutic action when administered by the mouth, as its organic constituents are decomposed in the digestive tract.

5. The usual initial dose is one c. c. (fifteen minims), subsequently increased, if necessary, to two or three c. c., or in exceptional cases to four or five. In a very few cases doses of ninety and even of one hundred minims have been given. With most patients, however, larger doses than two c. c. (thirty minims) produce an excessive reaction with no corresponding advantage.

6. It is customary to administer a single dose daily, or every second or third day, according to the reaction and effect on the tumor, which usually begins to soften almost immediately, and may break down if the remedy is pushed too hard.

7. To give the hypodermic injection, mark the neck of the ampoule with a file, when it breaks readily. Insert the hypodermic needle and fill the syringe in the usual way. Rub patient's arm with iodine, followed by alcohol, to make sure of aseptic conditions. Inject subcutaneously or intramuscularly at choice, selecting different points at successive treatments. The injection causes momentary smarting, and a certain amount of induration and soreness may follow, but no case of abscess at the point of injection has been observed. The arm is selected merely as a matter of convenience, and any other portion of the bodily surface may serve, or on occasion the injection may be made into the substance of the tumor itself. There is usually no advantage in the latter method, as the action of the remedy is constitutional rather than local.

8. There is usually no immediate observable effect of the hypodermic injection, but a chill may supervene within a few hours, or exceptionally within a few minutes, together with a slight rise in temperature, increased pulse, and a certain amount of physical discomfort or mental disquietude. These symptoms are a characteristic and expected "reaction" and require no treatment.

9. If the expected reaction does not occur, and the tumor does not regress, it may be well to administer a smaller dose (initially not more than eight or ten minims) intravenously, when a very rapid and vigorous reaction will probably supervene.

10. It may be or may not be desirable to press the treatment so rapidly as to cause the breaking down of a superficial tumor. A congested condition at the surface of the tumor may indicate a tendency to disruption. It may then be desirable to lessen the dose, or preferably, to extend the interval between doses to perhaps two or three days. Some of the most striking results, however, have been attained in cases where the tumor was stimulated to the point of rapid disintegration so that it was evacuated exteriorly.

11. A possible complication may result through too rapid breaking down of the tumor in the way of involvement of the bloodvessels, permitting hemorrhage. This occurs very rarely, but should be borne in mind as a possibility.

12. Treatment is often complicated by the fact that the patient has become an opium addict. After autolysin has been given for a few days, the pain usually subsides, and it becomes possible to withdraw the morphine. The nervous condition of the patient, however, due to long use of morphine, may make it advisable to continue the opiate for a time. In such cases it is well to administer the morphine by the mouth in connection with tincture of cinchona and tincture of nux vomica, so that the bitterness may give no clue to the amount of morphine, and to decrease the dose as rapidly as possible, until presently the patient is taking only the bitter tincture, although he supposes himself to be taking morphine also. The morphine addict will often complain of pain when his discomfort is not due to the cancer, but is merely a sequel to his drug addiction.

13. As to diet of the patient under autolysin treatment, no particular rules are necessary, except that it is well to avoid the taking of protein foods in excess. While a large tumor is undergoing absorption, necessarily filling the system with the products of proteolysis, it is well to avoid meat in the diet, or at least to limit the quantity.

14. As to local treatment of superficial neoplasms under autolysin, as a rule nothing is required beyond attention to cleanliness—thorough swabbing with peroxide of hydrogen, for example—and the application locally of aseptic dressings. Where large masses of broken down tissues are present, it may be necessary to use a curette in evacuating the contents, and in this case care should be taken to avoid injuring the neighboring tissues to the extent of producing hemorrhage.

15. The autolysin treatment gives ample opportunity for the use of all the skill and acumen of the experienced physician, yet its application lies well

within the grasp of any practitioner of experience. The new remedy enables the general practitioner to give positive benefit to the victims of inoperable cancer that hitherto have been beyond the reach of medication. It even promises to remove cancer from the category of merely surgical diseases, and to bring its observation and treatment within the province of the general practitioner.

#### A CONCLUDING WORD.

In concluding this preliminary survey of the use of autolysin in the treatment of malignant neoplasms, I trust that I may be permitted a word of quite personal character with regard to the humanitarian rather than the coldly scientific aspects of our problem.

Taught by past experience, I feel very certain that there will be a few ultraconservative or unimaginative critics who will ask why we have not delayed this report another six months, or another year, until it could speak the final word as to results in a larger proportion of cases. The answer is very simple: Malignant neoplasms do not wait. Thousands of patients whom autolysin might aid are at a stage where another month would place them beyond reach of its benefactions, and another six months would bring them to the grave.

Consider these facts. Although precise statistics are not available, enough is familiarly known to justify the estimate that about 275 persons die of cancer each day in the United States alone—275 each day, 1,900 each week, 8,000 each month, not far from 100,000 every year; the toll is exacted with appalling regularity. So each week's delay implies the death of 1,900 more victims of cancer. More people die each week of cancer in the United States than went down with the *Titanic* or the *Lusitania*.

I do not mean to imply that the particular 1,900 that are to die next week could be saved by autolysin; they are moribund and beyond the reach of remedies. But just as regularly as the toll of death is taken, must it occur that a like company of sufferers pass day by day and week by week across the ill defined but all important line that places them beyond hope of reprieve. This week, conceivably, autolysin might help them; next week their powers of recuperation will have waned just past the point of possible recovery.

If, then, the announcement of the possible benefactions of autolysin were delayed another six months, something like 50,000 cancer sufferers would have passed this shadowy and intangible, but for them critical and all important line. In the five months since Doctor Beebe's first announcement was printed in the *NEW YORK MEDICAL JOURNAL*, autolysin has reached about 700 persons suffering from inoperable cancer, and, as we have seen, about two thirds of these have been markedly benefited. But who can forget that in the same period something like 40,000 other persons, similarly afflicted and in dire extremity, have passed into the realm of the irrecoverable?

I verily believe that to a large proportion of these unfortunates, now past reprieve, autolysin might have given immeasurable relief—even the possibility of complete amelioration of their sufferings. Be-

...aving this we could not justifiably delay. We have sought the cooperation of others, and striven in every way to bring the message of hope to as large a company as possible of the afflicted in the shortest possible time. The response of our medical colleagues, which has been of a character gratifyingly in accord with the best traditions of a humane profession.

3 EAST SIXTH STREET

## THE TREATMENT OF COLLES'S FRACTURE

BY ARTHUR E. HOAG, M. D.,  
New York,

Instructor in Surgery, Cornell University Medical College; Surgeon,  
Hospital, Out Patient Department.

The writer having had the chance of seeing and treating successfully many Colles's fractures in his private and clinical practice, and as this class or variety of fracture is perhaps the most common that the general practitioner or dispensary surgeon is called upon to treat in his daily work, he has thought that perhaps a few statements in regard to results and methods might prove interesting and instructive reading.

Colles's fracture is the result, as a rule, of a fall upon the palm of the hand, fracturing the radius at its lower end anywhere from a third to three quarters of an inch above the articular surface of the radius, with or without a fracture of the styloid process of the ulna, many cases having the ligament attached to the styloid process of the ulna only torn or stretched. The fracture in the radius may be transverse, slightly oblique, or a comminuted one with or without impaction and loss of bone substance, or it may be a simple transverse fracture.



FIG. 1. Position of fragments in Colles's fracture.

The fragments generally take this position: The lower end of the upper fragment is displaced anteriorly, while the upper end of the lower fragment is displaced posteriorly, and the articular surface of the radius, instead of looking downward and forward, looks downward and backward. This

displacement of the fragments is the cause of the typical deformity of Colles's fracture, the so called silver fork deformity. There also may be a lateral

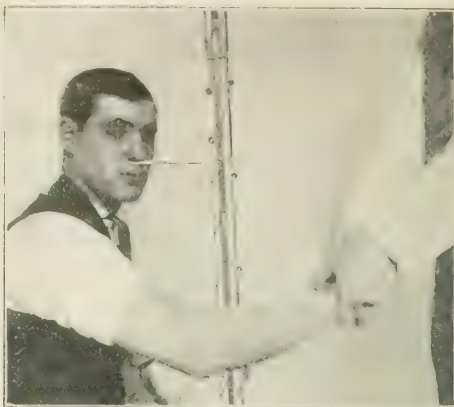


FIG. 2. Method of reducing and prevention of overreduction of Colles's fracture.

displacement of the lower fragment outward either to a slight or marked degree.

The patient comes to the surgeon with the typical history of a fall on the palm of the hand and inability to use the wrist because of the extreme swelling and pain. Often the patient presents the silver fork deformity. On palpation there is marked tenderness over the lower end of the radius above the articular surface, also there will be found a tender point over the styloid process of the ulna. The malposition of the fragments may be felt, that is, the lower end of the upper fragment anteriorly



FIG. 3. Holding the fragments in Colles's fracture ready to apply the splints.

and the upper end of the lower fragment posteriorly. Normally the styloid process of the radius is lower than the styloid process of the ulna, but in Colles's fracture the relationship of the two styloid processes is altered: the radial styloid process is on the level



or above the styloid process of the ulna. This is a very important symptom in diagnosis, also it is a great help to the surgeon in reduction of the frac-



FIG. 1.—Splints of moulded plaster of Paris applied to a Colles's fracture.

ture. If on examination of the fractured wrist he finds the change in relationship of the two styloid processes altered and after his attempt at reduction finds them still in the same position as on his first examination he will know that he has not succeeded in reducing the bony deformity, as sometimes the appearance as if the bony deformity had been reduced. If, on the other hand, he finds the radial styloid lower than the ulna styloid and then compares the two wrists and finds them alike he can feel reasonably certain that he has reduced the bony deformity, and then by measuring the circumference of the wrist he will know whether the lateral displacement has been reduced.

There are many and varied methods of reducing Colles's fractures. It is not the object of this paper to go into these different methods, but to give the reader a method that the author has found to be very simple and as sure a way of obtaining a good reduction as is known at the present time. This paper deals only with those Colles's fractures which are comparatively recent, that is after bony repair has taken place. There remains only one method that will give satisfaction and that is the open operation.

Needless to say, in recent fractures the earlier the reduction is attempted, the easier it will be, as there is not as much swelling and no attempt at repair

and the surgeon can better determine the position of the fragments. Colles's fracture may be reduced with or without an anesthetic, a great deal depending on the amount of impaction and the length of time that has elapsed since the fracture was received. Either nitrous oxide or ether is used. The patient is placed on his back upon a table if an anesthetic is given, but if no anesthetic is used, he is seated in a chair.

The fractured forearm is then grasped in this manner: The thumbs of both hands of the surgeon are placed directly over the lower fragment posteriorly, the right thumb resting directly on the broken fragment, while the left thumb rests on top of the right so that it forms an X. The thenar eminences of both thumbs will then come in contact with the dorsum of the hand. The first fingers of both hands are placed on the lower fragment anteriorly; the remaining fingers will then lie in the palm of the patient's hand as illustrated in Fig. 1.

This gives the surgeon control of the lower fragment with his thumbs and first fingers, while the hand of the patient is held between the thenar eminences of the thumbs posteriorly and the rest of the fingers anteriorly. Extreme hyperflexion is then exerted on the lower fragment; naturally the hand will take the same position because it is held between the lower part of the thumbs and the remaining fingers. Through this extreme and forcible hyperflexion the impaction is broken up and the fragments are now separated, the lower fragment being posterior to the upper fragment. Now while traction is exerted on the lower fragment through the



FIG. 2.—Case of Colles's fracture set by Doctor Hoag; lateral position.

thumbs and first fingers, and through the ligaments of the wrist by the thenar eminences of the thumbs and the remaining fingers, hyperextension is made

of the thumb, and if there is lateral displacement the lower fragment is drawn toward the ulnar side, and as the fragments fall into place the thumbs resting on the posterior surface limit the overreduction of the fracture (Fig. 2).

The fragments are then held in position with dorsal flexion of the hand and ulnar deviation until the splints are applied (Fig. 3).

Before speaking of the splints, it is to be emphasized that as good a reduction should be obtained as possible, both for the restoration of function and the cosmetic effect. The author prefers the Stimson splints of plaster of Paris for these fractures. These splints are moulded from plaster of Paris bandages, one for the anterior surface of the forearm, the other for the posterior. The anterior and posterior splints are measured to extend from about an inch and a half below the bend of the elbow to within a short distance of the metacarpophalangeal joints. The splints, beginning as they do at this distance below the elbow joint, do not interfere with motion, nor are they a hindrance to the blood supply of the forearm, and then on having the splints end at the metacarpophalangeal joints the patient is given perfect freedom to move the fingers with the hand held in dorsal flexion. Aftertreatment is found to be much easier, the function of the wrist and fingers being restored at a much earlier period (Fig. 4).

I do not advise placing adhesive plaster around the splints to hold them in place, as is often done, because there is danger of interference with the circulation in the forearm and fingers if much swelling occurs, as the adhesive plaster has very little elasticity, while if gauze bandages are used they will stretch to a certain extent. Gauze bandages are much better than muslin, because they are more porous and allow the plaster to dry more quickly.

The aftertreatment of Colles's fracture must not be overlooked, as it is extremely important, and unless carried out thoroughly and carefully, the desired result will not be obtained. The splints, after being applied and a radiograph taken to verify the reduction, are not removed for at least from ten to fourteen days, unless there is some indication to the contrary such as extreme swelling and pain. Baking may be begun after the third day, the splints being left in place and the hand and forearm well wrapped in flannel to prevent burning. The baking should be done every other day until the tenth to fourteenth day, when one splint may be removed at a time and gentle massage begun. The massage should be just forcible enough to promote absorption of the exudate, but not forcible enough to disturb the fragments. After the massage the splints should be carefully replaced. This treatment should be carried on for another seven days, that is the baking and the removal of one splint for massage and replacing it after the treatment has been completed. At the end of the third week both splints may be removed for baking and massage, and at this time active and passive motion should be begun. In the elderly I now leave the splints off and encourage them to move the wrist as much as they can, as there is a great tendency in the old toward a stiff and painful wrist if the splints are left on too long. In the young and middle aged I remove one splint, generally the posterior, leaving the anterior splint on

until the end of the fourth week to be removed at the time of baking and massage; after the fourth week this splint is left off and the patient is encouraged to move the wrist himself, but no lifting or heavy work is permitted until after the sixth week. The baking and massage are continued until complete function is restored. The restoration of function in the young is much earlier than in the elderly, generally between the fifth and sixth week, therefore it will be found necessary to continue the massage and baking much longer in the elderly than in the young. With this method of treatment very good results are obtained, and early use of the fingers and wrist will result. There will also be little or no deformity.

410 WEST NINETY-FIFTH STREET.

## ANESTHESIA BY THE RECTUM IN THYROIDECTOMY.

BY WALTER LATHEROP, M. D.,  
Hazleton, Pa.

To Dr. James T. Gwathmey, of New York, belongs the credit of patiently working out the scheme of oil-ether colonic anesthesia, and while the technic has been varied slightly in an effort to get an ideal combination, we have at present adopted the mixture, also a method of administering, to be described later, which has been eminently satisfactory in our goitre work. Gwathmey gives full credit to Cunningham, of Boston, who first used air as a means of conveying the ether vapor into the intestinal tract. The early work of Cunningham and Sutton and their technic helped the originator of the oil-ether mixture in the development of his method.

The physiological effects of the oil-ether mixture are shown soon after its first administration, when it becomes heated to the body temperature, and at this point the ether, or some of it, becomes gas and is rapidly absorbed by the small capillaries of the colon, and carried to the general circulation, is taken through the lungs, where some is excreted, while some is resorbed and carried to the brain.

We have found little or no change in blood pressure. The brain is not deeply narcotized, as in the inhalation method, and the patient regains consciousness rapidly, while the sensation of pain seems to be held in abeyance for some time. The eye reflex is seldom lost, but the relaxation of the general muscular system is complete. There are four factors acting in harmony, which help maintain an even plane of anesthesia: "1. The constant rate of evaporation of the ether from the oil. 2. The distention of the colon, causing less ether to be absorbed, than when only partially distended. 3. As the ether leaves the oil, both the mixture and gut are cooled, which retards elimination and absorption. 4. The difference between the absorptive power of the colon, and the eliminative capacity of the lungs." (Gwathmey.)

The method is very valuable in cases where fear is a prominent element, as in goitre—especially hyperthyroidism—in neurotics, in patients with asthma, and in hernia operations, on patients such as we see so often in the coal regions, who suffer with miner's asthma; these men sleep peacefully, and

have none of the choking or cyanosis seen during the usual anesthesia by inhalation. It is useful in fat patients who have short thick necks and narrow air passages, and for all operations upon the head and neck. It is, of course, contraindicated in colitis, hemorrhoids, ulcer, or fistula, or when pain is caused by its introduction. We have seen only one case of looseness of the bowels or irritation, in over 150 administrations.

The postoperative effects are much better than with the usual routine method of ether or chloroform, and postoperative vomiting has been present in less than twelve per cent. of our cases. The patient wakes quickly, after the flushing of the colon, is usually comfortable aside from the unavoidable throat irritation following goitre surgery; can retain medication or nourishment in most instances, and in abdominal operations there is usually freedom from pain for some time after the patient is returned to bed, although consciousness has been fairly well regained.

The technic of administration in our own work is practically as follows: The preliminary treatment consists in administering a laxative, usually calomel or phenolphthalein, the night before operation. This should be followed in the morning by enemas, one or more (usually two) an hour apart, using plain warm water or weak soapsuds.

A special rectal tube, one fourth inch in diameter, with eye in the side, should be used, and a clamp for the tube should be provided, also a small funnel into which the mixture is poured. Gwathmey has a special tube of his own design for rectal irrigation, which, however, we have not used. In our earlier work, one hour before operation we gave to the patient, by bowel, ether and olive oil, of each one half ounce; chlorotone, ten grains; the chlorotone should first be dissolved in the ether. Half an hour before operation, morphine, grain one quarter, and atropine, grain 1/200 to 1/150, are given hypodermically.

In the case of an alcoholic we may omit the rectal administration and use instead 1/100 grain of hyoscine hypodermically, two hours before operation, and repeat this with one quarter grain of morphine, one hour before operating, and follow with the oil and ether, as mentioned later.

Children under ten or twelve years of age need no preliminary treatment, aside from a laxative and an enema. Twenty minutes, or better forty, before operation, the oil-ether mixture is introduced into the bowel, and should be given at the rate of one ounce a minute, through the funnel attached to the rectal tube, inserted four or five inches within the bowel. The Sims position is the correct one. The average mixture for adults in our experience is olive oil, two ounces; ether, four ounces. This has been varied in different cases, and we find that where one person has the sole charge of this work, that the quantity used can be greatly reduced, and splendid anesthesia maintained. It is important that the use of oil-ether mixture be in the hands of one who can begin its administration and have it under his or her care in all cases, and this should not be delegated to a different doctor or nurse each time it is used.

Should narcosis be slow, or the patient restless, as will occur now and then, a few whiffs of ether

will quickly produce sleep; usually one or two drams are ample. We keep a piece of gauze over the nose and mouth, and the anesthetist watches the patient just as in ordinary anesthesia.

Breathing, as a rule, is quiet and regular, the pulse normal, the reflexes are not disturbed. Should there be loss of lid reflex, cyanosis, or stertor, it is an indication to withdraw one or two ounces of the mixture from the colon. The rectal tube is always left in the bowel and clamped.

We had only once to withdraw any mixture, and that was in the case of a woman, very strong and healthy as far as could be determined, who had a large colloid goitre which had flattened the trachea. The pressure was relieved, and she reacted quickly after the bowel was flushed with tap water. Should respiratory arrest occur, of course, artificial respiration would be indicated, as in any similar condition under inhalation anesthesia. After the operation is over, or better while the sutures are being introduced, the rectum should be thoroughly irrigated with tap water or soapsuds, and gentle massage of the colon from right to left will help to expel any mixture that may remain. This should be followed by the introduction of four ounces of olive oil and one pint of water, which is allowed to remain.

The preliminary injection which we use now in all cases, and with almost invariable success, is morphine, grain one quarter; paraldehyde, two fluid drams; ether and olive oil, of each half an ounce. This is given forty minutes before operation. The paraldehyde is used in place of chlorotone and is far superior to it. This is followed by the procedure already described, save that morphine is not given hypodermically, and we find that less of the mixture is needed than in our earlier series of cases.

Gwathmey has lately experimented at the Bellevue laboratory with a preliminary mixture of:

|                            |         |
|----------------------------|---------|
| Morphine, .....            | gr. ¼;  |
| Potassium bromide, { ..... | ãã 5ij; |
| Paraldehyde, .....         |         |
| Water, q. s. ad.....       | ÿiv.    |

M. Sig.: Inject one hour before operation.

This is followed at the proper time by one ounce of a sixty-five per cent. mixture of oil and ether to forty pounds of body weight. We have tried this in a few cases, but have found the earlier method to be far more satisfactory; that is the preliminary use of morphine and paraldehyde and equal parts of oil-ether. Experiments have shown that two drams of paraldehyde used this way seem to equal two ounces of the seventy-five per cent. oil-ether mixture; thus the amount of oil-ether has been reduced at least one third.

For children, the oil-ether should be used in equal parts, as advised by Gwathmey. We have not used it as yet in the young. Eight ounces of a seventy-five per cent. mixture will maintain anesthesia for two to three hours; eight ounces should never be exceeded, although we have not used more than six ounces since the change from chlorotone to paraldehyde.

The principal reason for discussing this subject is to emphasize its usefulness in thyroidectomy, where freedom of movement is essential, and where the ether cone is absent. We can anesthetize a patient in bed, remove him to the operating room, op-



crate, and our patient will have had little or no conception of what has taken place. How helpful this is, anyone who has seen many cases of highly strung, nervous, apprehensive, hyperthyroid patients, and those who have not yet reached the toxic stage, but are near enough to be exceedingly nervous or depressed, can fully appreciate.

The principle of anociassociation can surely be realized in this way as far as the calmness and indifference of the patient is concerned, by the lack of apprehension or knowledge of when the ordeal will take place. When the patient is asleep, Crile's use of novocaine for nerve blocking can be tried if desired. We usually give a small injection, four ounces of plain water every second day, for a week preceding operation in nervous or hyperthyroid cases, instructing the patient to retain it for its tonic effect. On the morning of the operation the patient receives the regular injection of paraldehyde, etc., already mentioned, and later on, the requisite amount of the mixture. This is usually given on the table, as the patient is drowsy and does not realize what is taking place, but occasionally a woman will require the entire anesthetic procedure in bed, after which she is removed to the operating room. The fear caused by placing a cone over the face as in inhalation anesthesia, is entirely absent. The apparatus is cheap, and the technic so simple that the anesthetist can give his whole time to the patient; the anesthesia is under control, and the mixture can be withdrawn, if needed. There is absence of mucus and saliva, and the ether is less irritating to the colonic membrane than the vapor is to that of the respiratory tract. Postoperative nausea is reduced to a minimum, as are gas pains. The safety limit is extended by the gradual absorption of ether by the colon, and its rapid elimination from the lungs. It is interesting to note that very soon after the preliminary injection, the odor of paraldehyde and ether is observed on the breath, hence the anesthesia may be deepened by placing a damp towel over the nose and mouth, causing rebreathing, or lightened by leaving the face merely covered by a layer of sterile gauze.

The safety factor is increased. Dr. W. H. Park, chief of laboratories of the New York department of health, found that a seventy-five per cent. oil-ether mixture killed the colon bacillus in one minute, and a fifty per cent. mixture kills it in ten minutes. "As the colon bacillus is an important infective agent postoperatively, the oil-ether solution acts as a desirable prophylactic against possible infection." (Gwathmey.)

It is not my purpose to advocate this method for general use, as the time required for the proper technic would prohibit it where a number of operations is scheduled; for regular procedure, we cling strongly to ether by the open or drop method.

For head and neck work, especially goitres, it is our firm belief that oil-ether anesthesia is superior to any other, and, further, as demonstrated by Gwathmey, the principal factor of safety is the wide margin between the dose required for surgical narcosis and that which precipitates toxemia. "After administering the oil-ether, it is impossible at any time to withdraw the oil and leave the ether, or vice versa. Every molecule of ether is bound to a molecule of oil, and this union is broken only when

vaporization occurs. When anesthesia is established, it is automatically maintained by the ether separating from the oil, according to certain physical laws, and this vaporization never varies, so it is impossible to have a deep anesthesia at one time and a light one at another, unless deepened by rebreathing, or lightened by an airway tube." The anesthesia can be concluded at any time by withdrawing the mixture, following this by introducing tap water, as already mentioned.

Baskerville, of the College of the City of New York, by his laboratory experiments, has shown that the evaporation of ether is very constant, no matter whether cotton seed oil, wool fat, codliver, peanut, or olive oil is used.

The recorded cases are now well over the thousand, and show that the use of oil-ether anesthesia, especially in head and neck surgery, is very valuable. Manhattan and Brooklyn probably lead in the number of administrations, as reported by various surgeons and anesthetists.

Rodman, of Philadelphia, has also used it and written in its favor. Luther, of Palmerton, Pa., has had considerable experience in its use in abdominal surgery, and with excellent success. Lumbard, an expert anesthetist, of New York, has recently reported (*Surgery, Gynecology and Obstetrics*, May, 1915) cases of head and neck operations in which he administered the oil-ether. He advised the thorough mixing of the drugs by shaking for one minute in a bottle, and then gradually introducing it into the bowel, as already described. I believe this suggestion of mixing in a bottle is much better than first to put the materials in a graduate.

We have operated in 111 cases of goitre from June, 1914, to September 9, 1915, under this anesthesia, and from our experience with a large number of these operations before adopting it, we are convinced that we have an ideal method superior to inhalation.

To summarize, I would say:

1. It is most valuable in head and neck operations.
2. There is no fear, as is so often seen in the usual method.
3. The pulse and respiration, as a rule, remain near normal, or do not vary much from their condition when the operation is begun. If rapid, as in hyperthyroidism, it remains rapid, but does not increase as when fear is added to the troubles of the patient.
4. There is less tax on the lungs and kidneys.
5. Operations can be done without the knowledge of the patient, which is surely valuable and must play some part in anociassociation, while Crile's technic may be carried out, if desired.

I wish to thank Doctor Gwathmey for many letters of suggestion and help during the past year, and I believe we are indebted to him for working out a most valuable method of anesthesia, and one which, if used with proper care, will add greatly to the convenience of the surgeon and the comfort of the patient.

Of our goitre cases in which oil-ether anesthesia was used, we had:

|                          |     |
|--------------------------|-----|
| Hyperthyroidism .....    | 15  |
| Paraneurymatous .....    | 38  |
| Colloid and cystic ..... | 58  |
| Total .....              | 111 |

There was one death, three days after operation, in a case of exophthalmic goitre. This was the only case in this series in which ligation was performed instead of thyroidectomy. Since the foregoing was written, we have added seven more cases, making 118 up to September 10, 1915.

STATE HOSPITAL

## PRIMARY CARCINOMA OF THE APPENDIX.

By J. GOLDSTONE, A. B., M. D.,  
New York.

*From the Pathological Laboratory, State Hospital.*

Though several hundred cases of primary carcinoma of the appendix have been reported, the condition is still rare enough to warrant case reports. Rogg (1), in a thorough review of the subject, concludes that carcinomata occur in 0.5 per cent. of appendixes, basing this percentage on 10,925 organs examined microscopically. Clinically, the vast majority of cases have given no inkling of their histologically malignant nature; occasionally, however, they give rise to an acute appendicular inflammation. While malignant tumors of other organs occur, as a rule, during or after middle life, Rogg found that of 148 cases of appendix carcinoma 118 (seventy-nine per cent.) occurred before the fortieth year, and that of 144 cases ninety-one occurred in women. That the greater frequency of these tumors in the female is probably due to the more commonly undertaken laparotomy, is Rogg's explanation of the differences in the two sexes.

The growths may be situated in any of the coats of the appendix, intramucous, submucous, intra-

that of an Italian woman, aged 16 years, who was admitted to the service of Doctor Oberler with a diagnosis of double sided pyosalpinx. At the operation (by Doctor Davan) the preoperative diagnosis was confirmed and both tubes and ovaries were removed. An inspection of the appendix showed the tip to be thickened and club shaped, for which reason it, also, was removed. The tubes and ovaries may be dismissed with the statement that they showed the changes usual in a chronic suppurative inflammation.

The appendix in the gross measured three and a half inches in length, and presented at the junction of the lower and middle two thirds a sudden and sharp increase in diameter to about three quarters of an inch, this extending to the tip of the organ. On palpation this club shaped thickening was very hard. Longitudinal section through the appendix showed grossly a normal organ with patent lumen to the beginning of the thickening where the lumen abruptly terminated. Tangential section through the thickened mass showed obliteration of the canal and a mass about a half inch in diameter, golden yellow in color, occupying the area of the appendix lumen.

Microscopically the proximate end of the appendix showed no pathological changes worthy of mention. Section through the lower third showed a carcinoma composed of small cells arranged in small alveoli. Mitotic figures were infrequently observed. The neoplasm had originated in the mucous coat, and in its growth had destroyed and replaced the lumen of the organ. Strands and isolated islands of carcinomatous tissue extended in all directions through both muscular coats, but stopped short at the serosa. The condition is well shown in the accompanying photomicrograph, for which I am indebted to Dr. Francis C. Wood.

### REFERENCE.

1. ROGG: *Ztschr. f. Krebsforsch.*, viii, 13, 1913.

EAST 141ST STREET AND CONCORD AVENUE

## CLINICAL TEACHING.

By M. SCHULMAN, M. D.,  
New York.

*From the Department of Clinical Medicine, Columbia University.*

In addition to the usual instruction in clinical medicine which the students of the second, third, and fourth year classes are offered in the hospital wards, clinic rooms, and amphitheatres, the Board of Managers of the Vanderbilt Clinic, presided over by the Dean of the College of Physicians and Surgeons of Columbia University, in October, 1911, permitted me to organize a district service in connection with the clinic, which would offer medical care at the patient's home and at the same time give the students of the fourth year an additional source of material for study.<sup>1</sup> This work has now been carried on for over three years, and has proved useful, instructive, and interesting. Perhaps others may find something suggestive in it; hence this report.

Vanderbilt Clinic is situated on the borderline between what are popularly known as "Hell's Kitchen" and "San Juan Hill" districts. The area in which the home medical service is given covers 171 square

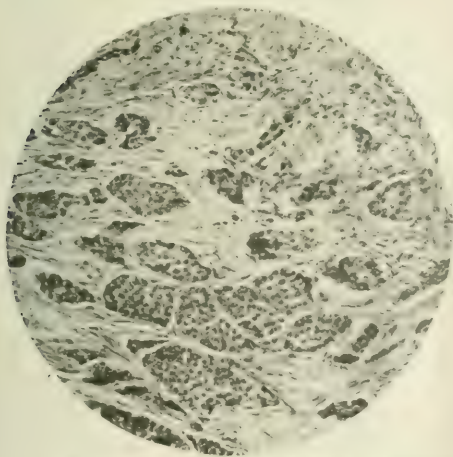


FIG. Photomicrograph of Dr. J. Goldstone's case of appendicular carcinoma.

muscular, or subserous. Two cell types are found: one, a small celled type, which is the most frequent and is usually benign in its clinical behavior, the other, a cylindrical celled type, rarer and much more likely to infiltrate and metastasize.

The clinical history of the case to be reported is

<sup>1</sup>This was written in 1912.

home, and is thinly populated by the poorest of our city. We treat at home only needy and deserving adults (all over twelve years of age) who are suffering from a nonsurgical, nonsyphilitic, or nonvenereal disease, who are too ill to come to the clinic, who cannot or for some sufficient reason will not go to a hospital for treatment. Application for

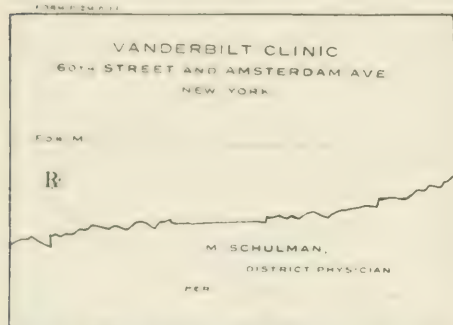


FIGURE 1.—Reduced facsimile of the prescription blank used in clinical teaching at the Vanderbilt Clinic. The original measures 4 1/2 by 6 inches.

the medical care of such a patient, at home, is made to the nurse in charge of the social service department, who takes a brief history, sifts out cases not fit for this service (such as venereal, gynecological, etc.), and then refers the patient to the physician in charge of the service. The physician calls on the patient, elicits a full history, makes a complete examination, orders specimens of urine, sputum, etc., sent to the clinic for examination and report, and if he finds the case a proper one for home care, proceeds with the treatment. Whenever the nature of the case or the home conditions are such as to make it appear that the patient would be safer in a hospital, he is urged to go to a hospital, but this is not insisted upon unless other members of the house or family are jeopardized by the patient's stay at home, for example, in case of typhoid fever. Medicine is prescribed on a special prescription blank (Form 1), which the patient is advised to present at the clinic. In this way the patient gets the medicine at a minimum cost, and, in fact, in 68.5 per cent. of the cases, at no cost. Practically 100 per cent. of the patients get their medicine at the clinic pharmacy. When further aid, in the way of food, fuel, etc., is needed, the case is referred to the social service department of the clinic. In thirty per cent. of our cases such aid is administered in addition to the medical care.

When the visiting physician finds the case instructive, it is referred for attention to a student of the fourth year, who gets a copy of the brief history as elicited by the nurse (Form 2), and a copy of the Directions for Treating Patients on District Service of the Department of Applied Therapeutics (Form 3), together with further verbal or written instructions applicable to the specific case in hand.

These "directions," the following copy of a recent report made to the Board of Managers of the Vanderbilt Clinic, and a copy of the table of classifications of diseases met with, give an ample idea of the nature of the work.

The special features of this course, which is a part of the Clinical Course in Applied Therapeutics given to the fourth year students, in sections, for a period of two months, are readily apparent. The variety of conditions encountered is greater than in a hospital medical service. The diseases are, in most instances, less acute and of longer duration. The student has complete control, under supervision, of the patient, and has the opportunity to examine him and study the changes in his condition from day to day, often for a prolonged period. He feels his own responsibility in the case much more than in the hospital ward. He is brought into intimate contact with misery and disease in their best breeding ground, and has an opportunity to see for himself in all their detail, the conditions under which the poorest of our city live, starve, and die.

The students take to the work with enthusiasm. The patients receive careful and prolonged medical care, while, very frequently, they would otherwise have had either no medical attention at all, or only sporadic or very unsatisfactory treatment. Since about ninety per cent. of the bedridden sick of this city still do not, or cannot resort to the hospitals, there is a large field for work such as we are doing. Cases for home treatment are referred to us by doctors and nurses of the clinic, the various charity institutions of the city, life insurance nurses, churches, and the patient's families, neighbors, and friends.

#### REPORT TO THE BOARD OF MANAGERS, VANDERBILT CLINIC, DECEMBER, 1914.

The first 1,000 cases (not including repeaters) treated in the district service of Vanderbilt Clinic are classified according to diagnosis in the subjoined table. The total number of calls made on these patients was 5,073, and of this number 2,563 were made by students of the fourth year. Thus the

| COPY                 |             | VANDERBILT CLINIC                    |           |
|----------------------|-------------|--------------------------------------|-----------|
| NAME                 | John Brown  | Department of Applied Therapeutics   | 191       |
| ADDRESS              | 123 4th St. | DATE                                 | Dec 24/14 |
| OCCUPATION           | Cong. Sec.  | BIRTHPLACE                           | Poland    |
| FAMILY HISTORY       |             | AGE                                  | 32        |
| PREVIOUS HISTORY     |             |                                      |           |
| PRESENT ILLNESS      |             | 1 day, slight, Cong. Syphilis, Acute |           |
| PHYSICAL EXAMINATION |             |                                      |           |

FIGURE 2.—Reduced facsimile of the history blank used in clinical teaching at the Vanderbilt Clinic. The original measures 7 1/2 by 9 1/2 inches.

average number of calls to each patient was five. The number of students who participated in the work was 273, making the average number of calls for such student 9.4.

The total number of prescriptions dispensed was



4,386; of this number 3,007, or 68.5 per cent., were dispensed gratis.

Of the 1,000 cases treated, 297, or about thirty per cent., received assistance from the social service department.

The work was conducted as outlined in previous reports.

The table of diagnoses shows the wide range of conditions met with; there were 168 varieties. The 1,000 patients presented 1,434 clinically manifest, and, at the time seen, relevant diseases. It must be emphasized that the diagnoses made and recorded are clinical diagnoses of the conditions presenting and demanding attention at the time the patients were seen, and not complete anatomical diagnoses. The latter would be manifestly impossible, with the difficulties and handicaps of practice in the very worst of tenements and with the poorest elements of the slum population. In the face of such a report on *Diagnostic Pitfalls*, as Cabot made in 1912, it would be presumptuous. Nevertheless, our therapeutic results are very encouraging, and in at least one class of cases, namely, chronic cardiac disease, we are able to do apparently more than is usually accomplished in the hospital management of such cases. I think that this is readily explained by the fact that we can give these patients a much more prolonged course of treatment and more continuous supervision of their activities, than is usually possible in a hospital. The ordinary story in reading hospital records of such cases is, that they are promptly improved and promptly discharged only promptly to break down again and be readmitted in worse condition than before, this course being repeated again and again. We are getting very satisfactory results with the home treatment of such patients, even in the very poorest of homes.

Speaking for the district in which we are working (popularly known as "Hell's Kitchen" and "San Juan Hill"), I believe it a fair estimate to make, that ninety per cent. of the entire population, including men, women, and children, consume alcohol to excess. This vice is the greatest curse of the district and at the root of much of the misery and disease. I hope some day to organize the students into a Student's Chapter of the Vanderbilt Clinic Auxiliary, to take up especially this matter of alcoholism, with the idea of carrying out a propaganda of education touching the evils of this practice. It would be my plan to begin by distributing pamphlets attractive in appearance and containing serious advice and warning sprinkled in among other reading matter likely to prove interesting to our clientèle.

If I can find among the students the necessary enthusiasm for welfare work and also find a clever editor among them, will the clinic pay the cost of the pamphlets?

The tuberculosis situation is far from satisfactory. There are altogether too many third stage victims remaining in their homes, or returning from hospitals and sanatoriums to their homes. These patients are doomed, and we are doing much to give them symptomatic relief and make them more comfortable. They are a grateful lot, but they are all flourishing centres of infection, and as such have no

right to be where they are potential for much harm. Nevertheless, hospital care for this class of cases is insufficiently provided, and what there is, is of such poor quality, that we cannot blame the poor consumptives for preferring their own miserable homes. The charities department needs urgent reminding of this situation. More abundant, and especially more decent accommodations for third stage tuberculosis patients, would be the most practical manner of reducing the spread of the disease.

The classification of diagnoses in the accompanying table needs explanation in some places, but that would make my report too lengthy, and I hope the table may be satisfactory without comment.

TABLE SHOWING DISEASES LEADING A. HOME, B. CLINIC, C. Y. A. S. MEDICAL STUDENTS AT VAN DER BILT CLINIC

| A. HOME                   |                               | B. CLINIC |   | C. Y. A. S. |  |
|---------------------------|-------------------------------|-----------|---|-------------|--|
| <b>Respiratory system</b> |                               |           |   |             |  |
| 38                        | Lobar pneumonia               | 1         | Carcinoma, colonic  |             |  |
| 7                         | Bronchopneumonia              | 1         | Carcinoma, rectal   |             |  |
| 47                        | Emphysema and chr. bronchitis | 1         | Carcinoma, pancreatic   |             |  |
| 30                        | Acute bronchitis              | 1         | Chronic pancreatitis  |             |  |
| 5                         | Emphysema and chr. bronchitis | 1         | Acute cholecystitis   |             |  |
| 3                         | Pulmonary edema               | 1         | Cholelithiasis  |             |  |
| 2                         | Pertussis                     | 1         | Cholecystitis—suppurative   |             |  |
| 14                        | Pleurisy—dry                  | 5         | Pharyngitis   |             |  |
| 10                        | Pleurisy—serofibrinous        | 14        | Acute suppurative tonsillitis                                       |             |  |
| 2                         | Pleurisy—purulent (empyema)   | 1         | Peritonitis   |             |  |
| 3                         | Acute laryngitis              | 1         | Hernia—inguinal and ventral   |             |  |
| 1                         | Acute rhinitis with epistaxis | —         |   |             |  |
| 1                         | Frontal sinusitis             | 179       |   |             |  |
| <b>Nervous system</b>     |                               |           |   |             |  |
| 163                       |                               | 19        | Hysteria  |             |  |
|                           |                               | 3         | Epilepsy  |             |  |
|                           |                               | 1         | Paralysis agitans   |             |  |
|                           |                               | 3         | Multiple sclerosis  |             |  |
|                           |                               | 3         | Sporadic pharyngitis  |             |  |
|                           |                               | 3         | Pott's disease  |             |  |
|                           |                               | 1         | Acute chorea  |             |  |
|                           |                               | 3         | Sciatica  |             |  |
|                           |                               | 2         | Neuritis—single nerves  |             |  |
|                           |                               | 1         | Multiple neuritis   |             |  |
|                           |                               | 1         | Alcoholic neuritis  |             |  |
|                           |                               | 1         | Trigeminal neuritis   |             |  |
|                           |                               | 1         | Herpes zoster   |             |  |
|                           |                               | 1         | Measles   |             |  |
|                           |                               | 1         | Acute ant. poliomyelitis  |             |  |
|                           |                               | 1         | Acute leptomeningitis from lumbar puncture (death)                  |             |  |
|                           |                               | 1         | Acute aseptic meningitis (irritation from lumbar puncture recovery) |             |  |
|                           |                               | 1         | Senile dementia   |             |  |
|                           |                               | 1         | Alcoholic dementia  |             |  |
|                           |                               | 1         | Alcoholic dementia  |             |  |
|                           |                               | 1         | Alcoholic dementia  |             |  |
|                           |                               | 39        | Acute alcoholism  |             |  |
|                           |                               | 1         | Delirium tremens  |             |  |
|                           |                               | 1         | Drug delirium—morphine and cocaine                                  |             |  |
|                           |                               | 87        |   |             |  |
|                           |                               | 1         | Alcoholic dementia  |             |  |
|                           |                               | 7         | Typhoid fever   |             |  |
|                           |                               | 32        | Grippe  |             |  |
|                           |                               | 17        | Simple cold   |             |  |
|                           |                               | 1         | Measles   |             |  |
|                           |                               | 63        | Polyarthritis, acute, subacute, chronic, or rheumatoid              |             |  |
|                           |                               | 1         | Pneumococcus arthritis  |             |  |
|                           |                               | 10        | Measles   |             |  |
|                           |                               | 2         | Scarlet fever   |             |  |
|                           |                               | 1         | Diphtheria  |             |  |
|                           |                               | 1         | Varicella   |             |  |
|                           |                               | 1         | Mumps   |             |  |
|                           |                               | 8         | Erysipelas  |             |  |
|                           |                               | 1         | Impetigo contagiosa   |             |  |
|                           |                               | 1         | Leprosy   |             |  |
|                           |                               | 1         | Elenphantiasis  |             |  |
|                           |                               | 1         | Scabies and pediculosis   |             |  |
|                           |                               | 1         |   |             |  |
|                           |                               | 1         | Cystitis  |             |  |
|                           |                               | 1         | Gonorrhea (epididymitis)  |             |  |
|                           |                               | 1         | Gonorrhea (arthritis)   |             |  |
|                           |                               | 1         |   |             |  |
|                           |                               | 1         | Syphilitic hepatitis diffuse  |             |  |
|                           |                               | 162       |   |             |  |
|                           |                               | 1         | Pregnancy   |             |  |
|                           |                               | 1         |   |             |  |
|                           |                               | 1         | Acute endometritis  |             |  |

|                       |                    |
|-----------------------|--------------------|
| 1. Cervical adenitis  | 25. Not diagnosed  |
| 2. Cervical adenitis  | 26. Not diagnosed  |
| 3. Cervical adenitis  | 27. Not diagnosed  |
| 4. Cervical adenitis  | 28. Not diagnosed  |
| 5. Cervical adenitis  | 29. Not diagnosed  |
| 6. Cervical adenitis  | 30. Not diagnosed  |
| 7. Cervical adenitis  | 31. Not diagnosed  |
| 8. Cervical adenitis  | 32. Not diagnosed  |
| 9. Cervical adenitis  | 33. Not diagnosed  |
| 10. Cervical adenitis | 34. Not diagnosed  |
| 11. Cervical adenitis | 35. Not diagnosed  |
| 12. Cervical adenitis | 36. Not diagnosed  |
| 13. Cervical adenitis | 37. Not diagnosed  |
| 14. Cervical adenitis | 38. Not diagnosed  |
| 15. Cervical adenitis | 39. Not diagnosed  |
| 16. Cervical adenitis | 40. Not diagnosed  |
| 17. Cervical adenitis | 41. Not diagnosed  |
| 18. Cervical adenitis | 42. Not diagnosed  |
| 19. Cervical adenitis | 43. Not diagnosed  |
| 20. Cervical adenitis | 44. Not diagnosed  |
| 21. Cervical adenitis | 45. Not diagnosed  |
| 22. Cervical adenitis | 46. Not diagnosed  |
| 23. Cervical adenitis | 47. Not diagnosed  |
| 24. Cervical adenitis | 48. Not diagnosed  |
| 25. Cervical adenitis | 49. Not diagnosed  |
| 26. Cervical adenitis | 50. Not diagnosed  |
| 27. Cervical adenitis | 51. Not diagnosed  |
| 28. Cervical adenitis | 52. Not diagnosed  |
| 29. Cervical adenitis | 53. Not diagnosed  |
| 30. Cervical adenitis | 54. Not diagnosed  |
| 31. Cervical adenitis | 55. Not diagnosed  |
| 32. Cervical adenitis | 56. Not diagnosed  |
| 33. Cervical adenitis | 57. Not diagnosed  |
| 34. Cervical adenitis | 58. Not diagnosed  |
| 35. Cervical adenitis | 59. Not diagnosed  |
| 36. Cervical adenitis | 60. Not diagnosed  |
| 37. Cervical adenitis | 61. Not diagnosed  |
| 38. Cervical adenitis | 62. Not diagnosed  |
| 39. Cervical adenitis | 63. Not diagnosed  |
| 40. Cervical adenitis | 64. Not diagnosed  |
| 41. Cervical adenitis | 65. Not diagnosed  |
| 42. Cervical adenitis | 66. Not diagnosed  |
| 43. Cervical adenitis | 67. Not diagnosed  |
| 44. Cervical adenitis | 68. Not diagnosed  |
| 45. Cervical adenitis | 69. Not diagnosed  |
| 46. Cervical adenitis | 70. Not diagnosed  |
| 47. Cervical adenitis | 71. Not diagnosed  |
| 48. Cervical adenitis | 72. Not diagnosed  |
| 49. Cervical adenitis | 73. Not diagnosed  |
| 50. Cervical adenitis | 74. Not diagnosed  |
| 51. Cervical adenitis | 75. Not diagnosed  |
| 52. Cervical adenitis | 76. Not diagnosed  |
| 53. Cervical adenitis | 77. Not diagnosed  |
| 54. Cervical adenitis | 78. Not diagnosed  |
| 55. Cervical adenitis | 79. Not diagnosed  |
| 56. Cervical adenitis | 80. Not diagnosed  |
| 57. Cervical adenitis | 81. Not diagnosed  |
| 58. Cervical adenitis | 82. Not diagnosed  |
| 59. Cervical adenitis | 83. Not diagnosed  |
| 60. Cervical adenitis | 84. Not diagnosed  |
| 61. Cervical adenitis | 85. Not diagnosed  |
| 62. Cervical adenitis | 86. Not diagnosed  |
| 63. Cervical adenitis | 87. Not diagnosed  |
| 64. Cervical adenitis | 88. Not diagnosed  |
| 65. Cervical adenitis | 89. Not diagnosed  |
| 66. Cervical adenitis | 90. Not diagnosed  |
| 67. Cervical adenitis | 91. Not diagnosed  |
| 68. Cervical adenitis | 92. Not diagnosed  |
| 69. Cervical adenitis | 93. Not diagnosed  |
| 70. Cervical adenitis | 94. Not diagnosed  |
| 71. Cervical adenitis | 95. Not diagnosed  |
| 72. Cervical adenitis | 96. Not diagnosed  |
| 73. Cervical adenitis | 97. Not diagnosed  |
| 74. Cervical adenitis | 98. Not diagnosed  |
| 75. Cervical adenitis | 99. Not diagnosed  |
| 76. Cervical adenitis | 100. Not diagnosed |

#### METHODS FOR TREATING PATIENTS

##### 1. THE PHYSICIAN'S RESPONSIBILITY IN THE TREATMENT OF PATIENTS

The physician's responsibility in the treatment of patients is a subject which has been discussed in many ways, but which cannot be done to the clinic, and who cannot, or will not for good reason go to hospital.

**Frequency of Visits.** The frequency with which the patient should be visited will depend on the nature of his illness, and will generally be indicated by Dr. Schulman.

**New Cases.** The first visit to new cases is always made by Dr. Schulman, who decides whether the case is sufficiently instructive to be referred to a student. While a case is being visited by a student Dr. Schulman continues visiting the patient periodically. He will arrange to see the case, together with the student in charge, whenever necessary.

**Conference.** On Tuesday and Wednesday mornings Dr. Schulman meets the students and confers with the students about their district cases. Dr. Schulman is also in V. C. Tuesday and Thursday and Saturday mornings from 10 to 12 o'clock, and may at such time be consulted personally, or any day from 1 to 2 p. m. at his office, by telephone. The nurse in charge of the social service department of V. C. will arrange for the telephone messages.

**HISTORIES.** The original history is kept in the clinic. A copy bearing the date of the original, and also the date when given to the student, as well as the patient's full name, detailed address, and chief complaint, is supplied to the student. The complaint noted on the copy refers back to the date of the original history and not the date of the copy. The student is expected to elicit and record a full history and to make and record a complete physical examination. These will be inquired into and corrected, if necessary, by Dr. Schulman. There are ample facilities and apparatus for making examinations of blood, urine, sputum, feces, blood pressure, etc. Specimens may be ordered delivered to the nurse in V. C. and should be accompanied by a note bearing date and patient's name, beside an indication of what examination is required. Whenever possible the student in charge of the case should make all examinations himself. *Patients to be visited at their homes should be visited at their homes and announce themselves as assistants of the district physician (not as students).* Every visit to a patient must be recorded in his history sheet under proper date, with brief notes as to condition at that time, and of continuance or change of treatment. Medicinal and other. The temperature and pulse should be recorded. *When a patient is discharged, the history must be handed in to Dr. Schulman.*

**EQUIPMENT.** Students should provide themselves with a clinic formulary, a clinical thermometer, and a hypo outfit, containing a glass barreled syringe and hypodermic tablets of morphine sulphate gr.  $\frac{1}{4}$ , atropine sulphate, gr.  $\frac{1}{100}$ , and strychnine sulphate, gr.  $\frac{1}{100}$ . The clinic has equipment for carrying out any course of home treatment that may be required. Nurse's assistance is available, as well as aid from the social service department. Tuberculosis patients are periodically visited by the nurse, without special request.

**Prescribing.** When prescribing medication we try to limit ourselves to the clinic formulary, but when special occasion requires, a drug or a formula not in the V. C. formulary may be ordered. Prescriptions are to be written on the blanks furnished by the clinic. The patient's full name and address must not be omitted. The formula should be written out in full (not ordered by name or number); but single doses may be written for, leaving it to the discretion of the clinic pharmacist how many doses to dispense. Patients are sent to the clinic for medicine. When ordering a renewal of previous medication, the order should be marked "renewal," and the number on box or bottle that had contained the medicine, added. "Renewals" will be dispensed by the clinic pharmacists on a student's order, but a student's order for a renewal of medication must not be omitted. *Without the sanction of Dr. Schulman.* This may be procured by referring the order to Dr. Schulman at the clinic on Tuesday, Wednesday, Thursday and Saturday mornings (10-12), or by telephone, giving the prescription to Dr. Schulman. The latter is attended to by the clinic nurse. It is therefore desirable to instruct patients to go to the clinic for renewals of their medication. *Patients to be visited at their homes should be visited at their homes and announce themselves as assistants of the district physician (not as students).* Every visit to a patient must be recorded in his history sheet under proper date, with brief notes as to condition at that time, and of continuance or change of treatment. Medicinal and other. The temperature and pulse should be recorded. *When a patient is discharged, the history must be handed in to Dr. Schulman.*

Since this paper was written I have succeeded in interesting the department of health in the matter and we now cooperate to produce *The Columbus Hill Chronicle*, a copy of which is given to every patient every time he or she visits the Vanderbilt Clinic.

We supply most of the reading matter, while the department of health pays the printer.

1845 SIXTH AVENUE.

## SUSPECTED THORACIC ANEURYSM WITH DEATH FROM RUPTURE.

By F. GRIFFITH, M.D.,

New York.

**CASE.** Mrs. E. S., widow, native born, aged sixty-six years, housekeeper by occupation, a few days ago, upon attempting to arise from bed in the morning, became suddenly weakened, called faintly to her daughter in the next room, gulped up a tumblerful of blood, then fell dead. The writer was called to the case several hours later. He learned that the woman had always enjoyed seeming good health having lived in the country until her removal to New York a year and a half ago. January 1, 1911, she was taken with a sudden hemorrhage from the mouth in quantity of about two ounces; four days later there had been another slighter bleeding. She had remained in bed between the first and second attacks, and for a month afterward rested almost continuously, then gradually resumed activity up to the extent that the evening before her death, six weeks later, she had done a little ironing. There appeared no direct causative relation between the woman's death and lung disease, as would appear. There was no history of cough, nor sweats, no expectoration, nor loss of weight to indicate pulmonary tuberculosis or lung cavity formation with ruptured bloodvessel to account for the death and so dismiss the matter. Viewed also by the coroner's physician, and after conference, the tentative diagnosis of death from a ruptured aneurysm was made and allowed for report to the health board.

The writer was afforded opportunity for a partial post mortem examination. The thorax was opened and the sternum removed. Apart from a condition of general edema and fullness of the lungs, nothing was found. The heart muscle was pale, left ventricle somewhat dilated, and walls thinned; a slight excess quantity of pale greenish yellow fat existed about the cardiac structure. The arch of the aorta was buried between the bulging lung lobes and could not be specifically determined; nor could any site of rupture be located. Yet in connection with the work of the embalmer carried out during the progress of the writer's examination, an apparent rupture of the great vessel in some part appeared to be present, for after withdrawing the major portion of blood from the corpse through the axillary vessel, the operator attempted to inject embalming fluid from a gallon jar container by a force pump entering the trocar through the wall of the exposed ascending portion of the aortic vessel. Two quarts were successfully injected, when the fluid commenced to well up freely in the thorax above the lungs and from the posterior mediastinum and continued. Furthermore, bloody fluid exudate appeared at the mouth and came from the body's nostrils. "She's purging" was the shop term applied by the embalmer, somewhat dismayed at the failure of his fluid to be retained in the vessels. The fluid appeared not to have regurgitated through the heart to any extent, for the stream was directed forward and the aorta was tightly ligated with a strip of

bandage, so that it could hardly flow back through the heart and pulmonary arteries to reach an exit by way of a possible pulmonary cavity to the throat. In No. 1122 of the *NEW YORK MEDICAL JOURNAL*, the writer reported a case where he mistook the condition for aneurysm of the arch of the aorta, which gave in life many of the standard symptoms, but proved at the post mortem examination to have been a mediastinal growth. In another case, set down in III, 21, of the *International Clinics*, where three fifths of the patient's chest had been converted into a cavern by an innominate aneurysm, extremes seemed to meet, for this patient had been treated for pleurisy and aneurysm, and had undergone an heroic tapping and withdrawal of his vital fluid in consequence. The writer's third case seems to fit in between the solid mass and cavern extreme instances he has recorded. That the case might have been an old disorganizing long standing kidney condition with a rapid secondary bloodvessel degeneration must not be overlooked, but that there was rupture of the aorta seemed to be manifest.

### TRACHOMA AND FOLLICULAR CONJUNCTIVITIS.

#### *A Successful Treatment by the Intense Bichloride Rub.*

By M. B. BEALS, M. D.,  
New York.

The usual routine treatment of trachoma and follicular conjunctivitis by blue stone, tannic glyceride, argyrol, etc., has shown but poor results when applied in the thousands of cases of school children on the records of the health department of New York. In the few cases where it has been possible to induce the patient to submit to the roller operation, many have shown that it has been impossible to make a clean sweep of the entire affected region, and also that a large amount of scar tissue almost invariably follows the operation, as is also the case with blue stone treatment continued for a prolonged period.

I have personally given these usual methods of treatment careful and exhaustive comparative trials in a large number of cases during the past ten years in the Bureau of Child Hygiene of the health department, as many as 600 cases a day for varying periods, and the result of my experience has been that the intense bichloride rub, combined with the treatment indicated to modify the intense reaction which often follows the first few applications, is so far superior to the other methods that it should supersede them in nearly all cases. This treatment is equally effective in trachoma and follicular conjunctivitis. Naturally much quicker results are obtained in follicular conjunctivitis. The intense bichloride rub is as follows:

Instil one drop of a ten per cent. solution of cocaine in each eye at five minute intervals three times and wait fifteen minutes. Use a specially made cotton applicator of heavy steel set in a good sized wooden handle, the steel shaft to be not round but three sided, to facilitate the twisting on of a pledget of cotton as firm and hard as possible, the pledget to be as large in diameter as the average lead pencil.

The end of the steel shaft is round and smooth, with no sharp edges. The cotton pledget extends well beyond the end of the steel shaft. The cotton pledget is dipped in the bichloride of mercury solution, one to 1,000.

The patient sits in front of the operator with the head tilted back at a convenient angle, and is directed to look toward the cheek and not to "squeeze" the eyelids, but to keep the eyes fixed on some object such as the operator's collar and to keep the lids relaxed as much as possible.

With the left hand, gently grasp the lashes of the upper lid, and raise the lid from the eye; with the right hand pass the cotton pledget as far up under the lid as possible. Release the lashes, and grasping the wood handle of the instrument firmly in the right hand, pass the hard cotton roll slowly but firmly from side to side, at the same time lifting the probe away from the eye and putting the lid on a gentle stretch. As the probe passes from side to side, it is rotated in the opposite direction from which it is moving, especially at the inner and outer angles. Directing the patient to turn his eyes upward, the same procedure is pursued with the lower lid. Every part of the conjunctival sac can thus be reached.

After the first few treatments, I usually get a slight show of blood on the cotton. The patient is then directed, if the reaction is severe and accompanied with pain, to apply cold applications for a few hours, and then to instil a bichloride solution, one to 5,000, three times a day until the next treatment. After one or two treatments, all discomfort will subside in fifteen to thirty minutes. Treatments should be repeated once in five to seven days. As the case clears up, we endeavor to rub only the affected conjunctiva.

From March to June 15th, I treated, under the direction of the Bureau of Child Hygiene of the health department, 125 cases of trachoma and severe follicular conjunctivitis. Fifty cases were cured, twenty were nearly cured, but kept under observation, thirty still require treatment, but every one is much improved. The remaining twenty-five have been transferred and lost sight of.

On September 15th, after the long vacation with no treatment, I find five of the cured had developed a few follicles and nine of the last thirty had started up some new activity; but where I had last March over forty severe cases in which we should unhesitatingly advise a roller operation at once, I have not one severe enough to suggest an operation. The only instructions I gave to the children at the beginning of their vacation was in cleanliness, and I warned the boys not to bathe in the sewage polluted waters surrounding New York, as I believe that this is one of the principal contributing causes of trachoma among school children, and accounts for the larger proportion of boys affected than girls in our tenement districts.

At the beginning of treatment, every patient should be refracted and any visual error corrected, if possible, but I was unable to do this in the 125 cases mentioned, and I believe that most of the cases which did not clear up or did not hold improvement, can be explained by reason of the irritation caused by eye strain.



One particular case, that of a boy of thirteen years, with both lids of both eyes filled with large masses of trachomatous tissue, was seen in an eye clinic just before I started treatment and was told that a roller operation should be performed at once. He was entirely cured in three months with no scar tissue. On September 15th, aside from two or three small follicles, he was in perfect condition.

Another boy of same age had been suspected by family and physician of some renal trouble because of the puffy and swollen condition of the eyelids. I found, on everting the lids, the conjunctival sac distended with trachomatous tissue. It all disappeared within three months under this treatment, and is still all clean at the present writing. This treatment of these children was followed closely by several physicians who can attest to the condition of these cases before treatment.

One boy not in this group, about fourteen years of age, had pannus of both eyes, with profuse granular tissue, and had been under the usual blue stone treatment at one hospital and one eye dispensary for two years. In two months, under this treatment, bichloride rub, one eye had cleared of pannus entirely and the other was much improved, when I lost the case on account of leaving town on my vacation. I hope to get him under treatment again soon.

A most pleasing feature of this treatment is that we get practically no scar tissue. I started with another group of 100 cases on September 15th, and several of the severe cases are showing most rapid improvement. One severe case has nearly cleared up in four treatments. This treatment is severe on the children and difficult for the ophthalmologist to administer and requires tact as well as skillful technic.

498 WEST END AVENUE.

### Abstracts and Reviews.

#### RECENT CONTRIBUTIONS TO THE PHYSIOLOGY OF THE STOMACH.\*

BY PROFESSOR A. J. CARLSON,  
University of Chicago.

Not since the time of Beaumont had there been an equally good opportunity for the study of the functions of the normal human stomach by direct observation until there recently came into our hands a young healthy man with a permanent gastric fistula. We would emphasize the fact that this patient is in every way entirely normal, with the exception of the presence of a complete stenosis of the esophagus and a permanent gastric fistula of large size. Both conditions have been present since the age of about five years. Prompted by the opportunities afforded by this young man, we have been led to the task of studying anew the physiology of the human stomach. Up to the present, our work has been mainly concerned with the movements of the normal empty organ, and the results of this work will be reviewed on this occasion.

Much has already been done on the movements of the stomach in man and animals by foreign students, and in this country by Cannon, but these studies have dealt with the movements of the digesting and partially filled organ. The results of these studies have been confirmed in our laboratory for the most part, both on ourselves and by direct observation of the organ in the man with the fistula. When the organ is full, the movements begin at the pyloric antrum, and as the viscus empties they extend more and more toward the cardia until in the empty organ they are found to begin in that region.

The easiest way to study the movements of the empty stomach in man or animals is by means of an inflated balloon passed into the stomach and connected with a suitable manometer. By this means we have found that there are two alternating periods of activity and relative inactivity always present. The period of activity begins gradually with a series of strong contractions which progressively increase in both strength and frequency until a maximum is reached at the end of about half an hour. Following this period, which might be termed the gastric systole, there is a period of about two hours' duration in which the movements are very slight and the organ is at rest. This period can be likened to diastole. If fasting is prolonged, the contractions during the period of gastric systole increase in frequency and force until they finally result in a condition of tetanic gastric contraction. Associated with each period of contractions there is the sensation of hunger, which increases with the increase in the frequency and force of the contractions. Owing to this direct association we have termed these movements hunger contractions.

These contractions always begin at the gastric cardia and pass over the fundus so rapidly that they cannot be observed in their transit by the eye. Each contraction throws up a high wave in the manometer tracing. Such contractions have been found to occur in all animals, and in man in health and at all ages from the unborn fetus to advanced years. The objection might be raised that these contractions recorded by the balloon method are the same as those produced in the stomach by filling it with food or by any other mechanical means, and that they arise solely in response to the mechanical stimulus of distention. That they are really the contractions of the empty stomach and not due to direct stimulation, has been shown conclusively by several methods of observation. In the first place, when they occur they produce the sensation of hunger, and if a person with a balloon in his stomach is asked to close an electric magnetic circuit, connected to write on the same drum as the record obtained from the balloon, during the periods when he feels the hunger sensation, the record will show that with each strong contraction the sensation of hunger appears. That they begin at the cardia and not at the antrum, as is the case during the presence of food, is easily demonstrated by fluoroscopic examination after the insertion of a double balloon, the inner of which has been coated with bismuth or barium in order to cast a shadow.

Further proof that they are phenomena of the empty stomach is found in the fact that the same

\*Read before the American Physiological Society at the University of Chicago, New York, November 7, 1914.

hunger sensations occur when there is no balloon in the stomach. They also occur in the crops of birds, and in these animals the contractions produce a visible movement of the overlying feathers. Finally, we have been able to observe them repeatedly in the man with gastric fistula by direct inspection of the empty organ. That they are not produced by the mechanical presence of the filled balloon is also shown by their periodicity and by the fact that they cannot be stimulated to appear during the diastolic period by sudden distention of the stomach produced by filling of the balloon.

The absolute parallelism between the occurrence and intensity of these contractions and the occurrence and intensity of the sensation of hunger proved the interdependence of the two phenomena, but whether hunger was the cause of the contractions or the contractions the cause of hunger remained to be determined. Our observations have led us to the conviction that the contractions are primary and that they initiate the sense of hunger. The facts which led to this conclusion were the observation of the same phenomena in decerebrate animals, in which the contractions were found to be usually even greater than in similar normal animals, as if some inhibitory mechanism had been removed by the exclusion of the brain. The contractions were shown to be solely of peripheral origin, also by the fact that they occurred in stomachs which had been removed from the body and kept alive.

It seemed obvious, therefore, that the contractions must send impulses to the central nervous system which caused the sensation of hunger, but these impulses could not themselves be studied, although it could be shown that section of the splanchnics and vagi prevented the sensation without preventing the occurrence of the contractions. That they exerted a reflex effect on the central nervous system was further demonstrated by the observations that parallel with their occurrence there was an increase in the activity of the knee jerks, and that there was a change in the volume of the arm enclosed in a plethysmograph which ran parallel with the contractions. The vasomotor changes were not always of the same kind in different patients, some showing dilatation, others contraction of the vessels, but the changes were always directly associated with the contractions, showing an influence of the contractions on the vasomotor mechanism.

The changes which might be brought about in these hunger contractions by various stimuli were next studied; it was found that anything whatever introduced into the mouth invariably inhibited them. Bitter substances, which have long been reputed to stimulate the sense of hunger, contrary to expectation, also inhibited the contractions and this inhibition was parallel to the intensity of the bitter taste. The introduction of any food or drug into the stomach, either by way of the stomach tube, or directly through the fistula, also invariably inhibited the contractions. The same was true of the introduction of materials into the intestine.

External stimuli, sufficient to produce slight pain, also always inhibited the contractions, but if the stimuli were not of sufficient intensity they had no effect whatever. The application of cold or heat to the skin had the same effect, except when it

failed to produce pain, in which case it was observed that one to two hours after the application the contractions seemed often to be increased. Exercise also inhibited the contractions. There was only one way found whereby the contractions could be influenced in a positive direction; namely, by sleep, during which they increased. We may conclude, therefore, that there is no known means of directly increasing the sense of hunger.

It has often been observed that during starvation the suffering from hunger increased in intensity for the first few days, but later became much less. From this it was expected that the contractions might become diminished after prolonged starvation, but the opposite was found to occur. With the increase in the intensity of the sense of hunger, there was an increase in the intensity of the contractions and of their frequency, but as the sensation diminished with further prolongation of starvation, the contractions persisted in unchanged intensity. From this observation we are forced to the conclusion that the change is a central one, the sense of hunger being largely replaced by other less distressing sensations.

The exact mechanism by which the hunger contractions are caused has not yet been positively determined, but experiments have shown that hemorrhage increased the contractions and that they were in some way connected with changes in the blood, for the blood of fasting animals when introduced into the circulation of nonfasting ones produced typical contractions.

We might, in closing, add a few other observations on the physiology of the stomach and mention that the organ is wholly devoid of sensibility to painful stimuli, but is capable of distinguishing heat and cold when these are marked. We have also found that the stomach continually secretes, even in fasting, and that the juice secreted contains a relatively large amount of pepsin. We have further found that the normal acidity of the gastric secretion is as high as the highest ever recorded in ulcer. From this it would seem that the stomach is incapable of secreting a greater concentration of acid than normal. The total amount of fluid which is secreted may be increased, however, above the normal, the concentration of the acid remaining high.

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### ***Therapeutic Notes.***

**Treatment of Various Skin Disorders.**—J. W. Miller, in the *Therapeutic Gazette* for August, 1914, discussing the treatment of eczema, points out that but few remedies are required to effect a cure in the majority of cases. It is not so much what is used as the method employed that is of significance. In his own cases he uses a benzoinated zinc oxide ointment with petrolatum as base. The parts are first washed with benzine, next covered with the ointment, and a gauze bandage then snugly applied. When the hands are involved, and the patient cannot even temporarily relinquish his occupation, the dressing can often be applied neatly under a light weight cotton glove, or in the case of the forearm, under a portion of the leg of a white stocking, until

the acute symptoms have disappeared. Daily changing of the dressing is important. Where there is a tendency to chronicity, two per cent. of silver nitrate should be added to the ointment. In chronic eczema, Miller found the following ointment (unguentum resorcini compositum, N. F.) effectual:

|   |                                 |                    |
|---|---------------------------------|--------------------|
| R | Resorcinoli, . . . . .          | ââ ðiss (6 grams); |
|   | Zinci oxidi, . . . . .          | ââ ðiss (6 grams); |
|   | Benzoati salicylicae, . . . . . | ââ ðiss (6 grams); |
|   | Olei cadini, . . . . .          | ââ ðiss (6 grams); |
|   | Petrolei, . . . . .             | ââ ðiss (6 grams); |
| M | Aquae linte hydrati, . . . . .  | ââ ðiss (6 grams); |
|   | M. et ft. unguentum.            |                    |

A two per cent. salicylic and zinc oxide paste proved useful in both subacute and chronic eczema. Care is especially enjoined to find out, if possible, whether a condition of anaphylaxis exists, some one article of food, e. g., coffee, alcohol, pork, or sugar, causing a sensitization and rendering the skin susceptible. Where excessive intestinal fermentation seems to exist, Miller has found the giving of castor oil and phenyl salicylate, put up in globules, an excellent measure. As to the use of vaccines, he states that often in the dry, scaly type of eczema improvement takes place after weekly or biweekly injections of suspensions of combined *Staphylococcus albus*, *aureus*, and *citreus*, in doses of fifty to 250 millions.

Impetigo contagiosa was found easily curable in from one to three weeks by the use of an ammoniated mercury ointment:

|   |  |               |
|---|--|---------------|
| R | Hydrargyri ammoniati, gr. v to xx (0.3 to 1.2 gram); |               |
|   | Unguenti aquae rosae, . . . . .                      | 5i (30 grams) |
|   | Ft. unguentum.                                       |               |

In ringworm Miller obtained very satisfactory results with a ten per cent. ointment of iodine in goose grease. Conceding, however, that the use of ointments to bring about a cure in this condition is time consuming and laborious, he considers massive dose Röntgen ray application the most rational treatment now available. The dose should be measured by means of a Sabouraud pastille. One pastille dose suffices to produce the necessary epilation without causing permanent baldness. Epilation is complete in about a month. The child is then free of infection and may return to school.

**Acetylsalicylic Acid in Febrile Conditions.**—E. Dupré and P. Merklen, in *Bulletins et mémoires de la société médicale des hôpitaux de Paris*, May 20, 1915, state their opinion, based on clinical experience, that acetylsalicylic acid is of decided value as an antipyretic drug in acute febrile states such as typhoid fever. Ingested daily in a single dose of fifteen or seven and a half grains (one or 0.5 gram) or even less, the drug was observed in a number of typhoid cases to produce a prompt and considerable drop in the temperature, amounting sometimes to three degrees C. (5.4° F.) or even more. The effect lasted a few hours, and was accompanied by more or less sweating, followed in turn by a rise in temperature to the preexisting level. As little as four grains (0.25 gram), in one of the illustrative charts given, is shown to have been sufficient to cause a drop in temperature from nearly 40° C. to below 37° C. Given at 7 p. m., at the acme of the daily febrile curve, the drug in seven and a half grain doses acted somewhat more slowly, viz., after a delay of two

hours, the drop being frequently preceded by a slight rise. Once established, however, the fall in temperature continued to about normal, as at other times of the day. Similar and equally marked effects were noted in cases of fever due to acute or subacute tuberculosis. Doses of fifteen grains (one gram) were used in these cases. In no instance were any signs of collapse observed. The drug, if used in small doses, may thus be considered a safe though rapidly and powerfully acting antipyretic. In some typhoid cases in which cold sponging lowered the temperature but a few tenths of a degree, acetylsalicylic acid carried it down to about normal.

**Local Treatment of Eczema.**—Gougerot, in *Progrès médical* for April 4, 1914, recommends that in acute eczema the affected area be sprayed with pure boiled water by means of an atomizer. This should be done for fifteen or twenty minutes three or four times a day. In parts of the body where such spraying is not very convenient, e. g., in the case of the extremities, immersion in pure water may be substituted. Where the leg is affected, a vertical position of the member during the bath should be avoided, as this promotes congestion and pain in the affected area; some means should be devised of keeping the leg extended almost horizontally during the bath. Wet dressings of unstarched material, eight or sixteen layers thick, may also be used; absorbent cotton, previously slightly moistened, and some tissue impervious to water should be placed as coverings over the wet dressing. The latter should be renewed whenever the patient feels the lesions becoming dry or warm, i. e., two or three times a day. In the interval between sprayings or applications of the wet dressing, some bland powder should be applied, preferably starch, except in skin folds where talcum powder should be used instead. Before such powders are used, the eczematous surface should be carefully dried with cotton pledgets. In certain cases of eczema, powders are not well borne; in these Gougerot advises the application of freshly melted lard, sometimes with neutral bismuth subnitrate incorporated.

**Treatment of Premature Baldness.**—Jackson and McMurtry, in the *Medical Fortnightly* for May 25, 1914, are credited with the recommendation that in premature baldness massage of the scalp be frequently and thoroughly done, for twenty or thirty minutes at a time. The masseur should use an emollient cream, such as the following:

|    |                                   |                    |
|----|-----------------------------------|--------------------|
| R  | Cerae albae, . . . . .            | ââ ðiss (6 grams); |
|    | Petrolei, . . . . .               | ââ ðiss (6 grams); |
|    | Aquae rosae, . . . . .            | ââ ðiss (6 grams); |
|    | Sodii boratis, . . . . .          | ââ ðiss (6 grams); |
|    | Sulphuris praecipitati, . . . . . | ââ ðiss (6 grams); |
| M. | et ft. cremor.                    |                    |

Deep brushing with a long bristle brush for a few minutes night and morning is also advised, and electricity and vibratory massage have their advocates.

Pilocarpine is the only medicinal agent that appears to exert a specific action.

|   |                                       |                    |
|---|---------------------------------------|--------------------|
| R | Pilocarpinae hydrochloridi, . . . . . | ââ ðiss (6 grams); |
|   | Aquae coloniensis, . . . . .          | ââ ðiss (6 grams); |
|   | Aquae rosae, . . . . .                | ââ ðiss (6 grams); |
|   | Mucosae albuli, . . . . .             | ââ ðiss (6 grams); |

M. Sig. To be well rubbed in night and morning.



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CHARLES E. DE M. SAJOUS, M. D., LL. D., Sc. D.

CLAUDE L. WHEELER, A. B., M. D.

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## PREPAREDNESS FOR WAR

The announcement by President Wilson of his views regarding the necessity for making proper preparations, naval and military, to protect the United States seems to have struck a popular chord. Practically all the newspaper press except the ultra-pacifist wing is united in approving the policy.

American surgeons who have visited the seat of the European war are well aware of the importance of the development of the medical corps as a part of the program of preparedness. The military surgeon is not merely a doctor in uniform. He is an officer in command of bodies of men and must have a sufficient knowledge of military tactics to issue commands to the sanitary troops under him, intelligently and in due military form. Moreover, he must be a practical sanitary expert, with sound judgment as to the handling of bodies of men in the field and a knowledge of military hygiene. All this special information is of vital importance to the troops with which the surgeon serves. Unless the health of the troops is guarded by trained military surgeons, they will soon become incapacitated and disease will accomplish what the enemy may not be able to achieve.

Therefore in outlining a program of military preparation, it is most essential to plan that an adequate number of competent physicians shall receive at least a modicum of training and instruction in the

duties of a military surgeon. This can be best accomplished by providing opportunities for military instruction for the young, patriotic, and ambitious physicians on whom in time of war we should have to depend to a large extent for our supply of military surgeons.

What is needed is to provide military instruction for these young men at hours which will prove convenient to most of them and will not impose too great restraint upon them nor interfere too much with their engagements. We have already suggested the advantages of a reserve medical corps for the National Guard as a means of providing instruction in military medicine. A similar reserve corps should be provided for the proposed Continental army. If such reserve corps are arranged for, we feel confident that the younger members of the medical profession will be glad to avail themselves of the opportunity to add to their knowledge and to fit themselves for military service in case of war.

## THE QUESTION OF MATERNAL IMPRESSIONS AND PRENATAL CULTURE.

Now that eugenics is in the air, it is not astonishing to find that the theory of maternal impressions, that widespread superstition, is being made use of by many persons, many of whom are quite influential with the reading public, as a sort of short cut method of race betterment. Since it has definite medical aspects, it may be worth while briefly to discuss the problem.

The belief in maternal impressions, the efficacy of prenatal culture, "marking," and the like, comes to us as a tradition with a long history behind it. In fact, before the days of embryology and its allied branches, the number of physicians who believed in the probability, if not the actual occurrence of maternal impressions, was by no means small. It is difficult to conceive how any physician with a knowledge of the physiology of gestation and of embryological changes and relationships, can today believe in this theory; yet it may be interesting clearly to present to the reader the arguments which definitely prove the absurdity of the theory of the transmission of maternal impressions, whether these impressions be in the form of thoughts, emotions, shocks, fright of one sort or another, or what not.

In the first place it is now generally agreed by biologists that acquired characters are not transmitted. Even if, as Lamarck and even Darwin believed, acquired characters were capable of transmission, this would in no way be proof in support of the fantastic belief in the effect of maternal impressions, which is not based on accurate observation or correct inferences, but upon superficial think-

ing and the dangerous method of reasoning *post hoc ergo propter hoc*.

Not a single nerve or bloodvessel passes through the placenta from mother to child; and not a single drop of blood passes from the mother to the developing offspring. This is a positively proved fact concerning the circulatory processes in gestation. There is no direct connection between the blood streams, the child deriving its nourishment, as is well known, by absorption or osmosis from the mother's blood. How then can thoughts, desirable or undesirable, conduct, mental experiences in the way of shocks, sights, frights, and the rest, or of physical disturbances in this or that portion of the surface of the mother's body, cause impression on, transmission to, or "mark" the growing embryo or fetus. Once development has begun, it is plain that the child cannot possibly draw from its mother anything but nourishment.

Now, in questioning most mothers who believe in such impressions, it will be found that the fright or other accident or thought which they look upon as the causative factor in the production of the "mark" occurred between the third and sixth month of gestation. Before the second month or so the mother merely suspects that she is pregnant. But it must be recalled that the development of all the main parts of the body is complete by the end of the second month. Hence it naturally follows that the incidents or events which the mother looks upon as the cause of the marking of her child usually take place after the fourth or the fifth month. Since the child has by this time been fully formed, there is absolutely no possibility of affecting the embryo by any mental reactions in the mother so as to bring about maternal impression, with all that it implies. As the editor of the *Journal of Heredity* (November, 1915) so truly declares, "we now believe that most errors of development, such as lead to the production of great physical defects, are due to some cause within the embryo itself, and that most of them take place within the first two or three weeks, when the mother is by no means likely to influence the course of embryological development by her mental attitude toward it, for the very good reason that she knows nothing about it."

If maternal impressions were real phenomena, is it not strange that results are so few and far between as even the supporters of this theory assert? What pregnant woman, during the months preceding labor, is not subjected to or does not meet with unpleasant sights, mental shocks, and the host of other experiences of one sort or another? What actually happens is that when a child is born with any peculiar or undesirable characteristic, the

mother, a relative, some good and kind friend, or some omniscient stranger hunts for some possible experience in the preceding months as a satisfying explanation, and coincidence is taken as proof of causation.

From these few facts it is self evident that so called prenatal culture can in no possible manner specifically influence the development of the growing embryo, physically or mentally. Acts or attitudes of the mother cannot in the slightest degree change the course of development of the potentialities which existed originally in the two germ cells which united to form the beginning of the future offspring. Consequently prenatal culture can be of no value to eugenics.

We do not wish to be understood as detracting in any way from the desirability of the expectant mother doing everything to keep her physical and mental condition as nearly perfect as possible, since anything, be it lowered physical health or severe emotional upset, which disturbs or impairs the health of the mother, who is for the coming child the sole source of nourishment, may affect the normal development of the embryo, in a general if not in a specific manner.

The practising physician, then, should make every effort to assure the pregnant mother that she need have no cause for worry concerning maternal impression, since both maternal impressions and prenatal culture are but antique traditions, passed on to us from the days of long ago.

#### PARIS BABIES DURING THE WAR.

Pinard, according to *Presse médicale* for October 7, 1915, in an address before the Académie de médecine on October 5th, drew attention to the important results of the special protection extended to infants in Paris during the first year of the war. The general mortality had diminished, a phenomenon now noted for the first time during war; the maternal mortality from puerperal disturbances had also diminished. Fewer infants had been abandoned and there was less mortality under three months of age and from congenital debility. The total mortality up to three years of age had been about the same as for the previous year, in spite of an epidemic of choleraic diarrhea which had raged during August and September, 1914, and a particularly fatal epidemic of measles which had lasted an entire year. Pinard also noticed that in 1913-1914, babies born at term had been in the proportion of 34.43 per cent., while in 1914-1915, the proportion had been 56.40 per cent.; also that the average weight of the children born was greater during the war.

## DERMATITIS ARTIFACTA.

G. Stopford Taylor and R. W. Mackenna, of Liverpool, communicate to the *Medical Press and Circular* for October 27, 1915, four case reports of artificially induced eruptions. The diagnosis of these artificial lesions is based on, 1, the site; they are on parts easily accessible to the hands, particularly the right hand; 2, they are circumscribed in outline, frequently rectangular or linear in shape, and the surrounding skin is usually normal; 3, the lesions are said to appear suddenly—frequently during the night; 4, in most cases the sufferers are women, although one of the writers' patients was a boy eleven years old, who endeavored to prolong a pleasant convalescence from measles by applying mustard to his face. The boy was normal except for a hare lip and a cleft palate. The same desire for continued sympathy is a frequent cause of these eruptions.

The means used to produce the lesions comprise prolonged friction, scratching with the nails or with a sharp instrument, the use of caustic potash, silver nitrate, carbolic acid, mustard, etc. Usually hysteria underlies the performance, and areas of cutaneous anesthesia will be found, limitation of the field of vision, loss of the palatal reflex, or other hysterical phenomena. There may be insanity or defective intelligence; in the former case the patient is likely to enjoy the battle of wits with the surgeon and to acquire extraordinary ingenuity in hiding the source of her eruption. Eventually, however, she is likely to give herself away.

The treatment should be disciplinary, according to the writers. The patient should be removed to a hospital or nursing home to undergo the Weir Mitchell discipline. The lesions should be dressed and bandaged in such a way as to prevent further injury, and sharp tools and caustic fluids removed from the vicinity. Hysteria being notoriously a mimetic disease, the writers are disposed to believe that the sight of hosts of wounded soldiers now so common in England has much to do with the numerous cases of this artificial disease that have come to their notice.

## PRESENT PRACTICES IN PHYSICAL TRAINING.

Physical training, physical culture, physical education, or whatever name it goes by, has presented about as many "systems" for arriving at its goal as has medicine; and it might be said, with all due respect to both arts, that each system of physical training has been about as successful and as unsuccessful as have the various methods of healing prac-

tised in past times. With all the injury that was often wrought and all the labor that went for nothing, there has on the whole been a preponderance of profit, and at any rate, the body has gone forward in its development, as it often got well, despite the methods used by trainer or physician.

There are, as yet, two sides to physical training. The physician, no matter to what school he held, has always meant to do his patient good. While the physical trainer of one sort, the type that deserves the name of educator, has always had this purpose in mind, the trainer of the other sort, he who schools his pupils to "win at all costs"—the athletic coach—has not had, and can hardly be expected to have the future welfare of his pupils at heart. It is his business to bring his man up to the limit of his endeavor, no matter what the end of competition means or what the after results of such training may be. If, however, the physical trainer on the athletic side of the fence always understood his business, there would be far less injury done than at present. Too frequently he is chosen for the sole reason that he has been a good jumper or sprinter. He holds a record, not for study of his subject or for judgment in handling men, but because he has beaten his contestants. As well expect the best services from a physician who is chosen because he is robust. The colleges are often at fault for their indifference to proper training. Athletics are an unsolved problem for most of them, and, as a college president recently remarked, they are thankful if their athletes do not bring disgrace upon the school. What the athlete does so far as his own good is concerned does not so much matter.

Large sums are paid out for the training of the "teams"—of those who need exercise and bodily care least. A comparatively small amount is paid for the care of those who are not eligible for competitive games. The average pay of the athletic coach is double that of a medical consultant.

If the coach of the teams has erred in overdoing the matter of exercise, the physical educator has erred in the other direction by giving too much gymnastic drill. For corrective purposes gymnastics, wisely directed, are an excellent thing, and should be given a place in physical education, but a little of them goes a long way and much becomes a tedious grind, in which boredom neutralizes most of the physiological effect.

Happily the two domains of corrective gymnastics and games are both being recognized at more nearly their relative values, and our universities are now making arrangements for the rank and file of the student body to have the opportunity, at least, to enjoy recreative games of all sorts. At the same time there is a movement toward the better super-



ation of those who are in training for inter-scholastic contests. We are likely, in the future, to have less physical training and more physical training.

## TWO FRENCH MEDICAL PERIODICALS RESUME PUBLICATION.

We learn with pleasure that the publishers of two sterling French medical periodicals—*Revue médicale* and *Revue de chirurgie*, suspended since August, 1914—intend to reissue them at once. They invite their friends to send in original communications and will make a specialty of those on war surgery and medicine. Subscribers are requested to notify the publishers at 108 boulevard St. Germain, Paris, of changes of address; they will receive the issues for the remainder of 1915 free of cost.

## News Items.

**Changes of Address.**—Dr. Willis Allin Wilder, to 126 Claremont Avenue, New York; downtown address, 116 Nassau Street.

**The Mütter Lecture.**—Dr. Rudolph Matas, of New Orleans, will deliver the Mütter Lecture for 1915, in Thomson Hall, College of Physicians, Philadelphia, on the evening of December 17th.

**Philadelphia County Medical Society.**—The Aid Association of this society held its annual meeting on Monday, November 8th. Dr. Jacob R. Shellenberger was re-elected president and other officers were elected as follows: Dr. James C. Wilson, vice-president; Dr. Lewis H. Adler, Jr., secretary; Dr. John B. Turner, treasurer; Dr. J. Solis Cohen and Dr. I. P. Strittmatter were elected members of the benevolence committee.

**The New York Association of Medical Inspectors and Physical Educators** will meet in annual session in Rochester, N. Y., on Tuesday, November 23d, as a section meeting of the New York State Teachers' Association. Among the speakers are Dr. Clinton P. McChord, of Albany, president of the association; Dr. Thomas D. Wood, professor of physical training at Columbia University; Dr. Charles White Berry, sanitary inspector, New York State Department of Health; Dr. M. B. Beals, of New York, and Dr. Lucius L. Brown, of Rochester.

**Civil Service Examination for Assistant in Metabolism Investigations.**—The United States Civil Service Commission announces an open competitive examination for assistant in metabolism investigations, for men only, on December 8, 1915. From the list of eligible persons resulting from this examination certification will be made to fill vacancies in this position in the United States Public Health Service for duty in the field, at a salary of \$1,500 a year. The duties of this position will be to make complete food analyses, including calorimetric examinations, and to use the respiration apparatus for the determination of energy metabolism. For full information regarding the examination address the United States Civil Service Commission, Washington, D. C.

**Government Seizes Substitutes for Synthetic Drugs.**—The United States Department of Agriculture has announced the seizure of a number of imitations of neosalvarsan and aspirin, which, upon examination, proved to be worthless imitations of the imported articles. The medical profession is warned against the purchase of these drugs through irresponsible sources. The supplies of both these drugs have been much curtailed by the war, and there have been no shipments of neosalvarsan for some time and none is in the hands of importers. While aspirin is made in the United States by the patentees, the price has been very much advanced on account of the greatly increased cost of the materials from which it is made, thus offering added inducements for substitutes.

**Twilight Sleep Hospital Planned.**—It is reported that the Twilight Sleep Association is planning to establish a hospital in New York. The executive committee of the organization has appointed a finance committee to secure the necessary funds and it is hoped that sufficient money will be subscribed very quickly. It is the object of the association to establish an institution where the Freiburg method of twilight sleep will be used by experts and where physicians may come from all parts of the country for instruction in regard to its administration.

**The Navy Medical Corps.**—Only eighteen candidates have reported for the examination which will be held in nine of the principal cities of the United States on November 15th, for the seven vacancies for commissions in the Medical Corps of the United States Navy. Candidates for this examination must have graduated from one of the standard medical colleges. The *Army and Navy Journal* is of the opinion that the high standard of these institutions is the cause of the difficulty experienced by both army and navy in keeping the medical corps up to required strength.

**Western Physicians Form a New Society.**—Physicians of western North Dakota and eastern Montana recently held a meeting in Williston, N. D., and organized a society called the Kotana Medical Association, with the following officers to serve for the first year: President, Dr. M. E. Trainor; vice-president, Doctor Hagan; secretary and treasurer, Dr. F. W. MacManus; Dr. L. B. Dochterman, censor for three years, and Doctor Brigham, censor for one year. The next meeting of the society will be held in Williston, in January, after which meetings will be held quarterly.

**Medical Association of the Greater City of New York.**—A stated meeting of this association will be held in Du Bois Hall, New York Academy of Medicine, Monday, November 15th, at 8:30 o'clock. Dr. Selye W. Little, of Rochester, N. Y., will read, by invitation, a paper on the Ductless Glands and Atypical Growth, which will be followed by a general discussion. Dr. Richard P. Strong, of the School of Tropical Medicine, Harvard University, will read, also by invitation, a paper on Progress in Combating Infectious Diseases, with special reference to typhus fever in Serbia. A general discussion will follow.

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Monday, November 15th, Philadelphia Clinical Association, Medical Society of the Woman's Hospital; Tuesday, November 16th, West Branch of the County Medical Society; Wednesday, November 17th, Section in Otolaryngology and Laryngology of the College of Physicians; Thursday, November 18th, Section in Ophthalmology of the College of Physicians, Northeast and Northwest Branches of the County Medical Society; Friday, November 19th, Southeast Branch of the County Medical Society, Jefferson Hospital Clinical Society.

**The Milk Convention of the Westchester County Medical Society** held its quarterly meeting at the Hotel Gramatan, Lawrence Park, Bronxville, N. Y., November 5, 1915. This board employs inspectors to examine the various dairies in Westchester County, and no dairy can have its milk certified without having met with the requirements of this board. The members of the commission are: Dr. Robert C. Eddy, of New Rochelle; Dr. Louis V. Waldron, of Yonkers; Dr. B. F. Drake, of New Rochelle; Doctor Roberts, of Mount Vernon; Doctor Woodward, of Mount Vernon, and Dr. Herbert R. Charlton, of Bronxville.

**A Testimonial Dinner to Doctor Goldwater.**—On Saturday evening, November 6th, the officials of the department of health gave a testimonial dinner to Dr. S. S. Goldwater, who retired last week as commissioner of health of the city of New York. Dr. William H. Guilfoyr, registrar, acted as toastmaster, and among the speakers were Dr. Haven Emerson, Doctor Goldwater's successor as commissioner, Dr. Charles F. Bolduan, Dr. Matthias Nicoll, Jr., Dr. Charles B. Slade, Dr. William H. Park, Dr. S. Josephine Baker, Dr. Robert J. Wilson, Dr. L. I. Harris, Assistant Corporation Counsel William J. Millard, and Mr. Ole Salthe. Doctor Goldwater, in responding, took occasion to outline his conception of the work of a modern health department, one which would serve for the maintenance of good health rather than temporize with attempts to cure ill health.

**Railway Surgeons Elect Officers.**—At the annual meeting of the Railway Surgeons' Association of the Pennsylvania Lines East, held in New York last week, the following officers were elected: President, Dr. J. B. Siegman, of Oil City, Pa.; vice-presidents, Dr. J. B. Henderson, of Osceola Mills, and Dr. C. J. Roberts, of Berwyn, Pa.; secretary, Dr. A. W. Colcord, of Clairton, Pa.; treasurer, Dr. J. C. Egbert, of Wayne, Pa. A clinic for the visiting surgeons was held in the New York Post-Graduate Hospital.

**The Death Rate in New York.**—During the week ending November 6, 1915, there were 1,220 deaths from all causes reported to the Department of Health of the City of New York, corresponding to an annual death rate of 10.66 in 1,000 of population, compared with 1,236 deaths and a rate of 11.55 for the week ending November 7, 1914. Noteworthy decreases in the number of deaths from heart disease, pulmonary tuberculosis, other forms of tuberculosis, digestive diseases, and diseases of the nervous system, were observed. Lobar pneumonia and bronchopneumonia both showed a material increase last week over the corresponding week last year, and there were five more deaths from typhoid fever. The annual death rate in 1,000 of population for the first forty-five weeks of 1915 is 13.13, compared with a rate of 13.53 for the corresponding period last year.

**Columbia University Plans a Department of Sanitary Science.**—A separate school of sanitary science and public health is being planned at Columbia University through the extension teaching department. The course, which will probably be offered in the academic year 1916-1917, will be principally for sanitary inspectors, health laboratory assistants, and local health officers, and on the completion of the course a certificate will be conferred by the administrative board of the extension teaching department. In the plans proposed for the new school a two year course of study will be offered, leading to the degree of doctor of science in sanitation, and those who desire to take the course must have the degree of either M.D. or C.E. in sanitary engineering, or an equivalent degree. The teaching staff, in addition to a director, will be made up of members of the faculties of the schools of graduate engineering, law, medicine, political science, and pure science.

**Personal.**—Dr. John Hewat, of North Adams, Mass., who was wounded when serving with the British army in France, returned home a few days ago on furlough. He enlisted as a private, but was promoted for bravery to a lieutenancy and received the Distinguished Service Order.

Dr. William Seaman Bainbridge returned to New York on Saturday, October 30th, from a visit to Europe. Doctor Bainbridge made a thorough survey of the hospitals, ambulance service and other means for transporting the sick and wounded of the Red Cross service, and of sanitary conditions prevailing in the war zone and in Great Britain.

Dr. Richard M. Pearce, professor of research medicine in the University of Pennsylvania, received the honorary degree of D.Sc. from Lafayette College, on October 20th.

Dr. R. G. Brett, of Banff, has been elected lieutenant governor of the Province of Alberta, Canada.

Dr. Mary T. V. Moore, physician in charge of the baby clinic at the Massachusetts Homeopathic Hospital, Boston has been appointed a school physician to the Boston public schools.

**A Mental Hygiene Conference in Boston.**—A three days' conference and exhibit on the subject of mental hygiene will be held in Boston, November 17th, 18th, and 19th, under the auspices of the Massachusetts Society for Mental Hygiene. The Massachusetts society is one of a number of State societies organized under the direction of a national committee for mental hygiene, of which Dr. Lewellyn F. Barker, of Baltimore, is chairman. Among those who will present papers at the conference are Dr. William A. White, superintendent of the Government Hospital for the Insane, Washington, D. C.; Dr. Samuel T. Orton, of Philadelphia; Dr. A. J. Rosanoff, of the Kings Park State Hospital, New York; Dr. H. H. Goddard, of Vineland, N. J., and Dr. E. E. Southard, director of the Boston Psychopathic Hospital. The program committee is composed of Dr. Walter E. Fernald, Dr. James J. Putnam, and Dr. Alfred E. P. Rockwell, and the exhibit, which is one of the most elaborate ever shown on the subject of mental hygiene, is in charge of Dr. Charles E. Thompson, Doctor Rockwell, and Miss Burleigh.

**Resolutions on the Death of Doctor Huddleston.**—At a meeting of the medical board of Governors of the Hospital, held at the hospital, Wednesday, November 3, 1915, the following resolutions were adopted:

Whereas, The Honorable Board of Governors of the Hospital, do hereby resolve that the death of Doctor Huddleston, who has lost a warm friend and wise counsellor, and the hospital has been deprived of the services of one of its most valued members, be it resolved, That the medical board extends to the members of the family of deceased its sincere sympathy in their bereavement, and be it further

Resolved, That these resolutions be spread on the minutes of the medical board and that copies be sent to the local medical press and to the family of the deceased.

HENRY MARSH, SECRETARY.  
JAMES MARSH, CHAIRMAN.  
Committee.

**New York State Civil Service Examinations.**—Among the positions for which the Civil Service Commission of the State of New York will hold examinations on December 11th are the following:

**Supervisor of Exhibits, State Department of Health.** \$2,400. The department desires to secure the services of an active, capable man, who has had a thorough medical or technical education, to write publicity and news articles for the press; to aid in the preparation, and to supervise the planning and designing of exhibits on various phases of public health work; who is competent to institute local public health campaigns on communicable diseases, tuberculosis, child welfare, rural hygiene, diseases of adult life, etc., throughout the State; and who has the necessary knowledge, for and facility in addressing the public. Open to non-residents.

**Woman Physician, State Hospitals and Institutions.** \$1,000 to \$1,500 and maintenance. Candidates must be licensed medical practitioners of the State of New York, and must have had at least one year's experience on the medical staff of a hospital or three years' experience in the general practice of medicine. Candidates desired in both regular and homeopathic schools of medicine. Open to non-residents.

**Research Assistant, Kings Park State Hospital.** Open to men and women. Salary \$600 and maintenance. Candidates must have had a full collegiate education with subsequent experience in psychological, biological, research, especially in connection with human heredity; they will be given a written examination on mental tests, etiology and symptomatology of mental disorders, and on the subject of heredity in relation to eugenics.

**Physician to attend persons sustaining injury due to work under compressed air.** Public Service Commission, First District. \$2,500.

**Assistant in Radio-Physics, State Institute for the Study of Malignant Diseases, Buffalo, N. Y.** See above.

For full information regarding these examinations, address the State Civil Service Commission, Albany, N. Y. All applications must be in the hands of the commission on or before December 1st, and no application blanks will be sent out by mail after November 29th.

**Sir Charles Tupper, "Grand Old Man" of Canada, Dead.**—Sir Charles Tupper, venerable Canadian statesman and physician, died in England, on October 31st; he was ninety-four years old. From the establishment of the Dominion of Canada in 1867, in which he played a prominent part, up to within a few years ago, Sir Charles Tupper was so prominent in Canadian statesmanship that upon his retirement he, like the late Lord Strathcona, was called "Canada's Grand Old Man."

Born at Amherst, Nova Scotia, July 2, 1821, he studied medicine at Edinburgh University, and attained success in the profession in his native Nova Scotia, where he entered politics in 1855. He became premier of Nova Scotia in 1864. After the formation of the confederation he became minister of customs in the Sir John Macdonald cabinet that resigned in 1873, and was Sir John's closest adviser in the five years during which the Conservative party was out of power.

In 1878, when Macdonald returned to office, Doctor Tupper became minister of public works. He created the department of railways and canals, and became its first minister.

After the defeat of the Conservatives in June, 1896, Doctor Tupper resigned office, and upon the meeting of the new Parliament he was elected leader of the opposition. A few years later he retired to private life. Several years ago he went to London, intending to spend his remaining years there. His leaving-taking was made the occasion of a great popular demonstration in Vancouver. Doctor Tupper was created a baronet in 1879. He was at one time president of the Canadian Medical Association.







The stigmata of this condition are plainly shown by the symptomatology of the earlier or simple form of the disease, viz., depression, exhaustion, the readily fatigued mind or inability to labor mentally, the loss of will power, memory, and judgment, the early confusion hypochondriasis, the dilated pupils, etc., shown by the child, the periods of low temperature and low blood pressure, sometimes to the point of cyanosis, the feeble pulse, the anorexia notwithstanding a possible increase in weight (due to slowed catabolism), the slow eliminative processes with foul tongue, the asthenia, the leucopenia, etc. These signs are clearly those of deficient, slowed, or at least perverted metabolism in the cerebral system (the entire nervous system, in fact). We have seen (see issues of the NEW YORK MEDICAL JOURNAL, June 26 and July 10, 1915) that—from my viewpoint at least—the thymic phosphorus-laden nucleins represent the foundation of the chemico-physical portion of the entire nervous system—that out of which its myelin is built. The thyroid secretion, by sensitizing the phosphorus of these bodies to the action of oxygen, thus prepares them for the action of the adrenal secretion—which becomes adrenoxidase on its passage through the lungs, a powerful catalyzer, as again confirmed recently by Galdi (7). The nucleins, the thyroid secretion, and the adrenal secretion thus represent the tripod, as it were, of the anabolic or constructive phase of metabolism. As well stated by Ross (8) after a study of the metabolism in dementia præcox, "the patients had lost to a certain degree their normal powers of oxidation."

2. *As a result of the deficiency of nucleins, the catabolic phase of metabolism is also impaired and toxic intermediate wastes accumulating in the blood, including that which circulates in the brain cells, catatonic phenomena are initiated.*

It is interesting to note in support of the two conclusions submitted that Kraepelin attributes the disease to fundamental conditions: First, of chemical changes in the cortical cells of a degenerative or destructive type, and second, of an *auto-intoxication* as the source of these lesions, the toxic originating, however, in his opinion, probably in the genital organs. Nearer the true explanation of the second or toxic phase, from my viewpoint, is the conclusion of H. H. Tyson and L. Pierce Clark (9), after a study of the fundus in 109 consecutive cases, that the visual syndrome was "a distinct contribution to the theory that dementia præcox is an autotoxic disease, and that the poison is primarily vascular which finally induces neuronc degeneration." Concerning the genesis of the poison, the authors conclude that the syndrome further "points to a toxin of some sort which is either a metabolic defect in the tissues (ductless gland defect), or what seems more probable, that the poison is generated in the lower or in the gastrointestinal tract itself." Benedik and Deak (10), Laiguel-Lavastine (11), and others have also urged the importance of a toxic circulating in the blood, and from my viewpoint (see the data submitted elsewhere in this JOURNAL, June 26 and July 10, 1915) in the neurone itself.

3. *To oppose the intoxication, the ductless glands which take part in the defensive functions of the*

*body, the thyroid, parathyroids, and adrenals become abnormally active in some instances and incidentally excite the dystrophic brain cells, provoking the catatonic form of the disease.*

Dercum and Ellis (12), in a post mortem study of eight patients with dementia præcox, all of whom had succumbed to tuberculosis, found that in seven the thyroid was under weight. Three of the seven organs showed colloid abnormalities, quantitative or qualitative, and four retrograde changes in the acinal epithelial cells. The adrenals, on the other hand, showed a marked excess of weight in five of the eight pairs of organs, normal weight in two, and were considerably under weight in one. Unfortunately, the presence of a disease which taxes so actively the defensive resources of all the ductless glands cannot but suggest exhaustion at the end of the lethal process, and compromise the value of the findings as indicative of the actual condition of the organs as factors of the mental disease. May not, however, some cases be due, as Dercum and Ellis suggest, to inadequacy of the adrenal system—that is to say, the thyroid, adrenals, and pituitary, in addition, we would add, to premature involution of the thymus? Such may quite possibly be the case and might be shown to prevail, probably by means of pluriglandular therapy. Lemel (13), in fact, obtained eight favorable results out of twelve from thyroid gland.

The data in support of the third conclusion submitted are, however, of a more positive kind. I need no longer defend the view that the thyroid, parathyroid, and adrenals take part in our defensive mechanism, so general has been the acceptance of this view. When, therefore, in the presence of *toxemia*, we have clear evidences of overactivity of these organs, it is reasonable to conclude that we are dealing with a defensive reaction. H. J. Berkley (14), after observing that desiccated thyroid and iodothylin increased the motor symptoms of catatonia, noted also that these symptoms resembled several peculiar to Graves's disease; the rapid pulse, the muscular tremors, the hyperidrosis, the overactive eye reflexes, the increased mechanical muscular excitability, the demographia, the loss of weight, and the skin pigmentation. The prodromal stages of the diseases are also suggestively similar; insomnia, headache, vertigo, change of disposition, and irritability. The thyroid, however, showed only increased softness and occasional lumps in the glandular substance. The clear indication, therefore, was partial thyroidectomy, which was tried in eight cases, the operation being performed by Dr. Richard H. Follis. The results, recorded by Berkley and Follis (15), may be inferred from their conclusion that "it would be difficult to find eight successive cases of catatonia that recovered their mental integrity under any previously known treatment as these eight cases have done." Kanavel (16) also removed seven eighths of either of the thyroid lobes in three cases of catatonic dementia præcox. Here, however, the removed thyroid tissue showed marked hyperemia—which denotes excessive activity—in all three cases, marked parenchymatous

growth being present in two. Partial thyroidectomy was found to be of absolutely no avail, however, in all cases.

The explanation of these results is not difficult in the light of the third conclusion I have submitted. The marked reduction of thyroid secretion following the partial thyroidectomy, restored the equipoise between the deficient supply of nucleins and the thyroid secretion. Metabolism itself being equalized, the formation of catabolic wastes in excess was controlled, and these two sources of morbid activity in the brain cells being eliminated, normal psychic activities became possible.

The negative results in old cases find their explanation in the presence of organic lesions. Thus, E. E. Southard (17) found post mortem—and presumably, therefore, in advanced cases at the time of death—that "a vast majority of cases of dementia præcox is characterized by coarse anomalies or scleroses in particular regions of the cerebral cortex" and in other brain structures.

The foregoing data appear to me to show that, thanks mainly to the labors of Henry J. Berkley, Ludlum, and Corson White, successful treatment of dementia præcox is possible when the cases are treated before organic lesions are allowed to develop. Briefly,

4. *Thymus preparations, lecithins, or sodium nucleate should be tried faithfully in all but old cases of dementia præcox. If they fail, it is because they are insufficient to restore the functional equipoise of the ductless glands; in the latter case partial thyroidectomy or x ray treatment of the thyroid is indicated to inhibit its functions, in addition to the internal medication.*

The fact that Berkley, speaking of the use of lecithin, refers to this "phosphorus compound stopping the active nervous symptoms in two diseases, Graves's and catatonias," sustains my own view that the primary defect is deficiency of the surplus of nucleins which the thymus should furnish. As to sodium nucleate, Bayard Holmes (18) writes of this agent: "There is at least one remedy which has been very helpful in dementia præcox and ought to be used as a routine in every hospital for the insane until a better remedy is discovered." We would add that if the general practitioner could but familiarize himself with the early symptomatology of dementia præcox and at once initiate thymic or lecithin therapy, he would become the leading factor in the prevention of a disease which, as regards the yearly destruction of young minds, corresponds with the yearly mortality from typhoid fever.

#### REFERENCES.

1. LEMEL, L. A. *Bev.*, 1915, 1, 100.
2. LUDLUM, J. ELLIS. *Ann. of the New York Acad. Med. Sci.*, 1915, 1, 100.
3. LUDLUM, J. ELLIS, and CORSON WHITE. *Ann. of the New York Acad. Med. Sci.*, 1915, 1, 100.
4. LUDLUM, J. ELLIS, and CORSON WHITE. *Ann. of the New York Acad. Med. Sci.*, 1915, 1, 100.
5. LUDLUM, J. ELLIS, and CORSON WHITE. *Ann. of the New York Acad. Med. Sci.*, 1915, 1, 100.
6. LUDLUM, J. ELLIS, and CORSON WHITE. *Ann. of the New York Acad. Med. Sci.*, 1915, 1, 100.
7. LUDLUM, J. ELLIS, and CORSON WHITE. *Ann. of the New York Acad. Med. Sci.*, 1915, 1, 100.
8. LUDLUM, J. ELLIS, and CORSON WHITE. *Ann. of the New York Acad. Med. Sci.*, 1915, 1, 100.
9. LUDLUM, J. ELLIS, and CORSON WHITE. *Ann. of the New York Acad. Med. Sci.*, 1915, 1, 100.
10. LUDLUM, J. ELLIS, and CORSON WHITE. *Ann. of the New York Acad. Med. Sci.*, 1915, 1, 100.
11. LUDLUM, J. ELLIS, and CORSON WHITE. *Ann. of the New York Acad. Med. Sci.*, 1915, 1, 100.
12. LUDLUM, J. ELLIS, and CORSON WHITE. *Ann. of the New York Acad. Med. Sci.*, 1915, 1, 100.
13. LUDLUM, J. ELLIS, and CORSON WHITE. *Ann. of the New York Acad. Med. Sci.*, 1915, 1, 100.
14. LUDLUM, J. ELLIS, and CORSON WHITE. *Ann. of the New York Acad. Med. Sci.*, 1915, 1, 100.
15. LUDLUM, J. ELLIS, and CORSON WHITE. *Ann. of the New York Acad. Med. Sci.*, 1915, 1, 100.
16. LUDLUM, J. ELLIS, and CORSON WHITE. *Ann. of the New York Acad. Med. Sci.*, 1915, 1, 100.
17. E. E. SOUTHARD. *Massachusetts State Board of Insanity*, 1915.
18. HOLMES. *Chicago Medical Recorder*, Sept., 1915.

(To be continued.)

## Pith of Current Literature.

### MEDIZINISCHE KLINIK.

September 26, 1915.

**Pathology of Breast Secretion**, by F. Ebeler.—Eighty-seven cases of pathological secretion by one or both breasts in nonpregnant women were studied; the condition being found in association with many diseases, including uterine myomas, ovarian cysts, pyosalpinx, genital carcinoma, retroflexion, uterine prolapse, metritis and endometritis, and in affections usually involving some portion of the genital tract or the pelvis. Nearly twenty-five per cent. of the patients were barren; eleven had passed the climacteric. The breast secretion varied from typical colostrum to normal milk; it seemed to have no relation to the cause; evidently pathological mammary secretion is not uncommon and colostrum or milk not such certain evidence of pregnancy as thought. The secretion may be brought about either by reflex nervous processes acting on the ovaries in the cases of nongenital diseases, or by some chemical, fermentative, or toxic process in the cases with genital disorder.

**Treatment of Typhoid**, by Bruno Fellner.—A high caloric diet reduced the mortality from about twenty to seven per cent. Attempts were made to cause a further reduction by means of vaccines of sensitized typhoid bacilli according to Besredka. Eighty patients were treated with this vaccine and twice the number were observed as controls. All received the high caloric diet and were otherwise similarly treated. The vaccine caused no reduction in mortality, but it reduced the duration of the disease. There were fewer complications among the vaccinated patients, half as many had relapses among the vaccinated as among the controls, and the vaccine seemed to diminish the tendency to lose weight.

**Prognosis in Typhoid Fever**, by O. Landsberger.—Following the technic of Schottmüller, the number of typhoid bacilli in a measured amount of the patient's blood was determined as a prognostic index. The technic consisted in mixing two c. c. of blood with five c. c. of ox gall and mixing the whole with warmed agar which was then poured into a Petri dish and incubated. The resulting colonies were then counted and bacteriological identification of the organisms was completed. When less than thirty or forty colonies were present, the prognosis was good. Intermediate numbers—thirty to 100 colonies were seldom encountered, but counts above 100 always indicated a severe course and a bad prognosis. The highest count found was over 400 organisms.

### BULLETIN DE L'ACADÉMIE DE MÉDECINE.

August 31, 1915.

**Triple Typhoid and Paratyphoid Vaccination**, by Chantemesse. During combined typhoid and paratyphoid epidemics, the author considers justifiable a simultaneous preventive vaccination against both typhoid fever and the two forms of paratyphoid. The dose of typhoid bacilli should not be diminished below that usually employed in simple antityphoid vaccination, but the doses of the para-

typhoid organisms may reasonably be less, in view of the lesser severity of the disease. The triple vaccine employed by the author contains fifty per cent. of typhoid, thirty per cent. of paratyphoid A, and twenty per cent. of paratyphoid B organisms, sterilized by heat.

**Delayed Tetanus**, by Léon Bérard and Auguste Lumière.—Five cases illustrating the possibility of a tetanic reinfection are referred to. The condition is ascribed to the presence in old wound cavities, which may or may not have completely healed, of bits of clothing, soil or other foreign bodies containing tetanus spores in a latent, isolated or encysted state, which spores are then set free by a subsequent exploration or dressing of the wound or other surgical procedure. The beginning of the recurrent affection was observed to be insidious, the symptoms consisting of gradually increasing contractures in the limbs, sometimes limited to the injured extremity, together with slight but persistent trismus, rigidity of the neck, reflex exaggeration, epileptoid trepidation, and sweating. Almost constant, and of prognostic import, was a persistent, progressive contracture of the abdominal muscles. Convulsive seizures were absent or very mild and late in their appearance. In spite of the apparent mildness of the condition, the symptoms generally grew progressively worse until, in a few weeks, contracture of the respiratory muscles and asphyxia took place. The previous injections of antitetanic serum had evidently been given so long before that the organism was no longer sufficiently protected from the infection. It is therefore advised that in subjects who have received the customary two protective serum injections, a fresh dose should be given whenever there is later carried out some surgical procedure which might set free latent septic products in suspicious wounds. After the adoption of this rule no more cases of delayed tetanic infection were met with. Where the condition had, as in the early cases, actually developed, success in treatment was attained by the giving of large doses of serum as soon as the first symptoms had been noticed.

#### JOURNAL D'UROLOGIE.

September 4, 1915.

**Early Diagnosis of Genitourinary Tuberculosis**, by Micheli.—Colombino's sign is emphasized, viz., discovery in the urinary sediment of deformed leucocytes and red blood cells in early cases of genitourinary tuberculosis. Two cases are reported in which this sign first suggested tuberculosis.

**Pyelography**, by Plotkin.—Complications developed in three out of his eighty cases in which pyelography was done. In one, severe, and in another, mild renal colic occurred; in a third, fever and chills. The ureteral catheter should always be small enough to permit the reflux of any excessive fluid. If ureteral catheterization causes pain and hemorrhage, pyelography should not be done.

#### RIFORMA MEDICA

October 16, 1915.

**Three Day Fever in Naples**, by G. Martelli.—This condition, seen especially in soldiers, has an incubation period of four to seven days, a sudden onset with intense headache, pains in the joints and

lumbar region, also in the eyes. In a few hours the temperature reaches 104° F., and persists for seventy-two hours with or without slight morning remissions, and falls rapidly at the end of that time, leaving only a severe prostration lasting ten to fifteen days. There is an absence of stomach enlargement, of urinary changes, of hematozoa, and of serum agglutination; blood cultures were sterile. In these cases we must consider the possibility of rheumatic fever, influenza, acute malaria and dengue. The infective agent seems to be a virus which passes through the Berkefeld filter, which cannot be cultivated on ordinary media and which is frequently introduced by the puncture of a minute gnat called *Phlebotomus papatasi*. The prevalence of the disease seems to be in some relation to the distribution and presence of this gnat but it would also seem that the gnat is not the sole agent of transmission.

#### REVISTA DE MEDICINA Y CIRUGIA PRÁCTICAS.

September 28, 1915.

**Abortion**, by J. J. de la Muela.—There may be death of the fetus in utero with subsequent expulsion or it may be expelled while still living. Apart from traumatism, abortifacients and syphilis, we have to deal with acute infectious diseases as active etiological factors. The alarming increase of criminal abortion or race suicide with consequent danger of depopulation should be dealt with by the Government. Druggists should be forbidden to dispense so called regulating drugs without a physician's prescription and there should be a rigid punishment by law of even an attempt at abortion.

#### SEMANA MÉDICA.

August 16, 1915.

**Poliomyelitis Treated with the Serum of Cured Patients**, by G. A. Alfaro and J. M. Hitce.—A boy of seven months with a quadriplegia as well as paralysis of the muscles of the trunk and neck was successfully treated with intraspinal injections of serum of cured patients. The dose was two to three c. c. and eleven injections were given, six were on successive days, the others at intervals of two and three days. Not only did the paralysis disappear but the reflexes and even the tactile sense became normal. This method is absolutely harmless, simple, rapid and efficient. The blood from the immune patient is removed under rigorous asepsis and immediately centrifugated, then placed in an icebox and used within four days. An amount of cerebrospinal fluid equal to or greater than the proposed injection is removed as a preliminary step.

August 26, 1915.

**Submucous Fibroid Simulating Retained Placenta**, by F. A. de Luca.—A case of fatal post partum hemorrhage with supposed partial retention of the placenta proved to be due to a submucous fibroid. It is quite possible to make this mistake when the physician has not been in attendance during all the stages of the labor; further, in the absence of continued hemorrhage, operative procedures in such cases should be postponed until shock has been overcome.

**Serotherapy of Bubonic Plague**, by J. Moreno.—The great epidemic in Manchuria in 1910 and the



recently in Argentina show that the success of the serum treatment depends on several factors, such as the day of the disease, the size of the dose, the virulence of the particular strain of bacilli involved and the type of the disease—the pneumonic form being very difficult to overcome.

#### UPSALA LÄKAREFÖRENINGENS FÖRHANDLINGAR

**Significance of Childhood Exposure in Tuberculosis.** By Axel Wallgren. Von Behring's widely accepted theory that adult tuberculosis is a sequel to a primary infantile infection, is perhaps true, but the author takes the view of Römer, that, a mild primary infection may immunize, and a more intense one may lead to tuberculosis later. He presents the conclusions drawn from his own comparative study of the history of 100 consumptive adults under forty years from the Upsala tuberculosis clinic and 100 nontuberculous adults under forty years consisting of medical students, nurses and employees of the hospital. Pains-taking inquiry into the history showed fifty-one per cent. of childhood exposure in the tuberculous and thirteen per cent. in the nontuberculous, by exposure being meant close association with a coughing consumptive. In fifteen per cent. of the patients there was exposure before the fifth year, while this was the case in only one per cent. of the nonconsumptives. In this respect also his experience coincides with that of Römer, namely that exposure before the fifth year is more deleterious in its consequences as regards the development of adult tuberculosis, whether from autogenous reinfection or infection from without owing to failure of immunization.

#### BRITISH MEDICAL JOURNAL.

**Ureteral Calculus,** by David Newman.—With comparatively little experience we may be too ready to make a diagnosis of stone in the ureter from suggestive symptoms. The danger is equally great in cases of calculus in which the symptoms are not typical. Bearing in mind these two facts, we should employ every possible diagnostic aid. No single physical sign or symptom is without fallacy. In addition to determining the presence of a stone in the ureter, it is quite as important to establish its precise location, the functional state of the kidneys and whether or not obstruction is complete. If even slight amounts of blood are present in the urine, we may be certain that the stone is not completely obstructing the ureter, but blood may also be totally absent in cases of incomplete obstruction when the stone is smooth. Most cases give a history of a dull aching pain localized for a while in the lumbar region, but later suddenly shifting to the groin and increasing greatly in severity. This change is often coincident with a disappearance of hematuria and is indicative of an impaction of the stone. Pain and suppression of urine are the most important symptoms, but many other conditions than stone may cause ureteral obstruction. Usually, however, other diseases causing such obstruction give symptoms so prominent as to be unmistakable. In some cases calculus may be present for long periods of time without producing symptoms and in others the symptoms may be re-

ferred to the bladder or urethra. A striking feature of calculus anuria is that it may persist for days without producing uremic symptoms due to absence of renal damage. The most valuable single aid to diagnosis of ureteral calculus is the x ray. The fluoroscope should be employed in addition to the preparation or radiographs. The introduction of opaque sounds or the injection of opaque fluids into the ureter may be of great help in certain cases. Another material aid is found in the use of a ureteral resonator, which gives a grating sound when its tip comes in contact with a stone. Wax tipped bougies are of some value, but their use is considerably restricted owing to the possibility of their being scratched by other objects than the stone. For stones lying near the bladder orifice of the ureter, the cystoscope sometimes is of the utmost aid. When in the same location or even higher up in the ureter stones can sometimes be palpated by rectal or vaginal examination, and in thin subjects with lax abdominal walls can at times even be felt directly.

**Removal of Bullet from the Heart,** by L. H. C. Birbeck and G. N. Lorimer.—For eight days after receiving a wound to the right of the xiphosternal junction, the patient presented no symptoms other than slight local pain. The heart then began to show irregularity but was slow; there was no fever. Beside the external wound there were no abnormal physical signs, but the fluoroscope showed a shadow of a bullet apparently lying in the heart wall or ventricular cavity. A dose of veronal and three doses of morphine were given and the chest was opened under local anesthesia with a one per cent. solution of eucaine and one quarter per cent. potassium sulphate. During the entire operation there was no complaint whatever of pain or distress except for a minute when the lung collapsed after opening one pleural cavity. The pericardium was opened widely and by means of palpation the bullet was found in the cavity of the right ventricle. After displacing it so as to bring it near the apex, sutures were passed through the ventricular wall and the bullet was removed through a short incision. During the operation it was observed that when pressure was made over the upper, posterior part of the ventricular septum, the heart would miss a beat, but other manipulation, including firm grasping of half of the ventricle, was without effect on the rhythm. The patient lived for four days after the operation, dying apparently from multiple pulmonary infarcts in the right ventricle.

#### LANCET.

October 16, 1915.

**Clinical Characteristics of Paratyphoid Fever,** by Henry Robinson.—In a given time, eighty-nine patients were admitted to hospital as possible examples of typhoid fever. Of these, a few were probably not enteric cases at all, but the great majority presented the clinical picture of paratyphoid fever, and paratyphoid organisms were isolated from the blood, stools or urine of forty-seven. Careful study of these patients revealed the fact that paratyphoid A and B infections could not be differentiated clinically and that it was only by careful bacteriological methods that they could be separated. Paratyphoid was found to be a much milder and shorter disease

than typhoid. It was either gradual or moderately sudden in onset with shiverings. The most constant symptoms were headache, which was often very severe and persistent, and abdominal pain, either general or more or less localized to the right side of the abdomen. Next in order of frequency were cough, pain in the legs or back, diarrhea, constipation and epistaxis, all of which occurred in from thirty to sixty per cent. of the cases. Initial vomiting and subsequent sore throat were not uncommon. Successive crops of rose spots were observed in about sixty per cent. The spots tended to be larger than those of typhoid and often there were several crops in a single case. One of the most striking features of the disease was the slow pulse rate even during the course of the fever. Practically all patients showed a very slow pulse at some time during their illness, this often falling well below sixty beats a minute. No serious cardiac disturbance was noted and severe complications were rather rare, although they were the same in type as found in typhoid fever. Short relapses were relatively frequent. The organisms could seldom be isolated from the blood or urine, but were frequently obtainable from the feces. Diagnosis may be materially aided by quantitative Widal tests. The prognosis was extremely good, there having been no death, although several cases were very severe.

**Etiology and Prevention of Epidemic Cerebro-spinal Fever,** by Halliday Sutherland.—The disease is prevalent during cold weather and disappears with the coming of warm weather. The organism is quickly killed by exposure to temperatures below 70° F. The reason for the prevalence of the disease in cold seasons is to be found in overcrowding of living rooms and the presence of the meningococcus in the nasal secretions. Overcrowding produces unhygienic conditions, impairs resistance, and offers the best opportunities for the direct transmission of the organism. In addition, cold lowers the vitality of the nasal tissues and this is exaggerated by passage into a warm, damp atmosphere. The remedy lies in the provision of ample ventilation of all living rooms and dormitories at all times and the proper protection of the individual from chilling.

**Transient Aphasia Due to Arterial Spasm,** by J. Gordon Sharp.—Transient aphasia, hemiplegia, monoplegia or paraparesis occurs most commonly in persons past middle life in whom there is some degree of arteriosclerosis. It may also occur in young subjects with elastic arteries, but this is rare. It is not necessarily associated with high systolic blood pressure. Strong emotions and circulating toxins may provoke the spasm of the vessels. It does not seem that the middle cerebral artery or its branches are more prone to spasm than other vessels, as has been commonly stated, but rather that spasms of these vessels are more likely to produce symptoms than those of other cerebral arteries. In the preventive treatment, the determining causes, such as alcohol, tobacco, excitement, and vitiated atmosphere should be avoided. Hot or cold baths, the drinking of an abundance of water, and the free use of saline purgatives are also of great preventive value in disposed subjects. High systolic blood pressure calls for the occasional administration of

sodium nitrite, and in all cases the diet should be carefully regulated with a sharp restriction in the protein intake. Treatment for an attack is little else than a modification of the preventive measures combined with symptomatic remedies when required. Seven cases belonging to this class are described, all having been under observation for months or years, so that the spasmodic nature of the phenomena could be regarded as certain.

**X Ray Treatment of Fungating Epithelioma,** by Christopher Kempster.—Experience has taught the author that the best results in the treatment of fungating epithelioma are to be secured by a process of progressive filtration. The short soft rays have a remarkably rapid destructive effect and treatment should be begun with full pastille doses given without filtration, the neighboring skin being thoroughly protected from exposure to the rays. Two or three such doses are given at intervals of a week. At the end of that time the growth has usually shrunken very markedly, and then full doses are applied through a one mm. aluminum filter at the same intervals for another two or three weeks, when the filter is increased to one and a half and later to two mm. in thickness and treatment continued until healing is complete. This method gives very prompt results and the minimum of scarring.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

October 30, 1915.

**Diagnosis of Chronic Gastric and Duodenal Ulcers,** by George B. Eusterman.—The observations cover 2,400 cases surgically demonstrated. When direct x ray and clinical observations cannot be made the most important thing is a careful history. In over eighty per cent. of the cases there is characteristic course or remission of symptoms. Both pyloric and duodenal ulcers invariably showed periodical exacerbations, and seasonal variations. Recurrences were influenced by nervous and general fatigue, exposure, infection, toxic intestinal disorders and dietetic indiscretions. Complete relief generally occurs between attacks, except in ulcers along the lesser curvature, in which there are remissions rather than periods of complete freedom.

**Early Diagnosis of Intussusception,** by Irving M. Snow.—It is usually easy to make the diagnosis during the second or third day, but this delay is fatal. The infant in which intussusception occurs is usually breast fed and the first symptom is the sudden development of agonizing pain with its associated crying. The face is pinched, pale and cyanotic, presenting the appearance of shock. In a few hours the face may become more composed, and this is often deceptive, leading the physician to think that conditions have improved. Vomiting is another early and constant symptom. It may occur frequently or there may be longer or shorter periods of intermission. It is increased by food, and is seldom fecal in character. An insensitive, more or less rounded tumor which rotates on the axis of the mesentery can commonly be felt through the flaccid abdomen. Digital rectal examination should always be made and often yields valuable evidence, for the soft, fleshy mass may be felt, or bloody mucus may be discovered. Relief of the telescoped intestine

must be given within thirty-six hours or death will result from pain, vomiting, exhaustion, shock and toxemia.

**Clinical and Electrocardiographic Studies on the Action of Digitalis**, by Alfred F. Cohn. Patients with auricular fibrillation were studied. They were also free from edema and without increased blood pressure. The first conclusion reached was that slowing of the heart was not a primary or essential function of digitalis, and that it occurred only in cases with hypodynamic hearts. However, this applies only to slowing of sinus origin. Some delay in conduction time, varying up to partial heart block could be demonstrated in all cases, irrespective of any such tendency. This delay was manifest within forty-eight hours. The change usually lasted for about two days after discontinuance of the drug. It is not known whether the change can be regarded as indicative of a beneficial action of digitalis. Another common, but little recognized arrhythmia due to digitalis was found to be the production of a complete dissociation of auricles and ventricles with both beating at nearly the same rate. A new indication of digitalis action was observed, consisting in a gradual change in the direction of the T wave of the electrocardiogram, first a flattening of the first portion, then an isoelectric phase, and later either an inverted T wave or a double one, the first portion of which was inverted and the second upright. This phenomenon was of early occurrence and persisted a variable period of time up to three weeks after the last dose of the drug. Digitalis did not slow the heart in most febrile conditions, but that was not deemed evidence that it might not have benefited the heart in other ways. In cases of auricular fibrillation or flutter of a transitory nature and associated with toxic febrile conditions marked slowing was produced by the drug. There seemed to be no difference in principle between the way in which digitalis acted in febrile and nonfebrile conditions. The drug was not observed to elevate the systolic or diastolic blood pressures, and it also failed to produce diuresis except in the presence of edema of cardiac origin.

#### MEDICAL RECORD

October 10, 1915

**Mortality among Abstainers and Nonabstainers from Alcohol**, by W. E. Porter.—Statistics of the largest insurance companies in America and in England show roughly that the average mortality rate among total abstainers from alcohol is 68.4 per cent. of the expected rate, whereas that of the non-abstainers is 91.5 per cent., a difference of 23.1 per cent. This means a reduction of two and a third years in the average life of a nonabstainer.

**Dementia and Multiple Tuberculous Brain Abscesses**, by G. B. Hassin.—Multiple brain abscesses are as a rule of metastatic origin caused by a suppuration in organs remote from the brain. A rare combination is the simultaneous occurrence of multiple cerebral abscesses and dementia. Such a case occurred in a man of sixty years; the probable diagnosis was pachymeningitis but post mortem the abscesses were shown to be an encephalitis coupled with multiple abscesses.

**Infectious Diseases of the Intramural Insane**, by J. A. Jackson.—Infectious diseases are controlled by quick diagnosis, thorough isolation and appropriate treatment. Parasitic diseases are quite common in institutions and to avoid them the ward should be kept sanitary and there should be proper disinfection of towels, body clothes, and bed linen. Scabies is most common especially in paupers. Erysipelas is the most frequent contagious disease seen in asylums; prevention is very important. Bedsores are fertile fields for the streptococci of erysipelas. Vincent's angina is not uncommon in the insane especially if there has been carelessness regarding the hygiene of the mouth; while mumps is very uncommon. There is a high death rate due to tuberculosis in all hospitals; loss of weight is the principal significant sign. All institutions for insane patients should have a section or better a building for isolation purposes and the resident staff should have free access to consultation with experts in this particular line. Vaccines for the prevention of disease should be recommended as a harmless and efficient measure.

**The Lime Therapy of Diabetes**, by Max Kahn and Morris H. Kahn.—Diabetes is characterized throughout its course by calcium loss; acidosis, which is probably due to this loss, may be prevented by the administration of lime salts.

**Treatment of Opium and Morphine Addiction**, by S. T. Rucker.—This treatment is divided into preliminary, special and aftertreatment. The preliminary consists of physical and laboratory examination and purgation with slight reduction of the drug. The special treatment includes active purgation, hot baths, hypnotics in large doses especially at night, although given in day time to maintain nervous quiet. The room is kept dark and unnecessary noise is avoided, no one being allowed to see the patient during the special treatment except the nurse and the doctor. Bromides are given in doses of ninety grains three times during the second day. Calomel will not salivate when combined with salines, and drug users can stand large doses of purgative medicines. They can also tolerate enormous doses of hypnotics, e. g., from ninety to 100 grains triatal in three doses the first day. The electric light bath is extremely useful, stimulating the circulation and increasing the action of the skin and kidneys.

#### LANCET-CLINIC

October 16, 1915

**Fractures in the Vicinity of Joints**, by C. E. Caldwell.—The twofold mobility of the joint and the short bone fragment adjoining it renders adjustment difficult in these cases. Where the head of the humerus is dislocated into the axilla in conjunction with fracture of the anatomical neck, but without involvement of the greater tuberosity, the head can sometimes, under complete anesthesia be pushed back into place and more or less satisfactory repair of the bone secured. Where, on the other hand, the tuberosity is included in the line of fracture, the head will not infrequently be found completely turned about, with its articular surface directed upward and outward. Open operation is then indi-



ected, and according to Caldwell's experience, entire removal of the head gives the best chances of subsequent mobility. Care should be taken to leave no partly detached strips of periosteum which might later form bony spurs or ridges and impair mobility. In fractures of the neck of the radius but little displacement may be noted if the forearm is placed in flexion and semipronation; if, however, the skiagram still shows much displacement the radius should be exposed and a plate applied. In fractures about the hip joint Caldwell prefers Whitman's method of abduction to open operation, except in very favorable cases. In supracondylar fracture of the femur the double inclined plane with traction in the long axis of both the tibia and the femur seemed to give good results. When T fracture with great condylar displacement exists, however, the author recommends open operation with fixation of the fragments by the most available method.

## Proceedings of Societies.

### EASTERN MEDICAL SOCIETY.

*Regular Meeting, Held at the Hotel Brevoort,  
October 8, 1915.*

DR. ISRAEL STRAUSS, in the Chair.

**Peritonitis.**—Dr. JOHN B. DEEVER read this paper, which appears in full on page 977.

Dr. WILLY MEYER said that from the clinical aspect peritonitis was quite analogous to other inflammations and could be divided into acute, subacute, and chronic forms. The acute form was the one which was likely to be fatal, neither of the others resulting in death, except in rare cases. It was generally recognized that the future of medicine was to be in the prevention of disease, and while this should apply with full force to acute peritonitis, it had unfortunately not yet been reached. This was probably due to the fact that the conditions which commonly led to acute peritonitis were still first seen by the physician in general practice and seldom reached the hands of the surgeon early enough to permit of the prevention of the development of peritonitis. The three great causes of acute peritonitis were, first, appendicitis; second, inflammations of the gallbladder; and, third, inflammations of the pancreas. If prevention was to be secured in the future, the danger of peritonitis as a sequel to these conditions must be more generally recognized by the practitioner of medicine and a systematic examination which would lead to the early recognition of a developing peritonitis should be urged upon him. In appendicitis, which was by far the commonest cause of acute peritonitis, the four cardinal points for recognition could be stated in the order of their frequency and importance, as well as of their time of appearance, as: 1. Localized tenderness in the abdomen, commonest in the region of the appendix, but also found in the right hypochondrium, in the right lumbar region, or in the epigastrium. 2. Muscular spasm, primarily involving the right rectus muscle, but often more extensive. 3. An increase in the leucocytes with a relative polynucleosis, as de-

termined by a careful blood examination. 4. A rise in the pulse rate and some degree of fever. Under such conditions a surgeon should be called at once and operation performed. The same symptoms, with the pain and tenderness situated particularly in the region of the gallbladder, were diagnostic of acute cholecystitis, but in this condition the leucocyte count was of much less importance. In his experience, when peritonitis had already developed, much might be expected from placing the patient in the Sims position to facilitate gravitation of the fluid into the pelvis. This was of value whether or not the patient had been operated upon. They could not lay down fixed rules as to when to operate in acute appendicitis, but they should be guided rather by their judgment and the condition of the patient. After the second day expectant treatment often yielded the best results, as it gave an opportunity for the peritonitis to become localized and walled off. Operation undertaken when there was reason to believe that walling off had not yet occurred, might lead to a further spread of the peritoneal involvement and was often the direct cause of a fatal issue.

Dr. ROBERT T. MORRIS could not quite agree to pain, right sided tenderness, and rigidity of the right rectus muscle as evidences of appendicitis, for he had seen cases in which these signs were well marked in lobar pneumonia, even in adults and in the absence of other typical evidences of pulmonary trouble. These cases were rare, however, and the three signs were usually associated with appendicular inflammation. The significance of muscular rigidity had not been fully appreciated. It indicated Nature's effort to splint the bowel and to prevent the spread of peritonitis. From this fact they might draw the logical conclusion that in cases of spreading peritonitis efforts should be directed to aiding Nature in keeping the bowel at rest. Following this idea he had secured good results in many cases by an adoption of the Alonzo Clark method of giving opium. In this method the dose of opium should be measured solely by its effects, and the rate of respiration was their most trustworthy guide. The drug should be given until this rate had fallen to ten or twelve a minute and this degree of slowing should be maintained for a few hours to a day or more. Under such treatment the peristalsis would cease and the peritonitis would become walled in. The sedative effect of the opium also spared the general strength of the patient, acting to produce anoci-association and to allay the kinetic drive described by Crile. Opium itself should be used—never morphine—as it was more slowly absorbed and more slowly excreted, thus maintaining its effects longer. With this treatment he combined a Murphy drip which, in cases with acidosis, should contain bicarbonate of sodium. He was also unable to agree with Doctor Deever as to the advisability of doing a gastroenterostomy in severe cases of perforated gastric or duodenal ulcer where speed in operation was necessary. His practice in severe cases of this type was to operate under local anesthesia, merely making an incision and inserting a drainage tube. The patient could then be placed in the Fowler position and given opium until the peritonitis had become

walled off, when an operation under general anesthesia might be undertaken to repair the lesion in the wall of the viscera. He thought that there was a peculiar type of peritonitis associated with typhoid fever in the absence of perforation, which had not been generally recognized, but which resulted fatally if untreated. This was due to the passage of certain anaerobic organisms through the diseased intestinal wall, and, although the condition ran a low grade course, the abdomen should be opened at once and a drain should be inserted. There was another type of early peritonitis which was due to *Staphylococcus albus*, and in this condition a white, milky pus was found. This form of pus seemed to be protective and beneficial rather than harmful, and when found should not be removed. As to the value of the capillary or cigarette drain, he was convinced of its usefulness and capacity for removing fluid if properly employed. It should be used only as a wick and its outer end should be covered with a dry absorbent dressing to remove the fluid as fast as it was brought to the surface. The outer dressing might have to be changed every hour or two in the beginning, but as the formation of fluid decreased, the intervals could be made longer. It certainly was also of great value in stimulating the formation of adhesions and should never be removed until it had worked loose of itself.

Dr. CHARLES GOODMAN's experience had taught him the importance of removing the toxic materials from the intestinal tract in all cases of peritonitis if recovery was to be expected. During the past twenty years he had followed this plan with the best results. At once after operation with the provision for proper drainage, and as soon as the patient recovered from the anesthetic, he gave a bottle of citrate of magnesia in divided doses, and from then on kept the bowels open. His practice in cases of acute appendicitis with peritonitis was to incise, remove the appendix, separate the adhesions sufficiently to open pockets of pus, insert a cigarette drain, place the patient in the Fowler position, start enteroclysis, and administer a cathartic. Attention should be called to gonococcal peritonitis, which was overlooked in Doctor Deaver's paper. This condition, he had found, never needed operative treatment, as the gonococcus seemed to be very short lived when it gained access to the peritoneal cavity. In cases of peritonitis after the perforation of a typhoid ulcer, he followed the routine previously laid down, with the exception that he operated under local anesthesia.

Dr. WILLIAM LINDER called attention to the fact that peritonitis was always a secondary condition and that the essential point in treatment was to make a clinical diagnosis of the primary disease, in order to take steps to prevent the development of peritoneal involvement. The best results could be secured in cases of spreading peritonitis if the Ochsner treatment was combined with placing the patient in Fowler's position, giving enteroclysis and frequent gastric lavage, and forbidding the patient to have anything by mouth, not even water, until a localization of the inflammatory process had been secured. An uncommon form of peritonitis, occurring especially in children, deserved mention. This

form seemed to him to be due to streptococcal invasion of the peritoneum by way of the blood stream, and as it was always associated with acute tonsillitis, that disease might be properly regarded as the source of the infecting organisms. A very valuable point in the diagnosis of appendicitis or of peritonitis in children had not been mentioned by Doctor Deaver, namely, the necessity for a routine examination of the rectum for local tenderness. This was necessary because abdominal tenderness was often so obscure in children, or wholly absent so frequently, that to depend upon it would lead to many serious delays.

Dr. HOWARD LILIENTHAL expressed the opinion that in the early diagnosis of certain obscure cases of peritonitis, it was very important to consider the appearance of the patient. The facies in such cases could not be described, but once it had been seen it was perfectly typical. In this class of patients were often numbered the most serious forms of acute septic peritonitis. He could not agree with Doctor Deaver as to the nonremoval of the gallbladder in cases of peritonitis arising secondary to an acute cholecystitis. It was a very easy matter to remove an acutely inflamed gallbladder, the operation was not materially lengthened, and by it one removed the primary focus of infection at once. He also felt that they were not justified in taking Doctor Deaver's attitude that there were certain cases of acute peritonitis in which the patient would die with or without operation. The proposition was one which could not be supported, and personally he would feel that he had been grossly negligent if he lost a case of peritonitis because he had withheld operation.

Doctor DEAVER closed by saying that he could not agree as to the value of the leucocyte count, for this was often normal in severe cases of peritonitis. The reason that he did not operate in cases of peritonitis after acute cholecystitis, was that they all ended in recovery. His plan was to give them physiological rest by interdicting everything by mouth and then setting them up in bed to provide drainage into the pelvis. When the acute condition had subsided, he then operated and removed the offending gallbladder. For his own part he considered tenderness and rigidity the all important signs of peritonitis, and had rather have his sense of touch than all other means combined for diagnosis. All that he had to say regarding catharsis was that no man could use it on him. In the matter of operating under local anesthesia, he was not skillful enough to do it and it failed to secure the muscular relaxation absolutely essential to proper exploration of the abdominal cavity. For such cases as were bad risks for general anesthesia, the spinal method of producing analgesia was ideal, but it was far too dangerous to be used. Its greatest disadvantage in that respect was that once the drug was given there was no means of getting it back if the patient went bad under its influence. He quite agreed with Doctor Linder as to the value of rectal examinations in children, and he would extend it to include adults. There was frequently, also, a desire to defecate in cases of peritonitis, and this always indicated the presence of a collection of pus in the pelvis.

# MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.

*Sixty-fifth Annual Meeting, Held at Philadelphia, September 20-25, 1915.*

The Retiring President, Dr. EDWARD B. HECKEL, of Pittsburgh, in the Chair.

(Concluded from page 973.)

**Treatment of Myocarditis.**—Digitalis, continued Doctor Anders, if administered, should be given cautiously and combined with an arterial relaxant. In decided failure of compensation the speaker had found most useful strychnine, grain one fortieth; caffeine citrate, grain one; sparteine sulphate, grain one quarter. Venesection was possibly useful in the excessive hypertension of threatened apoplexy. Saline purgatives were advised. The fluid intake should be lessened, especially in the presence of edema.

Dr. DAVID RIESMAN, of Philadelphia, observed that the term myocarditis was rather loosely used when applied to acute diseases. Chronic myocarditis was never a single process. Functional and structural changes in the vessels, lymphatics, arterioles, and viscera were to be studied from the functional and anatomical standpoints. In the treatment of acute myocardial degeneration the essential point was food. When milk was given as the sole diet, milk sugar should be added. The patient's life with its activities was to be adapted to the capacity of the heart as nearly as could be determined. For such capacity, unfortunately there was no definite test. With compensation lost, rest and digitalis were the main remedies.

**Inadequacy of Ordinary Methods of Disinfecting Typhoid Stools.**—Dr. EDGAR M. GREEN, of Easton, said that reports from about thirty hospitals throughout the State showed that most of the institutions were disinfecting stools with chloride of lime, carbolic acid, or some of the composite commercial disinfectants from a few minutes to an indefinite time. Pathological experiments showed such disinfection was useless. Steam sterilization, which could be made complete in a typhoid stool in from twenty to thirty minutes, was strongly advised in all hospitals. In private practice where steam was not available, the well broken up stool should be exposed to a six per cent. solution of commercial formaldehyde for at least two hours, or treated with a cupful of commercial unslaked lime and hot water.

**Hemoptysis in Pulmonary Tuberculosis and Its Treatment.**—Dr. ELMER H. FUNK, of Philadelphia, restricted the term hemoptysis to the expectoration of blood with its origin below the glottis, and said that by far the most frequent cause was tuberculous infection. The possible association of other causative conditions was, however, to be borne in mind. Among 373 patients in the department of diseases of the chest of the Jefferson Hospital, with advanced pulmonary tuberculosis, hemoptysis was present in 164, or forty-four per cent. In 167 patients traced to the end, the symptom was noted in ninety instances, or fifty-four per cent. While hemoptysis was most frequent in young adult life, there had been reported the death of an infant of three months from hemoptysis due to pulmonary tu-

berculosis, and other cases had been collected in young children. While the average adult patient died within four years after the first hemorrhage, Goethe had had a profuse hemorrhage at nineteen and another at eighty-two; Rousseau, at twenty-three and lived to the age of sixty-six years. It had been the experience of the speaker that the extent of the lesion did not bear a direct relation to the occurrence of hemorrhage; it might be the first or the last symptom of the disease. In the studies carried out at the Jefferson Hospital pulmonary hemorrhage had been grouped under: 1. Frank profuse hemorrhage; 2, small and mild hemorrhage; 3, persisting hemorrhages; 4, Blood streaked sputum. It was advised that the expectoration of blood streaked sputum be given as careful thought as the profuse frank hemorrhage. In the treatment of hemoptysis in pulmonary tuberculosis, individualization was the keynote of success. Rest was by far the most important therapeutic procedure. Emetine was of distinct value in hemoptysis in which there was a tendency to repeated small hemorrhages or in cases suggesting capillary bleeding. The time honored ice bag to the chest had been disregarded. Persistent bleeding called for a consideration of artificial pneumothorax. Of vital importance was the free daily movement of the bowels, in the absence of positive contraindications.

Dr. C. R. PHILLIPS, of Harrisburg, reported the observations at State Tuberculosis Dispensary No. 13 from March 1, 1908, to March 1, 1915, covering a series of 5,700 cases diagnosed as tuberculosis pulmonalis, in which they had concluded: About as many people died from tuberculosis without having had hemorrhage as those who had; hemorrhages were as likely to occur early in the disease as late; dispensaries and sanatoriums reduced the frequency of hemorrhage. In only twenty-one per cent. of patients did hemorrhage occur after they had come under care. Hemorrhage *per se* could not be considered; it was but a part of a vast clinical and pathological picture, the significance of which depended upon the accompanying conditions.

**The Use of Tuberculin and Other Bacterial Products (Bacterins, Vaccines, Etc.) by the Mouth.**—Dr. SOLOMON SOLIS COHEN, of Philadelphia, reported the results of five years' personal observations chiefly with tuberculin; also with preparations of pneumococci, staphylococci, and streptococci. The bacterial preparation was given in about one ounce of physiological salt solution or diluted beef juice with the stomach empty; repeated according to the effect, usually in ascending doses, every third to seventh day. With tuberculin, special and careful management was necessary to avoid toxic reaction. While the method of administration did not confer power upon the vaccine to do that which vaccines could not do under any circumstances, it was in most cases of equal efficacy with subcutaneous injection. Digestion was not disturbed.

Dr. JOHN A. RODDY, of Philadelphia, said that the results of studies at the Jefferson Hospital gave evidence of reaction from administration by the mouth of the following strains of killed bacteria: Staphylococci, streptococci, pneumococci, and the bacillus of



rhinoid gland. These evidenced lymphocytosis or leucocytosis; pronounced typical vaccine reaction from overdoses; decided clinical improvement, amounting in about one half the cases to complete clinical recovery. In the majority of patients so treated after other methods had failed there was some improvement. While the group of cases was too small from which to draw sweeping conclusions, it was fair to believe that the method showed distinct clinical efficacy and was worthy of further investigation.

**The Tertiary Manifestations of Syphilis as Seen in a General Medical Ward.**—Dr. JOHN H. MESSER, JR., of Philadelphia, based this study upon the results of the Wassermann test made in every case of chronic disease in the men's medical service at the Presbyterian Hospital in the last four months, excluding frank pneumonia, typhoid fever, and necessarily the patients dying or leaving before the test could be made. One fifth of the patients with chronic disease had syphilis. While the therapeutic results were good, they could scarcely be called brilliant. The speaker concluded that a large percentage of cases of chronic disease was dependent upon syphilitic infection; that it was impossible always to detect such infection without the Wassermann reaction; and, that because of the importance of diagnosis of such cases a Wassermann test of the blood serum should be made in every case of chronic disease admitted to the general medical ward.

Dr. JOSEPH SAILER, of Philadelphia, in illustration of the frequently unusual manifestation of syphilitic infection, cited two cases, both of physicians. One suffered merely from malnutrition and indefinite digestive disturbance, for which there was no adequate explanation. In this case the Wassermann was positive. Two weeks after the first injection of salvarsan, the man had gained ten pounds and had since remained well. The other patient suffered merely from an irritative dry cough of the most persistent character. He was the father of three healthy children. There were none of the ordinary manifestations of syphilis. A positive Wassermann suggested the use of salvarsan, and the cough stopped almost immediately after the first intravenous injection. The speaker assumed from laboratory reports that at least 9,000,000 people in the United States were suffering from this disease and thought it fair to conclude that in the majority of this number the manifestations were so obscure that there was no suspicion of its existence.

**Election of Officers.**—The following officers were elected: President, Dr. John B. McAlister of Harrisburg; president-elect, Dr. Charles A. E. Codman, of Philadelphia; first vice-president, Dr. I. Torrance Rugh, of Philadelphia; second vice-president, Dr. Edgar M. Green, of Easton; third vice-president, Dr. W. Albert Nason, of Roaring Spring; fourth vice-president, Dr. Meyers W. Horner, of Mt. Pleasant; secretary, Dr. C. L. Stevens, of Athens; assistant secretary, Dr. C. P. Franklin, of Philadelphia; treasurer, Dr. George W. Wagoner, of Johnstown.

Trustees and councilors: Dr. I. J. Moyer, of Pittsburgh; Dr. James Johnston, of Bradford; Dr. John B. Lowman, of Johnstown; Dr. J. B. F. Wvart, of Kittanning.

Delegates to the American Medical Association:

Dr. A. R. Allen, of Carlisle; Dr. W. F. Bacon, of York; Dr. Wilmer Krusen, of Philadelphia; Dr. C. E. Strickland, of Erie; Dr. F. L. Van Sickle, of Olyphant. Alternates: Dr. T. B. Appel, of Lancaster; Dr. H. B. Gibbey, of Wilkes-Barre; Dr. George G. Harman, of Huntingdon; Dr. W. F. Klein, of Lebanon; Dr. John A. Hawkins, of Pittsburgh; Dr. Alice M. Seabrook, of Philadelphia; Dr. A. R. Matheny, of Pittsburgh; Dr. W. P. Walker, of South Bethlehem; Dr. R. B. Watson, of Lock Haven; Dr. Charles W. Youngman, of Williamsport.

The place chosen for the next meeting was Scranton.

### Book Reviews.

*[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]*

**Peroral Endoscopy and Laryngeal Surgery.** By CHEVALIER JACKSON, M.D., Professor of Laryngology, University of Pittsburgh; Consulting Laryngologist, Bronchoscopist, Esophagoscopist, and Gastroscopist, Western Pennsylvania Hospital; Laryngologist, Presbyterian Hospital, etc. With Six Colored Plates and 490 Illustrations. St. Louis: The Laryngoscope Company, 1915. Pp. 710-XXV. (Price, \$5.)

The advent of direct methods of examination of the larynx, trachea, and bronchi, not to mention those formerly used for the esophagus, have been of such instructive nature that they have already changed many of our views, and the future promises a wonderful outlook for improving our diagnostic and therapeutic means. One of the best known men in this country, next perhaps to Killian and Bruening in that field, is Chevalier Jackson, of Pittsburgh. It is to be wondered at that the profession looked forward with pleasure when his book was announced?

To review such a work for the general practitioner is a hard task, since it is impossible to do as we should have liked, viz., discuss every chapter in detail; lack of space compels brevity. Jackson has given his book a new and attractive title, *Peroral Endoscopy*, i. e., endoscopy *per os*, direct, for he deals almost exclusively with that method. Often laryngologists have been reproached for the great variety of instruments they use. Indeed, many a man has spent a fortune on his surgical outfit before getting any pecuniary return. The importance of a good and well equipped armamentarium for bronchoscopy, etc., forms the contents of chapter I. In the preface we read that "the author cites his personal experiences for what they may be worth; and he apologizes for the frequency of these citations."

No such apology is necessary, for it is precisely the ripe and personal experience of Jackson's that makes this work so valuable; we see that in the chapter just mentioned and in each following one. Here we may mention Jackson's universal handle, his tissue forceps, and many more. Jackson does not use any form of aspirator. It is best to swab out the abundant secretions and blood during bronchoscopy by means of specially devised instruments.

Details as to the preparation of the patient, for local as well as for general anesthesia, etc., are given in the ensuing chapters, so that the beginner can follow instructions, while to the man of experience they give many new points. Speaking on the position of the patient for peroral endoscopy, Jackson is in favor of the dorsal. In infants and young children he does endoscopy without anesthesia.

In the familiar illustrations showing the position of the operator, patient, assistant, and nurses, the white line of the dressings and garments naturally prevails and some illustrations are not quite distinct. Would it not be advisable for the sake of clearness, to have some dark lines (dark ribbon or coloring matter) interposed either on the dressing of the patient or the staff or both? That, it seems, would bring out the salient points better. Pictures like those

on pp. 104 and 105 and many others are practical and most instructive.

The chapter on suspension laryngoscopy is written by Killian and needs no further recommendation. It may be added that Killian specially recommends that method for the introduction of radium and mesothorium in cases of carcinoma of the larynx. The patient may thus be left in suspension one hour or even one hour and a half.

In chapter xi on acquiring skill, Jackson lays down the requirements of a good bronchoscopist. Endless patience is essential just as well as endless practice. The author might have used as a motto over this chapter the old Greek proverb to the effect that before virtue the immortal gods have placed sweat, or in Jackson's words, "No one should think of attempting for the first time to remove a foreign body from a human being until he has at least 100 times removed a foreign body from a dog." Coming to foreign bodies in the larynx, trachea, bronchi, and esophagus, it is here that Jackson shows his great skill, and these chapters may well be called classical. When in search for a foreign body the author is strongly against tracheotomy, even in infants. Jackson is here somewhat in opposition to the Berlin school, but he gives good reasons for his position. In the aftercare of such cases the possibility of the patient "drowning in his own secretions," or of respiratory arrest should be borne in mind and under no circumstances should the patient be permitted to leave the hospital before all danger of complications is over.

The second part of Jackson's book, if we may thus divide it, is of great importance, as it inaugurates a new stage of medicine in the treatment of diseases of the larynx, trachea, bronchi, and esophagus by direct methods. So far as we are aware, Jackson's is the first textbook to deal with these diseases in an elaborate and instructive manner. The chapters on esophageal diseases bring up so many new points as to the diagnosis and treatment that every one making a specialty of diseases of the stomach and metabolism will have to study them carefully, unless he be willing to surrender the treatment of the esophagus to the laryngologist, who already has made big inroads into that field; for Jackson says correctly: "It is no more justifiable to treat an esophagus, or to ignore esophageal symptoms, without an esophagoscopy, than it is to treat a patient with uterine symptoms without local examination."

We are so sure that a second edition of this work will soon follow that we make the following suggestions. In referring to a figure in the text, if the author gave us the page on which it was to be found, it would save a good deal of time. Furthermore, the bibliography and the index might be arranged differently, as it is difficult to find one's way, especially since the colored plates are placed between these two and appear like reading matter.

On the whole, Jackson's is a most valuable work, and, we believe, ought to be read by every medical practitioner. The publishers are also to be congratulated, as the print, the paper, and the entire makeup are a vast improvement on the author's earlier work.

## Interclinical Notes.

In the excellent bill of fare of the *Scientific Monthly* for November, 1915, we note especially The Physical Michelangelo, by Dr. James Frederick Rogers, of New Haven, one of those interesting and egregious birds, literary physicians. The Cash Value of Scientific Research, by Professor T. Brailsford Robertson, is another interesting essay, one we should suspect of irony had it appeared in some other magazine. The *Scientific Monthly* is a publication of which every college graduate should make a lifelong friend, and not solely for cultural reasons; to an inventive mind it is more than likely that its perusal would occasionally suggest ideas of the utmost practical importance.

\* \* \*

A carefully selected series of war cartoons from the German papers is an interesting feature of the *American Review of Reviews* for October; many of them will provoke a smile in the most ardent pro-ally. There is a sympathetic discussion of Mr. Osborne's changes at Sing Sing prison. There is an excellent article on our weakness of defense by J. Bernard Walker and modest suggestions as

to the remedy, which includes no fewer than 40,000 trained officers, 125,000 regular troops, 500,000 national guard fully equipped, and 500,000 reserve. Dallas D. L. McGrew voices the eternal wonderment of foreigners at the revelation in this war of the real French character.

\* \* \*

That such a paper as the *Masses* was needed is a reproach to our civilization; that it is not self supporting is still greater reproach. Inez Haynes Gillmore and Alice Duer Miller are two contributors to the November issue, the latter of as scathing a bit of verse as one is likely to see in a year's perusal of periodical literature. In this issue is cited the opinion of Judge W. N. Gatens in dismissing the Sanger pamphlet case in Portland, Oregon, which we reproduce on account of its general application: "It seems to me that the trouble with our people today is that there is too much prudery. Ignorance and prudery are the millstones about the neck of progress. We are all shocked by many things publicly stated that we know privately ourselves, but we haven't got the nerve to get up and admit it, and when some person brings to our attention something we already know, we feign modesty and we feel that the public has been outraged and decency has been shocked when as a matter of fact we know all these things ourselves."

## Meetings of Local Medical Societies.

MONDAY, November 15th.—New York Academy of Medicine (Section in Ophthalmology); Yorkville Medical Society (annual); Medical Association of the Greater City of New York; Elmira Clinical Society.

TUESDAY, November 16th.—New York Academy of Medicine (Section in Medicine); Tompkins County Medical Society; Buffalo Academy of Medicine (Section in Obstetrics and Gynecology); Tri-Professional Medical Society of New York; Medical Society of the County of Kings; Binghamton Academy of Medicine; Syracuse Academy of Medicine; Ogdensburg Medical Association; Oswego Academy of Medicine; Medical Society of the County of Westchester (annual).

WEDNESDAY, November 17th.—New York Academy of Medicine (Section in Genitourinary Diseases); Alumni Association of City Hospital, New York; Schenectady Academy of Medicine; Women's Medical Association of New York City (New York Academy of Medicine); Medico-Legal Society, New York; Buffalo Medical Club; Northwestern Medical and Surgical Society of New York.

THURSDAY, November 18th.—New York Academy of Medicine (stated meeting); Auburn City-Medical Society; Geneva Medical Society; German Medical Society, Brooklyn; Æsculapian Club of Buffalo; New York Celtic Medical Society.

FRIDAY, November 19th.—New York Academy of Medicine (Section in Orthopedic Surgery); Mount Vernon Medical Society; Clinical Society of the New York Post-Graduate Medical School and Hospital; New York Microscopical Society.

## Official News.

### United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending November 10, 1915:

Carte, Henry R., Assistant Surgeon General. Directed to proceed to San Juan, P. R., to inspect the operations of the Service in Porto Rico, and to investigate a reported epidemic of fever. Christian, S. L., Assistant Surgeon. Leave of absence for sixteen days from November 1, 1915, amended to read "sixteen days' leave of absence from November 12, 1915." Clark, T., Surgeon. Directed to proceed to Baltimore, Md., and Dover, Del., and such other places in the latter State as may be necessary, to confer with the State health and educational authorities relative to investigations of school

hygiene. **Collins, George L.**, Surgeon. Relieved at the Marine Hospital, Boston, Mass., and ordered to report to the acting director of the Hygiene Laboratory, Washington, D. C., for temporary duty. **Freeman, A. W.**, Epidemiologist. Relieved from duty in field investigations of rural sanitation, in Dallas County, Ia., and ordered to proceed to Cincinnati, Ohio, for duty in the investigations of the Ohio River; detailed to attend the meeting of the Southern Medical Association at Dallas, Texas, November 8-11, 1915; directed, en route to Cincinnati, Ohio, to stop at St. Louis, Mo., to present an address on Public Health. **Frost, W. H.**, Assistant Surgeon. Directed to take charge of the relief of seamen at Cincinnati, Ohio. **Galloway, T. C.**, Assistant Surgeon. Directed to report at the Marine Hospital, San Francisco, Cal., for temporary duty in the physical examination of able seamen. **Grubbs, S. B.**, Surgeon. Directed to proceed to Philadelphia and Marcus Hook, Pa., for observation of quarantine methods. **Lumsden, L. L.**, Surgeon. Granted ten days' leave of absence from November 1, 1915. **McCoy, George W.**, Surgeon. Granted ten days' leave of absence en route to Washington, D. C. **McLaughlin, Allan J.**, Surgeon. Granted one year's leave of absence without pay, from November 1, 1915. **Olesen, Robert**, Passed Assistant Surgeon. Directed to proceed to Madison and other places in the State of Wisconsin for studies of the conditions surrounding the employment of women in the industries of that State. **Perry, J. C.**, Senior Surgeon. Relieved from duty at Washington, D. C., and ordered to proceed to Ellis Island, N. Y., for duty as Chief Medical Officer. **Roberts, Norman**, Surgeon. Granted one month's leave of absence from November 1, 1915. **Slaughter, W. H.**, Assistant Surgeon. Granted six days' leave of absence from October 31, 1915. **Smith, F. C.**, Surgeon. \* Granted two weeks' leave of absence from October 28, 1915. **Sutton, Don C.**, Assistant Surgeon. Granted twelve days' leave of absence from October 31, 1915. **Tanner, W. F.**, Assistant Surgeon. Granted two days' leave of absence, October 30-31, 1915. **Von Ezdorf, R. H.**, Surgeon. Detailed to attend a meeting of the Southern Medical Association, at Dallas, Texas, November 8-11, 1915. **Wheeler, G. A.**, Assistant Surgeon. Granted twenty-three days' leave of absence en route to Washington, D. C. **Young, G. B.**, Surgeon. Detailed to attend the meeting of the American Association for the Study and Prevention of Infant Mortality, at Philadelphia, November 10-12, 1915.

#### Boards Convened.

A board of commissioned medical officers convened at the Bureau to prepare questions for the mental examination of Surgeon Paul M. Carrington, to determine his fitness for promotion to the grade of senior surgeon. Detail for the board: Assistant Surgeon General A. H. Glennan, chairman; Assistant Surgeon General W. G. Stimpson, member; Assistant Surgeon General L. E. Cofer, recorder.

A board of commissioned medical officers convened at the Bureau, Monday, November 8, 1915, for the physical examination of officers of the United States Coast Guard for promotion. Detail for the board: Assistant Surgeon General W. G. Stimpson, chairman; Passed Assistant Surgeon J. P. Leake, recorder.

A board of commissioned medical officers convened at the Marine Hospital, San Francisco, Cal., November 17, 1915, for the purpose of making a physical examination and conducting a mental examination of Surgeon Paul M. Carrington to determine his fitness for promotion to the grade of senior surgeon. Detail for the board: Senior Surgeon C. C. Pierce, chairman; Surgeon L. L. Williams, member; Surgeon W. C. Billings, recorder.

#### United States Army Intelligence:

*Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the month ending, November 6, 1915.*

**Beeuwkes, Henry**, Captain, Medical Corps. Reports arrival at the attending surgeon's office, Washington, D. C. **Bill, R. C.**, First Lieutenant, Medical Corps. Granted six months' sick leave from Walter Reed General Hospital, Washington, D. C.; address, 2740 Indiana

Avenue, Kansas City, Mo. **Ford, Clyde S.**, Major, Medical Corps. Ordered to proceed to El Paso, Texas, for duty; leave of absence for one month is granted. **Harris, Henry S. T.**, Lieutenant Colonel, Medical Corps. Relieved from duty at Fort D. A. Russell, Wyoming, and will then proceed to San Francisco, Cal., and report in person to the commanding general, Western Department, for duty as department surgeon. **Kramer, Simon P.**, First Lieutenant, Medical Reserve Corps. By direction of the President is honorably discharged from the service of the United States, his services being no longer required. **McLellan, George H.**, Captain, Medical Corps. Upon being relieved from duty at Fort McDowell, California, is ordered to proceed to Douglas, Ariz., and report to the commanding officer of the United States troops at that place, for assignment to temporary duty with the Sixth Field Artillery. **Meister, William B.**, Captain, Medical Corps. After his arrival in the United States will proceed to Fort D. A. Russell, Wyoming, and report to the commanding officer of the post for duty. **Metcalfe, Raymond F.**, Major, Medical Corps. Now on temporary duty at Fort Sam Houston, Texas, is relieved from further duty at Fort Porter, New York, and will report in person to the commanding officer, Fort Sam Houston, for duty, and by letter to the commanding general, Southern Department. **Murtagh, John A.**, Major, Medical Corps. Reports return to Fort Screven, Georgia. **Pierson, Robert H.**, Captain, Medical Corps. Granted two months' leave of absence effective about November 6, 1915. **Talbott, E. M.**, Captain, Medical Corps. On leave for four months; address 2325 First Street, N. W., Washington, D. C.

### Births, Marriages, and Deaths.

#### Married.

**Nathanson-Goldberg.**—In Dorchester, Mass., on Tuesday, November 2d, Dr. Edward S. Nathanson, of Lynn, and Miss Anna A. Goldberg. **Steffens-MacDougall.**—In Brooklyn, N. Y., on Friday, October 29th, Dr. Walter Steffens and Miss Catherine MacDougall.

#### Died.

**Byles.**—In Denver, Colo., on Thursday, October 21st, Dr. Frederick Gillett Byles, aged sixty-two years. **Colby.**—In Boston, Mass., on Monday, November 1st, Dr. Edward P. Colby, aged seventy-six years. **Cullen.**—In Toledo, Ohio, on Tuesday, October 26th, Dr. James G. Cullen, aged thirty-eight years. **Daniels.**—In New York, on Saturday, October 30th, Dr. Frank Herbert Daniels, aged fifty-nine years. **Firebaugh.**—In Robinson, Ill., on Tuesday, October 26th, Dr. I. L. Firebaugh, aged sixty-eight years. **Hilton.**—In Lowell, Mass., on Wednesday, October 27th, Dr. George W. Hilton, aged seventy-six years. **Hite.**—In Nashville, Tenn., on Thursday, October 21st, Dr. George M. Hite, aged fifty-seven years. **Kenney.**—In Manawa, Wis., on Friday, October 22d, Dr. Michael Kenney, aged forty years. **Kirkwood.**—In Wharton, Texas, on Tuesday, October 26th, Dr. J. W. Kirkwood, of Wichita, Kansas, aged sixty-three years. **McCain.**—In Brownsville, Texas, on Monday, October 18th, Dr. R. S. McCain. **McCormack.**—In Northampton, Mass., on Thursday, October 28th, Dr. Alfred H. McCormack, aged forty-five years. **Martin.**—In Green Bay, Wis., on Sunday, October 24th, Dr. Ira M. Martin, aged forty-nine years. **Post.**—In Lansing, Mich., on Wednesday, October 27th, Dr. Julius A. Post, aged seventy years. **Rivers.**—In Denver, Colo., on Sunday, October 24th, Dr. Edmund C. Rivers, aged fifty-eight years. **Russ.**—In Hillsborough, Cal., on Saturday, October 23d, Dr. Raymond Russ, aged forty-two years. **Schaeffer.**—In Reading, Pa., on Saturday, October 23d, Dr. Edwin D. Schaeffer, aged forty-seven years. **Shields.**—In Ogdensburg, N. Y., on Sunday, October 24th, Dr. William H. Shields, aged forty years. **Tynberg.**—In New York, on Wednesday, November 3d, Dr. Sigmund Tynberg, aged fifty-one years. **Vincent.**—In Pittsburgh, Pa., on Saturday, October 23d, Dr. James Rankin Vincent, aged sixty years.



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### Original Communications.

#### THE STUDY OF DRUG ACTION.

By THOMAS J. MAYS, M. D.,  
Philadelphia.

(Second Paper.\*)

#### STIMULATION AND IRRITATION.

These two terms find a wide application in the onomatology of therapeutics, and since they are often used interchangeably, it is important to ascertain their exact interpretation. This is particularly worth while if we accept the teaching that no two words possess the same identical meaning. Although both of these words are remotely derived from the verbs *to goad*, *to prick*, *to excite*, etc., yet their life history has been so moulded by usage that the former is applied to normal and the latter to abnormal processes—at least these are the definitions for which they are to stand in this discussion. The mechanism of this may probably be well illustrated by citing the familiar effects of friction and of heat. Thus when slight and gentle friction is applied to any part of the body, the molecular activity of the latter is aroused to its utmost physiological capacity, and this procedure is well known as a valuable adjunct in the treatment of pain and other transient depressed disturbances of the body. But when friction is carried to excess, as in the case of the laborer's hands, where blisters form in consequence of the handling of tools, the molecular activity is forced beyond the pale of health and assumes a pathological aspect. The same is true of the effects of heat. A hot drink, or the external application of hot water bags, often serves the purpose of infusing new life and activity into an abnormally depressed state of the body, such as that which comes from the shock of traumatism, or from like incidental circumstances. On the other hand, the application of extreme heat in the form of scalding water, hot cautery, etc., arouses too great a degree of molecular activity which manifests itself in the form of hyperemia, inflammation, and ulceration.

Both of these widely different phenomena are the result of a process which is exactly the same in kind, but differs in the degree of its effects. In other words the molecular activity of the animal organism is accelerated in both instances, but since rapidity of molecular motion and health are not always synonymous, the point at which this process is carried over the boundaries of health, marks the beginning of disease. This, therefore, constitutes

the line which should be drawn between the action of minimum doses or that of stimulants, and that of maximum doses which act as irritants—the former making for health, and the latter for disease.

Moreover, irritation, although always signifying a process of abnormal depression or an aberration from health, is a term of varied practical application. Thus in maximum doses mercury, chlorine, carbolic acid, quinine, etc., possess the power of impairing or destroying the activity of bacterial microorganisms, and are therefore known as germicides, antiseptics, disinfectants, antipyretics, etc. Then again there are a number of drugs which in view of their elective affinity, exert special stimulating and irritating influences on special textures in minimum and maximum doses; and hence we have special stimulants and depressants of the respiratory, the circulatory, and of other highly differentiated systems of the body.

Furthermore, irritation and depression also stand for narcotism. When, for example, a maximum dose of ammonia irritates the frog's heart to such a degree as to arrest its pulsations and bring it to a complete standstill, we say ammonia is a depressant. The same is said of the human heart when it is arrested by a maximum or poisonous dose of veratrine, digitalis, or aconite; but when a toxic dose of chloroform, opium, or nitrous oxide gas overwhelms the function of the brain and the nervous system, we no longer call it a case of depression or irritation, but one of narcotism. Conventionally, therefore, when irritation involves the heart, we name it depression, but in case of the brain and nervous system we label it narcotism, but in essence the action is one and the same thing.

#### PROPER DIFFERENTIATION BETWEEN INFECTIOUS AND CONSTITUTIONAL DISEASES AS A THERAPEUTIC FACTOR.

From a therapeutic standpoint it is very important to differentiate between these two pathological conditions. For at present it seems to be taken for granted that the existence of nearly every important disease is probably traceable to the agency of microorganisms, which are introduced into the body from its external surroundings. This is of course qualified by the reservation that those diseases which are still regarded as being dependent on causes arising within the body, will eventually be shown by improved experimental research to belong to the infectious class. But before assuming this somewhat apologetic attitude, it would, perhaps, be more fitting if acknowledgment were made that experimental proof is not the *sine qua non* method

\*See this JOURNAL for August 14, 1915.

that is capable of differentiating between diseases that are and those that are not due to infection. For we know that the contagious or infectious nature of a number of diseases like measles, scarlatina, smallpox, etc., had been clearly established long before the existence of our present system of laboratory methods.

Without following this controversial point any further, it may in all fairness be said that the voluminous efforts which have been exploited for the purpose of widening the etiological scope of specific infectious diseases have so far succeeded in emphasizing the fact that, on the one hand, there is a certain class of diseases which is of unquestionable specific infectious origin; while, on the other hand, there exists a number of well known diseases due to internal metabolic derangements, which possess nothing in common with infectious disorders so far as their origin is concerned, and which, in contradistinction to the latter, are denominated constitutional disorders. Being then of such a widely divergent etiology and derivation, it is very clear that the means and methods of treatment and of prevention suitable for the one would be radically and fundamentally inadapted to the other, and that if one was substituted for the other, disastrous consequences would inevitably follow.

As an illustration, no one would seriously encourage the doctrine that amelioration of the local and general hygiene of any community had any material effect in preventing the spread of syphilitic disease, and far less would he think of curing that disease by means other than those which are well known to exert a specific destructive action on the infecting agent lying at its bottom. Typhoid fever has always been regarded as the *bête noire* of the profession, at least in so far as its prevention was concerned. Since it has been discovered that it is dependent on a specific infectious bacillus, however, proved such both by clinical and experimental testimony, facts go to show that, since efforts have been put forth to prevent it on this single basis, it is controlled as readily as smallpox. The same is true of other specific infectious diseases.

Yet in spite of the actual practical conquest of specific treatment over specific infectious disease, independently of any material change in the general sanitary surroundings, it seems singular that the inclination to confound and to muddle the distinctive spheres of the two remedial principles above referred to, should persist and perpetuate itself to the detriment of consistent and consecutive medical thinking, without saying anything in regard to that of safe and sane therapeutics.

If one thing has been more culpable than another for the hazy distinction just referred to, it is the influence that animates the well known "seed and soil theory"—a doctrine that carries with it the implication that poverty, ill health, insanitation, etc., by impairing the vital resistance of the human constitution, prepare the path for the invasion of specific infectious diseases. There are very few medical propositions that are permeated more deeply with unalloyed sophistry than this. Specific infectious diseases are no respecters of health or of persons. Indeed, on clinical grounds alone there is much rea-

son for believing that, instead of inviting, infirmities of the body afford protection against such diseases. Is it true that a special soil preparation is necessary to an attack of syphilitic infection, or do smallpox and diphtheria impose a similar reciprocity?

There are some affections of the human body, however, the nosological position of which seems to hover around the border line which divides infectious from constitutional diseases, inasmuch as they are held to belong to one, and again to the other of these classes. A conspicuous instance of this is pulmonary tuberculosis or consumption. Up to the last three decades in this country, this disease was regarded purely as a constitutional disorder, but since then it is ranked among the well defined specific infectious diseases. Avoiding all details concerning the reasons for this change of grouping, it is sufficient to say that if it is a zymotic, or a specific infectious disease, its cure and prevention must be brought about through the practical application of principles which are known to palliate this class of diseases. And it is hardly necessary to note that such relief does not consist of means that seek to rectify poverty and other unhealthful surroundings, but of measures that destroy and exterminate the specific infection agency. No matter whether the causative germ enters the body through contagion, infection, or inoculation, the aim of treatment or of prevention, in order to be successful, must be directed toward the annihilation of the germ and nothing else. If the gospel of alleviating filth and of other insalubrious conditions was at all applicable here, those who hold this view will have to show that the most orthodox and right living hygienist, unless previously immunized, has a better chance of escaping such infectious diseases as typhoid fever and smallpox, than a denizen of the filthiest poverty stricken city district. Or, more specifically, do those who are not able to indorse this opinion, maintain that a strict enforcement of the most rigid and approved health regulations inclines to fortify the human body's defences against smallpox to such a degree that it is, or in time will be safe and advisable to discard the practice of vaccination?

#### THE METHOD OF ADAPTING DRUG ACTION TO DISEASE.

Viewing the action of drugs in the light of force, the important problem arises of finding the proper method of adjusting drug agents to the many varied conditions which are found in practical experience. From the very nature of things, it is quite obvious that such knowledge of the action of these artificial forces, and of the reaction of the bodily forces which they call forth, cannot be acquired through the exclusive study of the influence of the former on the healthy body, although much knowledge may be obtained by experimenting on the normal body in a general sense. It must always be borne in mind, however, that therapeutics is the science of alleviating and curing disease, and barring the objective point of restoring the diseased area to a normal state, it has no particular relation to health. It is that part of the science which primarily establishes a special and general knowledge of the behavior of drugs by experimentation on the lower forms of animal life especially in disease, and eventually controlling such knowledge by careful and

cautious application of these agents to the clinical subject.

In general terms, this proposition may be formulated as follows: If the forces of disease produce excessive molecular activity in the body, a depressant remedy is in order. If, on the other hand, depressed molecular motion exists, a stimulant influence is indicated. On the surface this seems to be a very simple theory of the treatment of disease, but on reflection it looms up as a problem of unending complexities. It means not only a simple knowledge of the life history of disease, but a thorough familiarity with the functional and organic changes which it imposes or has already imposed on the involved bodily textures, its direct and indirect relationship to other organs, and with the stage, degree, and intensity of its operation. It furthermore requires a close acquaintance with the action of a large number of drugs, possessing varied elective affinities under many diversified conditions and circumstances, as well as the art of properly selecting those drugs with their appropriate doses which redirect the diseased organ into the previous channels of health.

As a practical example, let us say, we have a condition of pain in the sciatic nerve which is rebellious to the action of remedies applied externally. It is true that a pain of this kind would yield at least temporarily to a hypodermic injection of morphine. But if pain in many instances is, as Vallex has defined it, the cry of a starving nerve, then a rational method of relief does not consist in depressing the nerve still further by administering maximum doses of morphine, but by the local injection of agents like theine, adrenaline, etc., in minimum doses, which raise the tone of the nerve to a normal level, and thus confer permanent relief on the patient.

This principle of therapeutic action, viz., the respective stimulant and depressant effects of minimum and maximum doses on living tissue, was worked out experimentally by the writer some years ago relative to all the important alkaloids, glucosides, acid and alkali compounds, alcohols, ethers, etc.

Furthermore, direct experiment demonstrates that nerve energy is greatly enhanced as well as depressed by the immediate application of different degrees of pressure to a nerve, as has been verified by Doctor Zederbaum (*Archiv für Physiologie*, 1883, p. 161), who found that a moderate degree of pressure exerted directly on the sciatic nerve of a frog, invigorates the power of the latter in transmitting impulses to the muscles of the leg, as is shown by the higher contraction tracings; while a greater degree of pressure (or irritation), diminishes and inhibits altogether the function of muscular contraction.

From this observation it appears, therefore, that any therapeutic agent with a well demonstrated elective affinity for a nerve tract or for any special body texture, no matter whether administered internally or applied locally, will, in minimum quantities, exert a stimulant influence on that tissue, and in large quantities have a destructive influence thereon. This principle may be said to be general, and is exemplified in the daily walks of every practitioner.

It elucidates the problem why the dose of digitalis, when given as a heart tonic, should always be small, and why electricity, friction, heat, mustard, etc., applied externally in moderate degree, relieve pain and many other impairments of the nervous system.

#### DRUG ANTAGONISM.

Some evidence has already been offered in the foregoing observations to show that drugs have the power of antagonizing disease in general. That drug antagonism is, however, not the simple mechanism which it seems to be, and something that may be described by a single stroke of the pen, is but too evident to any one who has given thoughtful attention to the subject.

Perhaps the simplest form of general drug antagonism, according to the writer's investigation, is illustrated in the influence of atropine and chloroform on the pulsations of the frog's heart. Thus, when atropine sulphate in the proportion of one part to 160,000 parts of two per cent. blood solution is transfused through the heart, the elevations of the pulse tracings rise to the height of eight mm. When directly after this, one part of chloroform to 500 parts of the same strength of blood is transfused, the pulse elevations are depressed to two mm. The former is called the minimum dose of atropine sulphate, and the latter the maximum dose of chloroform. If now the minimum and the maximum doses of these drugs are transfused in combination, the pulse tracings reach an elevation of eight mm.

Such an antagonism seems to be universal among the many agents that have been investigated, and substantiate the contention that all drugs possess at least two constant forces which tend to neutralize each other when brought into simultaneous active contact with living tissue, and exhibit the mean result that minimum doses overpower the depressing effects of maximum doses. These manifestations are displayed here as decidedly and as constantly as if they had been wrought by the mechanical forces of attraction and repulsion, and give us the exact mathematical conception that drugs have the potentiality of supporting and conserving life when encountered by adverse and destructive forces. If we conceive that disease is a force that depresses and impairs health, and substitute for it the operation of maximum drug doses, do we not obtain a clear idea as to how drugs in minimum doses combat disease, viz., by interference? It is well known that a law of this kind is firmly established in other departments of physical science. Two antagonistic sound waves produce silence, two opposite undulations of light forces on meeting result in darkness, and who shall say that a similar relationship does not exist between disease forces and drug forces? Who shall deny that an adjustment similar to the foregoing cannot be formed between our diseases and our many varied and powerful agents?

Now that which has been said in the preceding paragraphs of this section relates to the mechanism of general antagonism between drugs and living forces. Next in order brief consideration will be given to a phase of antagonism which is more special in character, and which is manifested by the agents known as antitoxins.

Since the time of Graham, who divided all bodies



into colloids and crystalloids, and that of Hofmeister, who first studied experimentally the action of salts upon colloids and compared their effects with those which occur in the animal organism, we know that colloidal substances either in the electropositive or the electronegative state are present, not only in the cells, but in the blood and fluids of the animal body.

It is with the colloidal substances of the blood, however, with which the antitoxin phenomena in their remedial sphere, especially in diphtheria, are chiefly concerned, and whether the theoretical ideas of Ehrlich as to haptophores, and toxophores, etc., are true or not, it is beyond dispute that, practically, the colloidal constituents of toxin and antitoxin in the blood have the power of neutralizing each other. That such a principle of action is not a novel one in medicine is confirmed by the well known fact that the poisonous action of arsenous acid is antidoted in the living body by iron hydroxide—the former being an electronegative radical, and the latter an electropositive colloid.

Other special lines of therapeutic antagonism have been worked out in recent years, probably the most important of which is Calmette's antivenin. The evolution of this product was founded on the discovery made by Doctor Sewall, in 1887, that minimum doses of rattlesnake venom injected subcutaneously in gradually increasing doses render pigeons immune to deadly doses of the same venom. After this opening of the way, further research demonstrated that the same held true in regard to the venom derived from the French viper, as well as to that of the cobra. In 1894, Calmette took up this work, and in the course of a year found that the serum of venom inoculated horses and donkeys contained antitoxic substances which, when injected, are capable of successfully neutralizing the lethal effects of snake bites in the human subject.

Another form of therapeutic antagonism is that which is known to obtain between atropine and opium, the nature of which is rather more indirect than direct. In 1874, Dr. J. Hughes Bennett found from a number of experiments on rabbits and dogs, that death from morphine poisoning was obviated by the subcutaneous injection of atropine. These results have since been frequently confirmed by clinical experience.

While the mechanism is not actually well defined, it is quite certain that this is neither chemical nor electrochemical, as in the cases of arsenic and iron hydroxide, or in the antitoxins, but seemingly consists chiefly in the degree of support which atropine lends to the depressed respiratory and circulatory centres which are incidental to the opium poisoning.

While both of these drugs exert a general influence on the brain and higher nerve centres, it is also true that there is considerable variation in the nerve tracts for which they have a special affinity, as well as in the physiological manifestations which they call forth. Thus morphine in maximum doses produces contraction of the pupil, stupor, somnolence, slowing of the respiration and circulation, lowering of the blood tension, etc., while atropine in small doses dilates the pupil, invigorates the function of respiration and circulation, and increases arterial tension,

etc.; but in maximum doses it causes vertigo, hallucinations, delusions, increase of the heart's frequency, lowering of the blood pressure, etc.

It is not so much a difference in the gross action of these two drugs, therefore, which unfolds the antagonistic power of atropine in this operation, as it is the effect of the minimum dose of the latter drug. In fact it seems to be a duplication of the experimental antagonism above referred to between the action of atropine and chloroform, in which minimum doses of the former counteract the influence of maximum doses of the latter when applied to the frog's heart.

From all that can be said on this question, it seems that the chief antagonism which atropine affords in opium poisoning comes from minimum doses of this agent, and consists in maintaining the circulatory and respiratory functions through the ordeal of opium intoxication.

Practically, then, it is a point of great importance in such an emergency to remain within the limits of stimulating or supporting doses of atropine, and so avoid the danger of superimposing further narcotic depression. Hence it should be administered at first in doses not exceeding one seventy-fifth, or one fiftieth of a grain. Atropine is very diffusible and shows its effects quickly, and if in fifteen minutes there is no evidence of improvement in respiration and circulation, the dose is to be repeated. The same or even a larger dose may be given after the same interval. The antagonistic effects of atropine in such a condition are more accurately gauged by the state of the pulse and breathing than by the dilatation of the pupil.

1829 SPRUCE STREET.

## LYMPHATIC OBSTRUCTION.

By A. L. BENEDICT, A. M., M. D.,

Buffalo,

Consultant in Digestive Diseases, Columbus Hospital; Attendant, Mercy Hospital.

It seems best to describe the case and to develop the diagnostic points about as they occurred to me; especially as this method will obviate the impression which might otherwise be conveyed that I made the correct diagnosis immediately, or even that one ought to expect to be able to do so in an unusual type. Personally, if a patient, I should prefer a physician who never diagnosed a rare disease to one who always thinks first of medical curiosities.

CASE I. Patient, aged fifty-four years, married, and an active housewife until disabled by her present sickness; German but born in United States. She had had eleven children, aged from thirty-four to eighteen years, and three early miscarriages. With the exception of scarlet fever when seventeen and jaundice shortly after the birth of the last child, she had always been well until the middle of June, 1911, after an exhausting period of caring for her husband, fourteen months before my first visit. At that time she noticed that, while long "fleshy," she was beginning to bloat, especially in the lower limbs, but also rather generally. Aside from the natural feeling of weakness, no special symptoms were noted.

Before seeing the patient at her home, I had a very good description of abdominal dropsy and edema, with cough, cardiac weakness, renal sluggishness, failure of appetite, orthopnea, etc., which gave rise to the tentative diagnosis of various degenerative changes formerly called

triple lesion, for which, many years ago, I proposed the name multiple visceral lesion as more appropriate. It was also stated that a physician had demonstrated "sugar diabetes." On examination, I found the pulse 120, heart too weak to allow of a positive diagnosis for or against murmurs; ascites up to two inches above umbilicus with patient standing; dropsy of abdominal wall, both general and in raised streaks, running upward in the flanks about as far as the ascites. As to hydrothorax and hydropericardium, I could not be certain, partly owing to the fat and edema which came just about to the twelfth spinous process behind, slanting downward to approximately the umbilical level anteriorly. There were some consolidated patches in the lungs, and bronchial rales were quite diffuse. Owing to the tension, the liver, kidneys, etc., could not be felt. There was a spot of edematous bulging at the umbilicus, but no caput medusae. Nor were there the dendritic venous markings in the hypochondriac regions which I have described as diagnostic of portal obstruction. This point is important and will be mentioned again. The legs were very much swollen and indurated, with scarcely healed ulcers and a history of recent leakage of clear fluid.

On the train, returning, I puzzled over the absence of the dendritic varicosities when it occurred to me that there were no blue markings on the abdomen, very few venous varicosities of the legs and that the streaks of raised swelling on the lower abdomen tapered to points at the top and that these streaks were translucent and of a waxy tint. Also, the contour of the legs was irregular and the skin was brawny; in short there were the typical square piano legs of elephantiasis. We will speak of the propriety of this term later. At the time, the noteworthy fact was the shifting of interest from hemic to lymphatic obstruction.

The single sample of urine brought home showed a slight trace of indican, no albumin and no sugar.

As to the practical therapeutic side of the case, it was obvious that the patient was in no condition to be moved, and that she was scarcely able to stand tapping. Generally speaking, I am prejudiced against tapping unless the mechanical interference with heart action and breathing is urgent, or unless we have to deal with an acute condition. Do not understand me as exaggerating the severity of this operation; even the septic danger seems to be very slight when crude methods of asepsis are employed or none at all, as in the earlier days. But I have noticed that the literature on tapping seems to run to a sort of pride in the amount of fluid removed and the number of repetitions. In most chronic cases, not too depressed generally, the liquid can be drained off by the emunctories through the stimulation of blood pressure and heart action, catharsis, diuresis, sweats, etc. In fact, respiration alone drains nearly a litre a day and on a nearly liquid-free and salt-free diet, if there is any vital strength at all (pardon the old fashioned expression, which is used simply to save space) the body will gradually absorb the transudate, without further attention. For the normal body, insensible sweat is reckoned at about the same amount, but is probably less for diseased conditions, and we must not forget the practical difference between the dry heat of most houses in winter and the natural outdoor heat with an average humidity of nearly fifty degrees in summer. It seems best not to sweat these cases severely nor to produce diarrhea, partly because such cases are mostly in elderly, very heavy persons, who cannot be moved for purposes of cleanliness and attention to the bowels without considerable fatigue

and risk of catching cold, which persists as a crude practical fact, although better explained on more scientific grounds. Thus, the best method is to rely mainly on digitalis, sparteine, renal stimulants, etc., to keep the bowels only moderately loose and the skin merely moderately active. If these methods do not act satisfactorily, we can always tap and, if they do, we have the advantage of a gauge of success and of physical response, which is valuable in exactly the same way as temperature uncontrolled by antipyretics in fever, and pain uncontrolled by morphine in inflammation of the appendix.

A week later, under digitalis (one eighth gram t. i. d. of pulverized leaves), salines, and relatively salt-free and water-free diet, the pulse had been reduced from 120 to 96, was stronger, the abdominal distention was slightly less, the patient felt stronger, the complexion was clearer, and the lips were redder. There was not much change in the legs, nor in the chest. The heart beat was so much stronger that murmurs could be excluded and the cardiac area was only slightly enlarged, allowing for the normal exaggeration of area by thick body walls in applying auscultatory percussion. As it was somewhat uncertain how much digitalis the patient had had previously, and how much she was taking in a tonic mixture which was left over from the previous attendance and which she had continued, it did not seem safe to continue it further with our daily observation which was impracticable. Theophyllin was therefore substituted, as a vascular tonic and diuretic.

Four days later the patient was brought to Buffalo in a wheel chair set in the baggage car. I have used an ordinary easy chair in similar cases. The baggage car is a convenient way to transport such patients, affording somewhat more privacy than an ordinary car, and while the state room of a Pullman is more elegant, the narrow passage sometimes prevents its use. But we dislike to use the baggage car for efferent patients.

The patient, three weeks from my first visit, is fairly strong, walks about, sleeps in bed propped up with pillows, and while, by inspection, there appears to be considerable ascites, the abdominal cavity is pretty well drained. On light percussion, owing to the edema of the wall, the abdomen is of dull pitch below the band of edema which forms, so to speak, a loop of dense tissue rising from a point about two inches below the umbilicus in the linea alba to the twelfth dorsal spine. If we examine carefully, we find that there is no lower limit to the edematous tissue, except that by bandaging we have forced the liquid out of the feet, ankles, and legs as far as the knee. What appears to be the lower margin of the edematous loop is simply a preexisting crease in a pendulous abdomen; and the pendulosity is due rather to fat than to diastasis of the recti or any true weakness of the abdominal muscles determining what is usually regarded as enteroptosis.

To return to the abdominal contents, we notice that heavy percussion gives a fairly resonant note and a still more resonant *feel*, almost down to the pubes. Laying the assistant's hand flatwise against the abdomen as a damper, there is almost no transmitted palpatory shock between the two flanks and no similar auditory shock when using

the stethoscope. In other words, the ascites has practically disappeared, although we probably never diagnose it by external physical means until several quarts have accumulated and it is perfectly possible that there may be quite a little liquid left in the abdomen.

The translucent streaks of which mention was made, have nearly disappeared, but we can still see them faintly and I think there is no question that they represent distended lymph channels.

Now that the ascites has abated, the liver can be felt about two inches beneath the costal arch in the middle line, but at this level the fingers or side of the hand "walk off its edge." Whether the liver is enlarged or depressed, I am not quite sure, as the thickness of the body wall and the pulmonary sounds alluded to, render it difficult to depend absolutely on either ordinary or auscultatory percussion. Another practical point is that we cannot be too arbitrary about landmarks with a patient whose thorax is as short and broad as the present one. Of course, some will ask why an x ray examination was not made. In the first place, with so much fat and edema, the shadow of a soft organ is not likely to show plainly; in the second place, with the skin in this condition and the circulation obviously impeded, at least for the lymph drainage and recently for the blood also, I do not wish to take any risk of producing trophic changes.

The blood has shown no marked abnormality beyond the anemia to be expected—about 3,500,000 reds on each of two examinations and about 4,200 whites. The urine which was reported as scanty, came up rapidly after I first saw the case and has ranged from 875 to 1,350 c. c. a day. There has been a trace of albumin, but no other abnormality and, as there has been no restriction of diet applicable to the concealment of glycosuria, I am inclined to think that the diagnosis of "sugar diabetes" was either made up out of whole cloth, or was due to some previous administration of salicylates which, as excreted in the form of salicyluric acid, do cause a muddy yellowish to brownish precipitate somewhat resembling the sugar reaction and often confounded with it. In several samples during the absorption of the transudate, I found hydrosulphuric acid or ammonium sulphide (odor, blackening of lead acetate paper on steaming the urine, even without an acid). Not much is said in works on urinary analysis about this reaction and it may have been due to some sulphur containing food, but I am more inclined to ascribe it to the absorption of proteids in the transudate.

While the urine was ranging in the neighborhood of a litre a day, the diet included not over 500 c. c. of water altogether, including that potentially present in carbohydrates. Indeed, the patient was actually drinking only about 100 c. c. a day. With loss of water in the breath, two or three fairly liquid passages, some sensible perspiration, about 100 c. c. of mucoserous expectoration (due to the stasis and to a subacute cold), and the excess of half a litre a day in the urine alone, it seems to me a fair estimate that she was getting rid of about 3,500 c. c. of transudate daily. After this rate of absorption had been kept up for a week, the urine yesterday dropped to about 300 c. c. (unfortunately it was not

accurately measured when the bowels moved), and this fact, in connection with the physical signs of reduction of the ascites and the obvious reduction of superficial edema, seem to prove that we really have succeeded in getting rid of a considerable accumulation.

A curious fact in this connection is that the sudden drop in quantity of urine has coincided with the disappearance of hydrosulphuric acid or ammonium sulphide. It is to be regretted that the first sample taken at the patient's residence, was not tested for this substance, before the circulatory force and renal elimination had been brought up from their low level. All I can say is that the urine at that time had no sulphurous odor.

It seems to me that now, we should give water more freely though not abundantly, in order to maintain blood pressure, favor elimination and catharsis, though still keeping it down to a litre a day, in order to expedite the resorption of superficial and residual peritoneal lymph, if possible. Fortunately, the patient has a good though not large appetite and no gross digestive symptoms.

In the differential diagnosis, I think we can clearly eliminate dropsies essentially due to the heart, kidneys, and blood. The absence of venous back pressure indicated by superficial distended veins, hemorrhoids, and alimentary canal hemorrhages, seems to me to exclude portal vein obstruction of any kind, although, against this conclusion is the palpable liver which may reasonably be held to represent the so called hypertrophic cirrhosis. Malaria, leucocythemia, syphilis, alcoholism, may pretty positively be excluded, and there is no indication of tuberculosis. As stated, I am not sure that the liver is large, but if so, I do not think this is the essential cause of the dropsy.

The condition of the legs seems to justify the term elephantiasis. My personal inclination is to limit this term to filarial or, at most to leprosy and other infectious processes blocking the lymph channels, but the dictionaries define the term more generally, including even anomalies of congenital nature. At any rate, whether we use the word elephantiasis or not, there is an edema and probably an interstitial change also, with inevitable secondary trophic skin lesions, due to lymphatic obstruction. Now with this obstruction involving both lower limbs, the abdomen and the abdominal wall up to the level of origin of the lower superficial abdominal lymphatics—as clearly shown by the translucent streaks—remembering that these last lymphatics have a downward current, we must clearly locate the obstruction no further from the heart than the receptaculum. Incidentally, this sharply defined limit between edematous and normal subcutaneous tissues, extending obliquely in a spiral line up to the twelfth dorsal spinous process, is as pretty a demonstration of drainage areas as we could wish and more definite than I have found in the anatomy. Below the twelfth spinous process, we notice a deep groove approximately corresponding to the second to the fifth lumbar spinous processes—probably indicating, not a different drainage area, but too firm connective tissue in the midline of the back to allow edema to develop.

On the other hand, the almost absolute symmetry



of the edema and its horizontal limit, seem just as plainly to localize the obstruction to a point not much if at all, above the receptaculum, for the major thoracic duct receives the lymph from the left chest, arm, and side of neck and head. On two or three occasions, the patient has had a soft, transient swelling of the right upper arm, and in both upper internal brachial regions there is a dense vermicular mass which may be enlarged lymphatics. But if the major thoracic duct was involved high up, the swelling would be in the left arm and it would involve also the thorax, even if not the neck and head. In a fatal case of pneumonia, some years ago, a slight general left sided edema developed a day or two before death, not accounted for by posture and very likely due to a coagulum occluding the major thoracic duct.

As to the nature of the obstruction, there is not, as yet, much to say. The nonfebrile course of the disease, the lack of leucocytosis, etc., pretty positively exclude acute infections. There is no eosinophilia and this excludes trichinosis and some other animal parasitic diseases. The habitat of the patient and the history exclude filariasis, lepra, tuberculosis, malaria, latent typhoid carrying, and many other possible surmises. There is no evidence of spinal disease. Malignant disease is always to be thought of, but there is no special indication of it. We should naturally expect the lymph glands to be pretty generally enlarged in any long standing malignant case, although it is possible that the lymph current might protect them in an involvement of the receptaculum or lower thoracic duct. If the vermicular masses in both arms are really indurated lymphatics, we may speculate on the presence of some essential fibroid change affecting this system, but this raises the question of why.

I should like to know whether the ascites was chylous or not, but have not regarded tapping as justifiable merely to satisfy this curiosity, especially as the ascites has been reduced so materially. The lymph flow from the legs was watery and, indeed, it is very doubtful whether ascitic fluid is chylous unless there has been rupture of some lymph channel, even when the accumulation is due directly to lymphatic obstruction.<sup>1</sup>

CASE II. Mrs. V. H., under observation January 27, 1915, till death, September 2, 1915, aged fifty years, married, American of French descent; four children aged from thirty-one to twenty-two years, two accidental miscarriages. Menstruated quite regularly, until two months before death, with exception of two months late in 1914.

Physical examination showed: Liver by auscultatory percussion, fifth rib to costal arch, kidneys not movable, spleen not palpable, appendix not palpable nor tender, gastric area normal, and no complaint directly referable to the stomach. Pulse irregular, about 100, varying from 90 to 130 during the subsequent attendance. Heart slightly enlarged to left, valvular closures not firm, but no distinct murmurs heard at any time. Right external jugular and communicating vein to left second intercostal space distended and tortuous, but no marked pulsation. This vein was said to have appeared ten years ago. Goitre, size of large plum, consisting of a deep hard, irregular portion with a soft, superficial cap, said to have developed at time of last pregnancy, twenty-one years ago.

Soft, smooth dropsy of both legs, extending into lower abdomen. No ascites demonstrable at any time, except doubtfully toward end of observation. Lower abdominal

lymphatics appeared as a network of dilated, tortuous streaks, more lines as they began at about the umbilical equator, gradually enlarging to size of goose quills toward pubes and thighs.

The edema of the legs could be considerably diminished by bandaging, but no permanent modification was effected. After about a month, the right breast became edematous and quite hard. This condition rapidly disappeared, and was irregularly intermittent, presumably according to posture, pressure of corsets when worn, etc., but no very direct connection could be traced to such external causes, and the patient and nurse both believed that the swelling diminished when corsets were worn. Probably partly on account of cardiac weakness but also from habit, the patient lay or reclined mostly toward the right. Hence, the right forearm showed a greater tendency to edema, but edema fluctuated in both forearms and upper arms, and toward the last was constant in both hands and forearms and below the eyes, the rest of the face becoming emaciated.

During the last few weeks, there was a slight accumulation of fluid in both pleural cavities, rather more on the right side.

For a couple of weeks in March, there was bronchophony and relative dullness in the lower part of the right lung, but no distinct bronchial breathing. During July and August, the left lung showed signs of partial consolidation, but without much expectoration and without rise of temperature, except for a few days, when the patient had taken cold. The pulmonary condition was, therefore, not considered inflammatory in any sense, except for a brief period.

The complaint of the patient at the beginning was of dropsy, constipation, scanty urine, general weakness. There was no marked anemia—seventy-five per cent. of hemoglobin at various times, even up to the last month of life and no abnormality in the cells beyond the slight diminution of red cells indicated by the hemoglobin percentage. There was no loss of appetite nor obvious failure of digestion until the last two months. There was no acute pain at any time. There were, until the last two months, none of the marked signs of cardiac or respiratory embarrassment, the dropsy not being so situated as to interfere immediately with either circulation or respiration. Toward the end, the increasing weakness, with the pulmonary consolidation mentioned and the slight accumulation of fluid in the pleural cavities, resulted in orthopnea, or rather emprosthoepnea, but without the struggle for breath so often encountered.

The cardiac weakness, without detectable murmurs or accumulation of fluid in the pericardium, need not be given a technical name since our nomenclature is not entirely satisfactory and, in the absence of histological examination, is based on surmise. It was fairly well controlled by digitalis, with considerable use of apocynum and occasional assistance from ammonium carbonate, strychnine, atropine, and sparteine.

The oliguria was mainly due to general circulatory weakness. Beside the use of cardiac stimulants, the only drug used to stimulate the flow of urine was diuretic. Aside from a period in which the attempt was made to secure absorption of fluid from the tissues by a salt-free and nearly water-free diet, the urine was soon restored to a normal amount for a woman at rest, varying from a pint to a quart a day. At no time did the urine show any qualitative abnormality beyond a slight band of albumin. In particular, sulphides were absent (*cf.* other case).

The constipation was easily controlled with phenolphthalein and pure mineral oil. Indeed, after the first two months, the use of fruit beverages, with cream of tartar, taken without order and without my knowledge, produced a moderate diarrhea.

In February, thyroid extract was given for two weeks. It was discontinued through the fear that further increase of pulse rate, etc., might be produced. Cr  de ointment was used over the thyroid and, in June, it was found that the hard, deep portion of the goitre had entirely disappeared, leaving merely the soft, more superficial cap.

The dropsy, being obviously due to lymphatic obstruction, presented a difficult problem, more particularly since there is almost no literature on the subject of a clinical nature, unless we go back about 150 years, when we find an abundance, but with a

<sup>1</sup>This patient was first seen in September, 1912; was much improved from November to January, and died with recurrency of dropsy, etc., in the spring of 1913. No necropsy.

curious mixture of truth and error. It will be noted that the other case here reported presented a clear cut picture of obstruction of the greater thoracic duct or of the receptaculum itself. In the present case, there was no ascites, unless of small amount toward the end. While most of the dropsy was in the lower limbs and lower abdominal wall, this was not diagnostically significant on account of the effect of ordinary posture. The intermittent swelling of the right breast and the greater tendency to edema of the right arm, prevented the exclusion of the lesser, right thoracic duct as in the other case. Indeed, the intermittence of the dropsy of the upper part of the body generally, suggested that it might be due merely to general circulatory weakness, plus the influence of posture and accidental pressure. Early in the observation, while operative measures were out of the question at the time, it was hoped that there would be sufficient recuperation to allow an attack upon some definite site of obstruction. Such recuperation did take place for a period of about six weeks during May and June, but the patient and her family were strongly opposed to operation and, in the meantime, a study of the case had shown the improbability of any single site of obstruction. The superficial lymphatics of the lower abdomen and umbilicus and those radiating from the saphenous opening were permanently dilated, and even massage of the individual vessels showed that there was a distinct obstacle to the flow of lymph. But the obstruction was bilateral and nearly symmetrical, it apparently did not involve the deeper lymphatics, since ascites was absent. As stated, dropsy of the upper portions of the body was intermittent and variable and not necessarily due to lymphatic obstruction in the limited sense. There was no evidence of syphilis, tuberculosis, malignant disease, or other tumor. Under these circumstances, it was impossible to direct an operation to a definite point, even if the patient's consent could have been secured. The possibility of mediastinal conditions, thrombi lodged in the great veins and thoracic duct, etc., was considered, but no definite location or indication of lesions on their own account could be made and no hypothesis was convincingly supported throughout the case. On the contrary, the findings conflicted with all hypotheses, on grounds of location, nature of lesion, etc.

Owing to the absence of aggregations of muscular tissue, innervation, definite course of vessels, etc., in the lymphatic system, compared with the blood vascular system, it is obviously not so easy to control or even attempt to control lymphatic dropsy as that due to the heart and bloodvessels. The dropsy of the lower limbs could easily be diminished by bandaging, but it promptly returned. Incision of the skin was suggested by a consultant, but was objected to by the patient and family and was not regarded as of any radical benefit, while the dangers of incision and the possible danger of removing salts and other substances in the escaping lymph actually contraindicated such procedure. Applications of kaolin in glycerin were made, but had no apparent effect. The endeavor to force the body to utilize water and salts from the dropsy, by dietetic restriction, failed utterly. So did the measures directed

immediately at the general circulation, diuresis and a brief period of hydragogue cathartics.

## PARAPSORIASIS.

### *The Disease from the Clinical and Diagnostic Standpoint; a Brief Report of Five Cases*

BY FRED WISE, M. D.,

New York.

Assistant in Dermatology and Syphilology, College of Physicians and Surgeons, Columbia University; Chief of Clinic in Dermatology, McSams and Hottel Island Hospitals, etc.

The term, parapsoriasis, is used in its large conception to designate a vaguely defined group of comparatively simple cutaneous efflorescences—simple as regards their clinical manifestations and not at all complicated in the histopathological changes which characterize them.

In 1890 a work on the parakeratoses in general was published by Unna, Santi, and Pollitzer, in which was described a malady first named by these authors *parakeratosis variegata*. This publication formed a nucleus around which has arisen a formidable literary structure dealing with a number of closely related, if not always identical dermatoses. Unfortunately, as new cases of these polymorphic cutaneous affections came to light, new names to fit their respective clinical appearances and peculiarities were added to dermatological nomenclature; so that today the term, parapsoriasis, even to the initiated, usually carries with it a mental picture in which the phrase "chaotic state" looms up prominently, in connection with their nosological position. Thus, these chronic, resistant, macular, maculopapular, patchy, sometimes scaly erythrodermias are so overburdened with a superfluity of titles that the problem of clarifying and simplifying the entire subject is one with which dermatologists the world over are continually grappling. The close interrelation which obtains in this family has been very clearly demonstrated by Werther, who has recently described a case in which the three well recognized types of parapsoriasis occur in the same patient. The following is taken from Ormsby's recent textbook:

Brocq introduced the term parapsoriasis for this group of diseases and proposed the three following divisions: *parapsoriasis en gouttes*, *parapsoriasis lichenoides*, and *parapsoriasis en plaques*. This classification includes the various manifestations, and presents a clear conception of the group. Parapsoriasis is a rare disease of the skin characterized by persistent, red, scaling patches or lichen planus-like lesions, devoid of subjective sensations and resistant to therapeutic measures. The disease, as described in individual cases, varies as to type. . . . In all varieties the persistence of the lesions in spite of treatment is characteristic. The lesions occur chiefly on the trunk and limbs. The inflammatory process is superficial and devoid of infiltration and of subjective sensations. The primary lesion is a macule or maculopapule, often scale covered, which spreads peripherally. New lesions slowly but surely appear, until larger areas become involved. In this way the guttate, retiform, and patchy varieties are produced. A true conception of the disease cannot be had from observation of a single case. The individual cases differ from each other in a striking manner. The particular features of each must therefore be depicted. At present it cannot be stated which variety occurs most commonly.

GERARD VAREYRE; *Parapsoriasis en gouttes* (Brocq). *Dermatitis psoriasisiformis nodularis* (Jadassohn). *Pityriasis*

*lichenoides chronica* (Juliusberg). In this variety a close resemblance to psoriasis is noted. Again, at times, a scaling syphiloderm is simulated. The eruption is very superficial, consisting of pinhead to pea sized papules, round or oval in form, and of an intense, clear red color. The larger are paler, well defined, and flat, with an occasional central depression. The smaller are slightly pointed. Scaling may be quite perceptible, or the papules may be devoid of scales. The lesions are somewhat firm and some are follicular. The scratched lesion is red and bleeds but little. The scale when removed is found to be thicker in the centre than at the periphery. New papules or nodules appear here and there as the eruption gradually increases. In the beginning there is an areola of redness. No subjective sensations are present and involution of the lesions is uncommon. The hands, face, and scalp are usually free from attack.

**RETIFORM VARIETY:** *Parapsoriasis lichenoides* (Brocq), *parakeratosis variegata* (Unna, Santi and Pollitzer), *lichen variegatus* (Crocker).—In this variety the eruption is more generalized than in either of the other forms, and is represented by lesions that may be described as intermediate between those of lichen planus and psoriasis. The subjects of this disorder have been adults in the third and fourth decades of life. The eruption is usually generally distributed over the trunk and extremities and is retiform in character, almost as though the patient were covered with a net. This peculiar appearance is induced by hyperemia occurring in the form of a patchy network, enclosing areas of a less intense hue. The primary lesion is a reddish yellow or darker colored, flat topped, scale covered papule. The lesions on coalescing produce the peculiar picture above described. The extremities may be the seat of a more marked dermatitis, with increased scaling, and also with more distinct papulation, the papules being flat topped, shining, and like lichen planus. In a few recorded cases, the premycotic stage of mycosis fungoides has been mistaken for this eruption.

**PARAPSORIASIS EN PLAQUES** (Brocq).—The cases described under the title *érythrodermie pityriasique en plaques disséminées* and *xanthoerythrodermie persans*, by J. C. White, Crocker, and others, belong to this group. In this variety plaques or patches of varying size and irregular shape occur on the trunk and limbs. The patches are well defined, range in size from that of a dime to a walnut or larger, and present varying shades of red, reddish brown or yellowish brown or fawn color, and at times a darker brown. In certain cases a seborrheic dermatitis is simulated. Moderate scaling is usually present, and the scales are small and adherent. In certain instances visible scaling is absent. On pressure the color may all be removed. There is no elevation of the lesion, no infiltration of the skin, and subjective sensations are absent. The lesions are very persistent and show practically no tendency to undergo spontaneous involution, but are clearly resistant to treatment. The patches are sometimes so delicate as to appear like a mere stain.

A considerable number of publications on this subject appears in the American literature; among these, very instructive articles have been contributed by Corlett and Schultz, Brocq, J. C. White, C. J. White, Anthony, Ravogli, Trimble, Sutton, and others. Scores of papers by British and Continental authors, too numerous to mention, form the bulk of the literature. Of the German publications, the papers of Arndt and of Werther are recent, and contain a great amount of valuable information. Those desiring to read up the subject in English will do well to consult the above mentioned authors, and will find it profitable to peruse the papers of Corlett and Schultz, Brocq, J. C. and C. J. White, and Fox and Macleod.

The five cases of parapsoriasis here recorded were encountered during the past two years in private and dispensary practice, in New York. The writer has seen, in addition, perhaps a half dozen other instances of the same disease, in the hands of his colleagues, within the same period of time. It can

hardly be said, therefore, that the disease belongs to the category of the very rare dermatoses. Probably a goodly number of cases every year escape close observation and are relegated to the psoriasis and seborrheic eczema groups of dermatoses.

The two women and three men forming the subject of this report presented so many features common to each, that time and space may be saved by considering certain points collectively, instead of particularizing. The common factors which obtained in each of these patients may be briefly outlined as follows:

1. All were in good health. None of them suffered from any condition which could be even remotely interpreted as having the slightest bearing on the cutaneous affection. One of them (Miss S. S.) suffered from nephropathy and had undergone an operation for fixation of the right kidney. With this exception, physical examination revealed no abnormalities.

2. The Wassermann blood test was negative in all.

3. The eruption appeared insidiously, without ascertainable cause, progressing slowly. Once a lesion appeared on a certain area of skin, it never entirely vanished, although periods of remission and exacerbation were present in all. With one exception, treatment was unavailing.

4. With the exception of a very moderate degree of pruritus, there was a total absence of subjective sensations. None of them complained of itching.

5. In all a certain degree of cutaneous irritability, dermatographism, was manifested.

6. There was a uniform chronicity in all of the eruptions, and an extremely slow evolution of the lesions.

7. The face and scalp, and hands and feet were unaffected.

8. The nails, hair, and mucosæ were not involved.

The eruption in the first four cases presented lesions which were flat, patchy, some of them slightly scaly, usually noninfiltrated, and depicting various shades and combinations of pink, yellow, red, brown, *café au lait*, etc. They belong to the group designated by Brocq as *érythrodermie pityriasique en plaques disséminées*, or *parapsoriasis en plaques*. In the fifth case the lesions were macular and maculopapular, producing an exanthem which is described under the titles *parapsoriasis en gouttes*, or *pityriasis lichenoides chronica*.

**CASE I** (referred by Dr. Louis Weinstock; *érythrodermie pityriasique en plaques disséminées; xanthoerythrodermie persans*). Mrs. C. R., aged twenty-seven years, a widow, stout healthy woman, whose family and past history presented nothing of interest; personal history, negative. About four years ago, indefinite, slightly scaly, reddish yellow spots appeared on the upper and lower extremities; shortly after, similar spots were noticed on the chest, back, and buttocks. They appeared insidiously and without subjective sensations. None of the patches entirely vanished during the past years, but some became lighter and darker at times. Scaling had always been very moderate in amount, especially so on the trunk.

With the exception of the face and neck, and the hands and feet, the skin of the entire body presented a multitude of scattered macular patches, most numerous and most prominent on the trunk, buttocks, and thighs, and, approaching the ankles and wrists, gradually becoming paler and paler, finally fading entirely. These macular patches varied in size from that of a silver quarter to areas from three to six inches in diameter. The majority were of



... a man's palm. Most of them were circular in outline, especially those on the buttocks and the lower half of the thighs; others were elongated and oval ... the backs of the thighs, just beneath the



FIG. 1.—Case 1, another view.

transverse gluteal fold, these oval patches were seen to follow a certain arrangement in lines, conforming with the folds of the skin. On the anterior and upper portion of the thighs they had a tendency to arrange themselves parallel to the oblique line of the groin. The consistence of these macules was that of the normal skin, i. e., nothing could be made out by the palpating finger. Not the slightest difference between a macule and the neighboring normal skin was perceptible. The patches were flush with their surroundings. In color, these lesions presented a distinct yellow tint, giving the integument a somewhat muddy looking, mottled appearance. The yellow tint was nowhere uniform, but presented gradations, so that some areas were salmon colored, others fawn colored, others buff colored, etc. On the chest and back, these various shades could not be distinguished clearly, for in many areas the patches presented a mixture of colors. On the buttocks, thighs, and legs, some of the lesions were reddish brown and purplish in color. Over the shins there were a few ill defined, yellowish, slightly scaly areas, resembling patches of fading seborrheic eczema. The boundaries of these macules were not sharply defined, but fused imperceptibly with the surrounding normal integument. None of the patches (excepting those on the lower legs) was actually scaly in any sense of the word, but many of them, notably those on the anterior and upper portions of the thighs, gave the impression, to the eye, of being covered with fine scales. Scratching these lesions with the finger nail, however, failed to remove anything more than a meagre scurf. Over the hips, some of the macular patches were distinctly wrinkled into longitudinal folds; this appearance was due to the underlying striae atrophicæ. On the chest and back the macules had a greasy appearance, due to the coexistence of seborrhœa oleosa. Dermographism was present to a marked degree.

Treatment with sulphur, tar, resorcin, salicylic acid, pyro-

gallic acid, etc., proved fruitless. A temporary disappearance of some of the lesions was demonstrated after a series of exposures to the Kromayer light. The lesions relapsed as soon as the light treatment was discontinued. The patient was careless and indifferent, so that the value of ultraviolet rays was not ascertained.

Histopathology (section removed from a patch on the thigh): The horny layer was thinned and for the most part composed of two strata, one closely adherent to the underlying epithelium, somewhat homogeneous in appearance; the other, separated from the former by narrow clefts, was lamellated and, in some spots, presented numerous cells containing well stained, elongated, flattened nuclei (parakeratosis). The stratum lucidum was represented by a fine line, in some places absent, in others rather prominent. The stratum granulosum consisted for the most part from one to four layers of regularly disposed, well preserved cells with distinct granular nuclei. Most of the cells showed evidence of advanced ceratohyaline degeneration. The cells of the granular layer seemed to be equally in evidence in areas showing retained nuclei in the horny layer, as in regions where the latter were wanting.

The stratum spinosum was moderately increased in thickness and showed only a moderate amount of intracellular and intercellular edema. The nuclei were well stained in some areas, poorly defined in others. Throughout the prickle cell layer were scattered spots with cellular infiltrations and collections of pigment granules. Many plasma cells were among the infiltrating round cells. Edema was a pronounced feature in this stratum.

The basal cell layer was in some regions almost completely obliterated, the palisade cells having lost their uniform arrangement, so that the line of demarcation between epidermis and derma was lost. This condition was most pronounced in areas subject to cellular lymphocytic infiltration around the papillary bloodvessels. In other places, the basal cell layer was unaffected, the palisade cells and their nuclei retaining their normal contours.

The pars papillaris of the corium showed a marked degree of edema, with granular degeneration of the collagen.



FIG. 2.—Case 1, another view.

Lymphocytic cellular infiltrations were scattered throughout this portion of the derma, all of them apparently surrounding dilated capillaries and small bloodvessels. These cells were composed of a small, round, well stained nucleus

with very little protoplasm. Plasma cells were numerous and polymorphous leukocytes very sparse. The bloodvessels were dilated and some had distinctly thickened walls. Most of them were also surrounded by "cuffs" of cellular infiltrations. Infiltrations independent of bloodvessels were not seen. The papillae were narrow, edematous, and nearly all of them presented the picture of harboring a dilated bloodvessel, surrounded by lymphocytes.

The pars reticularis corii presented a swollen and edematous collagenous tissue. The vascular walls were thickened. The arrectores muscles were swollen and edematous. The glands were normal.

CASE 11 (from the Mt. Sinai Hospital Dispensary; *erythrodermie pityriasique en plaques disséminées*). Miss S. S., seamstress, aged thirty-one years, somewhat frail and anemic in appearance, several years ago underwent a nephrorrhaphy operation on the right kidney; she suffered from general visceroptosis, but was otherwise in normal health. The past and family history was negative. About six years ago, reddish and brownish spots appeared on her legs and arms, unaccompanied by subjective sensations. Since that time, fresh patches had appeared on the extremities and on the chest and back. None of these disappeared once they became evident, and none showed any signs of involution.

The lesions were present over the entire trunk and upper and lower extremities, as well as the neck; the face, hands, and feet were free. They consisted of large, irregularly outlined, circular and oval, yellowish, brownish, and yellowish red patches. The surface of most of them was smooth and free of scales; others presented a distinctly wrinkled and shagreened surface; others appeared to be lichenified and rough; still others were covered by a fine, furfuraceous deposit. On the chest and back the patches were mottled and muddy looking, caused by a fusion of different tints, varying from light yellowish red to brown. The patches were most prominent and well defined on the upper and lower extremities. On the flexor surface of the left forearm, adjoining the bend of the elbow, was a patch of diseased skin possessing the following peculiarities: The patch was oval in shape, about the size of a child's palm, rather sharply circumscribed, light brown in color; the surface markings consisted of very distinct, obliquely set, fine, parallel furrows, like wrinkled cigarette paper. Scratching this surface elicited a fine, furfuraceous scaling.



FIG. 3. Case 11, from Mount Sinai Hospital Dispensary.

There was considerable infiltration to be sensed by the palpating finger, but the patch was absolutely flush with the neighboring healthy skin. The surface of the patch presented evidences of slight atrophy; there was a marked resemblance to a fading patch of seborrheic eczema. Simi-

lar lesions were present on the anterior and posterior surfaces of the thighs, but were lighter in color and not at all infiltrated, and some of them presented a more pronounced furfuraceous desquamation. On the inner aspect



FIG. 4. Anterior view of Case 11.

of the right thigh, midway between the knee and groin, was a roughly circular, rather sharply defined area of reddish skin, surrounded by a halo of normal, white integument. This patch was about the size of a silver dollar, and presented in its centre another irregularly circular area of normal skin, giving to the whole lesion a somewhat iris-like appearance, accentuated by the reddish brown patch above and adjacent to it. While the general appearance of the eruption strongly simulated a fading seborrheic eczema, this patch looked more like a disc of psoriasis which had recently been subjected to chrysarobin inunction. Dermoglyphism was moderate.

The usual treatment with reducing agents proved unsuccessful. The patient was then treated with autogenous serum therapy at the Vanderbilt Clinic, but it was too early to report the results of this procedure.

Histopathology (section removed from large patch on the forearm): The stratum corneum was irregular in thickness, lamellated, and wavy, adherent in some places to the underlying structures, widely separated in others. In the adherent portions, the layers were compact and well stained. In certain limited spots were nucleated epithelial cells, few in number, but with distinct, well stained, oval and elongated nuclei (paraceratosis). The stratum lucidum was represented by a fine undulating line. The granular layer was attenuated. It varied in width from one to three cell rows, and presented evidences of advanced ceratohyaline degeneration. Some of the cells showed complete dissociation of the granules, the latter being deposited outside the edematous cell bodies. Many of the nuclei had completely lost their staining power. The edema was advanced. Over most of the regions where the corneous cells were nucleated, the layer was reduced to a single row of cells possessing elongated, longitudinally disposed nuclei; in some areas the granular layer was represented only by a few cellular remnants.

The stratum spinosum was widened through increase in its cellular elements and the presence of intercellular and intracellular edema. In thickness it varied between ten and twenty cell rows (acanthosis). Edema was manifested by the marked increase in the width of the intercellular channels, the prickles being easily seen, the cells themselves being swollen; the nuclei, however, were well stained. Some of the cells had lost their nuclei entirely as a result of the edema. A few migratory lymphocytes were present between the prickles.

The basal cell layer was for the most part unchanged and well outlined against the corium, excepting in certain areas invaded by the cellular infiltrate. In certain places the palisade layer had lost its normal contour, its cells and nuclei being disposed obliquely and longitudinally, instead of vertically. Edema was marked throughout this region.

In the corium, the pars papillaris presented evidences of advanced edema with scattered areas of round cell infiltrations. The papillae themselves were elongated and their structural elements more or less disorganized by the edema and the cellular infiltration in which they were implicated. In the vicinity of the capillaries and the smaller bloodvessels, some of which were distinctly dilated, the cellular

infiltrate was quite pronounced; longitudinal sections of some of the bloodvessels showed a cuff of infiltrating cells. The cellular infiltrate was composed chiefly of lymphocytes with well stained round and oval nuclei and little proto-



FIG. 5.—Case III, from the Vanderbilt Clinic.

selves, but also in the different efflorescences. There was a great deal of variation in their size, outline, definition, and surface markings. On the buttocks were several large plaques, near which were smaller, satellite lesions. On the left buttock was a patch presenting the following peculiarities: It was roughly circular in shape, about six inches in diameter, smooth, and free of scales. On its outer edge it was sharply defined against the neighboring normal skin; at its inner edge it gradually shaded off into the adjacent integument. The color was a deep pink over the outer half of its surface, and a yellowish pink over the inner half. In the upper and inner portion of the patch was a silver dollar sized, sharply defined disc of normal skin, surrounded on all sides by the deep pink of the disease. It was interesting to note that this little area of skin had never been involved in the process and had presented the same appearance during the past year. In the lower and inner segment of this same patch was another area of apparently healthy skin, the boundaries of which, however, were very indistinctly outlined, fusing, as they did, with the surrounding yellowish pink integument. Here the appearance was that of an area of involution in the midst of the diseased patch. On the back of the legs and thighs were large, smooth, light fawn colored, nonscaly areas, forming irregularly scalloped bordered patches, in the midst of which were imbedded several oval and circular, pink, slightly raised macular areas, resembling nothing so much as little islands in a lake. In some of these little patches the infiltration was moderately marked, but none presented any signs of white, silvery, adherent scales, like those of psoriasis. On the knees and elbow joints, however, several lesions were distinctly scaly in character, and, though their location was not typical of psoriasis, they certainly closely resembled that disease. Vigorous scratching of some of the larger areas on the trunk produced a fur-

plasm. There were a few plasma cells, but no polymorphs. Some of the vessels showed a marked obliterating endarteritis. The dilated bloodvessels were most prominent in the papillae and the subpapillary network, and all were surrounded by lymphocytic cells. In some bloodvessels the lumina were almost completely obliterated.

The pars reticularis, apart from the edema of the collagen, was normal in appearance. Many of its bloodvessels, however, showed decided thickening of their walls, with endothelial proliferation. There was considerable edema manifested in the coil glands, with degenerative changes in the glandular epithelium.

CASE III (from the Dermatological Department, Vanderbilt Clinic). *Parapsoriasis pityriasis, or plaques disséminées*. Mr. M. K., aged twenty-five years, single, had always enjoyed good health; family and past history negative. His skin disease began about six years ago in the form of red and pink, slightly scaly spots on the upper and lower extremities, soon followed by similar eruptions on the trunk and the buttocks. There never had been any pruritus or other subjective sensations. The patches which appeared at the beginning of the disease were said to be still present, in exactly the same localities.

The lesions were distributed chiefly in the vicinity of the knees and elbows, on the buttocks, hips, thighs, front and back of the legs, and a few on the abdomen and over the lumbar region. They consisted of irregularly outlined plaques, some of which possessed a slightly furfuraceous surface, others being perfectly smooth. Their color varied from a deep pink to a light yellowish red. Gradations of tint were present, not alone in the individual patches them-



FIG. 6. Another view of Case III.

furaceous scaling, but actual desquamation was wanting, nor was there any indication of bleeding points after forcible removal of the superficial layers of the skin. In short, the picture presented by this patient's eruption simulated faithfully a treated and regressing psoriasis, in the process



of healing. Dermographism was rather marked. Subjective symptoms were lacking.

The lesions partially disappeared under chrysarobin inunctions, but when this treatment was suspended, they soon recurred in full bloom.

Histopathology (specimen obtained from a patch on the hip): With the exception of a few small areas, the horny

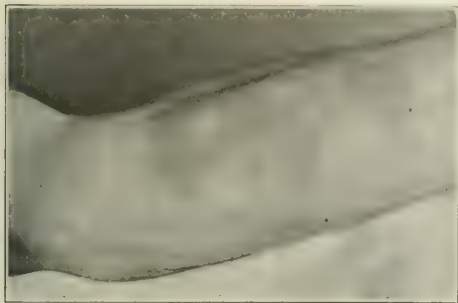


FIG. 7.—Case IV, from the Vanderbilt Clinic

layer was attenuated; in some spots it appeared as a thick, adherent scale, which presented numerous well preserved cells, containing deeply stained, elongated nuclei. The paraceratotic layers were distinctly laminated. The stratum lucidum showed as a fine, wavy line. The stratum granulosum was reduced to one or two rows of cells, with poorly stained nuclei and cell bodies, demonstrating advanced ceratohyaline degeneration. The stratum spinosum was increased, through growth in its cellular elements and the size of the individual cells themselves, with widening of the intercellular spaces, as a result of the high grade of edema. The nuclei and cell bodies took the stain poorly.

The basal cell layer was unchanged, except in areas invaded by cellular infiltration. The palisade cells were normal in contour and sharply defined against the corium; in only a few scattered areas was there a disturbance of their normal arrangement. Pigment granules were seen here and there. The pars papillaris of the corium was quite edematous, showing a loosely woven subpapillary network. The papillae were short and narrow, many of them being completely disorganized by the edema which pervaded them. Dilated and engorged bloodvessels, surrounded by moderate cellular infiltrates, were seen within the papillary bodies and in the upper portions of the corium. Many of the dilated bloodvessels were surrounded by a cuff of infiltrating lymphocytes; but on the whole, the cellular infiltration was moderate. The nuclei of the cells were well stained, small, and round. A few scattered plasma cells were present. Edema was marked. In the pars reticularis, the collagenous bundles were markedly swollen and edematous. There was considerable thickening of the vascular walls, with endothelial proliferation. Plasma cells were abundant, but there were no polynuclear leucocytes. The glands and arrectores muscles were unchanged.

CASE IV (from the Dermatological Department, Vanderbilt Clinic; *erythrodermie pityriasique en plaques disséminées*). Mr. N. K., aged twenty-eight years, had always been in normal health; past and family history negative. Three and a half years ago, he first noticed a brownish discoloration on the forearms, near the elbows. Later a patch appeared on the anterior surface of the left thigh, and a few, indistinct, yellowish plaques on the buttocks and hips. No subjective sensations were present.

The lesions appeared as large, irregularly outlined plaques on both forearms and small, indistinct patches on the buttocks and hips, with one palm sized area on the front of the left thigh. The most prominent lesions were those on the forearms, on the flexor surfaces. Both forearms were alike affected, the eruption being symmetrical. The patch on the right forearm began a couple of inches below the bend of the elbow and extended half way toward the wrist. It was irregular in shape, roughly oval, between yellowish brown and *café au lait* in color, smooth, free of scales, flush with the surrounding skin, and uninfiltreated.

Its edges were indistinctly outlined except at the upper pole, gradually fusing with the normal surrounding skin. Within the affected area were several smaller patches of apparently healthy integument. The general appearance was that of a thin cloud, breaking up, with patches of clear sky showing through. Below this large patch was a number of smaller and less distinct satellite lesions. Forcible scratching of the affected areas elicited no scaling. A mild follicular keratosis was manifest in the larger patches on the forearms. The plaques on the thigh and buttocks were hardly more than yellowish red discolorations, without infiltration and without scaling. There were no subjective symptoms, and dermatographism was moderate.

The patient was given a mild chrysarobin ointment and the patches disappeared for a period of a week or so, only to return as before. He was then placed on autogenous serum injections, together with a two per cent. chrysarobin ointment, with the result that the lesions again disappeared, after the third autogenous serum injection. At the time of writing, his skin had been free of lesions for about three weeks. To complete his course, he was to receive three more serum treatments, the chrysarobin being discontinued.

Histopathology (section removed from plaque on the forearm): There was considerable thickening of the horny layer, which was compact, lamellated, and more deeply stained in its external than in its proximal portion. The latter adhered closely to the underlying epithelium. The lamellae presented numerous well stained, flattened, nucleated cells (paraceratosis). There was no stratum lucidum. The granular layer varied in thickness from one to four layers of cells, presenting marked ceratohyaline degeneration. There was considerable edema throughout the layer. Wide nuclear spaces were numerous. In a few places, where the nuclei of the overlying horny layer were



FIG. 8.—Case IV, from the Vanderbilt Clinic

persistent, the granular layer was lacking entirely. The stratum spinosum was markedly widened and edematous. The cells were increased in size and number, the cell bodies swollen and edematous, the intercellular spaces widened—in short, the evidences of pronounced intercellular and intracellular edema were obvious. Many of the nuclei were

wide clear spaces separating them from their cell bodies.

The basal cell layer varied in appearance. In some areas it was normal and well defined against the underlying structures. In others it was disorganized as a result of the edema of the subpapillary network. Here the palisade cells were indistinct and the nuclei did not possess their normal arrangement and configuration. Pigment granules were seen here and there; a few mitoses were present. Between the cells were a few wandering lymphocytes.

In the pars papillaris of the corium, evidences of edema were well marked. The bases of the interpapillary pegs were in some places completely separated from the derma by clear, wide spaces, resulting from the collection of fluid at this point; the edema was so intense as to cause a weakening of the cohesive properties between epidermis and derma. There was an almost complete disorganization of the papillary bodies from the edema and the perivascular infiltration. The papillae and subpapillary network presented numerous dilated bloodvessels, surrounding which were well defined cellular infiltrations, composed of numerous lymphocytic cells with clearly stained round nuclei and some plasma cells. In some areas the infiltrate was quite dense and extended almost down into the reticular layer. An extensive capillary network with its accompanying cellular infiltrate was seen in several regions. There was pronounced endothelial and perithelial proliferation in many of the bloodvessels. The collagen showed signs of early degenerative changes, some parts of it being granular and edematous in appearance. Numerous plasma cells were seen in the subpapillary layer. The pars reticularis presented an edema of the collagenous bundles, with endothelial proliferation in the walls of the bloodvessels, some of which were markedly thickened. The arrectores muscles were edematous. There was edema of the coil glands, manifested by separation of the epithelial cells from the basal membrane.

CASE V (from the Beth Israel Hospital Dispensary; *parapsoriasis en gouttes*; *psoriasis lichenoides chronica*). Mr. L. M., aged thirty-four years, stocky built man, in good health; family and past history negative. Skin eruption first made its appearance two and a half years ago, as reddish and brown macules and papules on the chest and abdomen. New spots had been making their appearance continually since the beginning of the eruption, and none of them had ever disappeared.

The lesions appeared on the chest, back, arms, and thighs, on the buttocks, and over the hips. A few were scattered on the neck, above the collar bones. The face, hands, and feet, lower legs, and genitals were free. The lesions consisted of red, reddish brown, yellowish brown, and salmon colored macules and papules, thickly sprinkled over the chest and abdomen, more sparsely scattered on the back, buttocks, arms, and thighs. The papular lesions predominated. The macules varied in size from a small pinhead to a lentil, had faintly defined edges, were perfectly smooth and absolutely free of scales. Scratching them with the finger nail, however, produced a fine, furfuraceous appearance of the surface. Some were circular, most of them oval in shape. The papules varied in size from a large pinhead to a pea, were distinctly raised, free of scales, smooth, but did not glisten. The depth of their color was much more pronounced than that of the macules, among which they were scattered indiscriminately. There was no definite arrangement of the lesions into groups, rings, etc., but around the axillae they had a tendency to follow the lines of cleavage of the skin. To the palpating finger, the papules imparted a slight sense of resistance, especially in the larger and darker lesions. The majority of the papules, however, were not palpably infiltrated. Dermographism was marked, but subjective sensations, barring a little pruritus, were absent.

The usual internal and external remedies, carried on for several months, proved futile. Exposure of the chest and back to sunlight produced no lasting betterment, although slight improvement was noted for a while. The patient received x ray treatments at the Vanderbilt Clinic, but not enough time has elapsed to judge effects.

Histopathology: A small papule, together with a narrow zone of normal skin, was removed with the cutaneous punch, from the skin of the abdomen. Low power: The middle part of the section showed a cellular infiltration reaching from the pars papillaris of the corium almost to the horny layer. This infiltrating area occupied the width

of about seven papillae. Toward either side of the infiltrate, the cells became less densely crowded, gradually thinning out, and becoming more sparse as they approached normal conditions at the periphery of the section. The papillae were almost entirely obliterated within this infiltrated region, becoming more and more prominent on either side of it. High power: The stratum corneum was divided into lamellae, some of which adhered closely to the underlying epithelium, others were loosely attached and more or less fibrillated. The cells were most compact over the middle portion of the section, overlying the area of cellular infiltration. In this region some of the epithelial cells possessed well stained rod shaped nuclei (parakeratosis). The stratum lucidum was wanting. The stratum granulosum was markedly thinned, showing only one to two rows of cells with indistinct nuclei and poorly stained cell bodies. Over the central portion of the infiltrate the granular cells were barely visible, but toward the periphery the cell bodies were better defined, the nuclear granules becoming more prominent.

With the exception of an area in the centre of the section, the stratum spinosum was markedly thickened by an increase in size and number of the prickle cells. There was a pronounced intercellular and intracellular edema throughout this region. In the middle portion of the section the Malpighian layer was replaced by a cellular infiltrate of moderate density, which, in some spots, reached almost to the horny layer. At the sides, the prickle cells were swollen, the nuclei were large and took the stain poorly. In the portion lying within the area of cellular infiltration, the stratum Malpighii was reduced to three or four rows of flattened, compact cells, showing loss of the prickles and containing oval, poorly stained nuclei. Lower down, the prickle cells were obliterated entirely, their place being taken by the round cell infiltration. The line of demarcation between corium and epidermis had disappeared, the basal cell layer having become infiltrated with cells, extending upward from the subepithelial layer. Where the cellular infiltrate was thinned out, the arrangement of the palisade cells was well preserved, the line separating epidermis from corium being distinct. The cellular infiltrate was composed chiefly of lymphocytic cells with well stained, round nuclei and little cell body. Among these were also a few polynuclear leucocytes.

The middle of the section showed a complete absence of the papillae, the cellular infiltration occupying this area. Toward either side, the papillae were flattened and infiltrated with lymphocytes. The papillary bodies showed a marked grade of edema. Numerous dilated bloodvessels were visible here, surrounded by a more or less dense cellular infiltrate. Some of the bloodvessels were filled with blood cells. Here and there was a plasma cell. The pars reticularis presented no marked changes, but there were numerous dilated bloodvessels, some of which were surrounded by infiltrations of round cells, similar to those seen in the papillary layer. The hair follicles, sebaceous and coil glands were normal.

#### DIFFERENTIAL DIAGNOSIS.

In considering this group of maladies, with their variegated efflorescences, from the standpoint of differential diagnosis, a number of dermatoses are mentioned, which, at first sight, seem to deserve no place in this field. Yet the following cutaneous affections, remote as some of them are in relation to parapsoriasis, by no means represent the full list of affections which may be simulated, to a greater or less extent, by the group of diseases with which we are dealing. On the contrary, the list may be doubled without overstepping the boundaries of sane and conservative differentiations and comparisons, clinically considered. It is better, however, to limit ourselves to a consideration of the dermatoses which are most likely to cause confusion in every day practice, namely:

1. Maculopapular syphilis.
2. Lichen planus.
3. Urticaria pigmentosa.
4. Psoriasis.
5. Seborrheic eczema.
6. Pityriasis rosea.
7. Mycosis fungoides.
8. Leuchemia cutis.
9. Tinea versicolor.
10. Atrophia maculosa cutis.

Limiting ourselves to a discussion of the cutaneous pictures here described, we may say that Case I resembled seborrheic eczema, the premycotic lesions of mycosis fungoides (and leucæmia cutis) the dappled type of macular leprosy, and (in some areas) tinea versicolor.

Case II simulated seborrheic eczema more than any of the other diseases, although the patch on the forearm and on the left thigh bore a striking resemblance to macular leprosy.

Case III was mistaken for a psoriatic seborrheic eczema and some of the dermatologists who examined it expressed the view that it was a fading psoriasis.

Case IV was considered to be one of leprosy by several experts, while others, at first glance, looked upon the eruption as one of pityriasis versicolor.

Case V simulated a maculopapular syphilide. Some of the lesions, taken individually, bore resemblances to lichen planus and urticaria pigmentosa.

Pityriasis rosea and the preatrophic lesions of atrophía maculosa cutis frequently present efflorescences which may be simulated by some of the individual plaques of parapsoriasis. A few such lesions were, indeed, seen in Case I.

The first patient presented an eruption easily confounded with beginning mycosis fungoides and with seborrheic eczema. But in the early (as well as the late) stages of mycosis fungoides, itching is usually a prominent symptom. The eruption is most often eczematous in character. The lesions are usually sharply defined; there is considerable infiltration; the picture is that of a polymorphous exanthem; raised plaques and solid nodules may be interspersed among patches which are indistinguishable from ordinary eczema; there may be weeping and crust formation. Most commonly there is marked deterioration of the general health of the patient, owing to absorption of toxins, lack of sleep, etc. The eruption is multicolored and ranges from bright red to deep brown.

Certain portions of this woman's eruption, especially on the legs, closely resembled seborrheic eczema. The patches here were yellowish in color, covered with somewhat greasy looking scales, were slightly raised, the edges gradually fading off into the normal skin. There were, however, none of the bright red follicular lesions commonly seen in seborrheic eczema. Itching was absent. On other parts of the body, the similarity to seborrheic eczema was not so pronounced. The areas of predilection for seborrheic eczema are the scalp, nasolabial folds, the sternum, and back. In this patient the chief involvement of the skin was from the waist down. The scaling was so slight as to be practically negligible, and it disappeared altogether after a warm bath. The scalp and face were not attacked. In seborrheic eczema we do not usually see the numerous scattered, poorly defined, variously tinted plaques which obtain on the thighs and buttocks in this case, and in an eruption as extensive as this, there are almost always larger and smaller areas covered with fatty yellow scales, characteristic of this type of eczema. The somewhat shriveled, parchmentlike surfaces seen in some of the plaques in parapsoriasis do not occur in eczema se-

borrheicum. The complete absence of infiltration speaks for parapsoriasis.

The dappled type of macular leprosy bears resemblances to this eruption. In this disease, however, the lesions are usually smaller, more sharply defined, more infiltrated, and darker in color. The concomitant lesions of leprosy are absent; thickening of the lobes of the ears and the skin of the forehead, nerve infiltrations, cutaneous anesthesias, etc.

As regards tinea versicolor, some of the patches, taken alone, could easily be mistaken for that dermatosis. The distribution of the lesions of parapsoriasis, the varieties of color, the lack of the characteristic yellow tint, and the absence of a furfuraceous deposit which can be removed with the finger nail, all speak against tinea versicolor.

The second case differed so little in its cutaneous manifestations from the first, that the above mentioned differential points apply to it with equal force.

The third case was at first regarded as a regressing or fading psoriasis. This assumption was strengthened by the presence of slightly scaly patches on (but not below) the knees and elbows. There was an almost total absence of desquamation in the lesions on the trunk, buttocks, and thighs, despite the fact that the patient had had no internal or external treatment for several months before he appeared at the clinic, when the accompanying photographs (Figs. 5 and 6) were obtained. The characteristic feature of untreated psoriasis is the presence of silvery white scales which are adherent, and, when scratched off, leave a bleeding surface at the site of attachment of the scale. The areas of predilection in psoriasis are the scalp and the skin just beneath the elbows and knees on the extensor surfaces. The scalp, in this case of parapsoriasis, was free from scales, while the areas of predilection beneath the knees and elbows were practically uninvolved. The patches of parapsoriasis varied in color, from a light pink to red. They consisted largely of nummular macules and extensive plaques, with smooth, nonscaly surfaces, in marked contrast to the scaling surface of psoriasis. The general outline of these patches simulated those of psoriasis, but their surfaces, instead of being of a uniform color, presented a peculiar variegated appearance, foreign to an untreated and unmodified eruption of psoriasis. This appearance was accentuated by areas of perfectly normal, oval, circular, and irregularly outlined patches, lying within or enclosed by the active parapsoriatic plaques. Furthermore, the color of the individual plaques varied, in that one portion presented one shade of red, another portion gradually shading off into another hue. Another feature not seen in psoriasis is the sharp outline of the edge of one segment of a patch, and the indefinite line of demarcation seen in the opposite segment, as it gradually fuses with the normal skin adjoining. In contradistinction to psoriasis, only the slightest amount of infiltration was elicited in some few of the lesions. Scratching of the surface of the patches produced no bleeding points. Dermographism was moderate, but in psoriasis it is usually absent altogether.

The fourth case, as has been said, was looked upon as an early eruption of leprosy. This diagno-



sis, based, of course, upon purely clinical grounds, was adhered to until the microscope revealed the true nature of the lesions. The patches on the forearm simulated this disease in their color, outline, consistence, localization, and configuration. In short, a clinical differentiation in this patient was not feasible. The diffuse and macular patches of leprosy are, however, usually more sharply defined than the lesions seen here. In leprosy the surface of the lesions frequently present distinct evidences of atrophy, a feature lacking in this case. In addition, the differential diagnosis must rest largely upon the other clinical findings common to leprosy and absent in parapsoriasis—thickening of the ears and the skin under the eyebrows, infiltration of the ulnar nerves, areas of cutaneous anesthesia, disturbances of tactile, temperature, and pain sensibilities, muscular atrophies, etc. The lack of palpable infiltration in early macular leprosy is common to both diseases. It must always be borne in mind that cases of macular leprosy are sometimes encountered in which the concomitant symptoms enumerated above may be entirely lacking, at least for the time being. Such instances always will present diagnostic difficulties.

The patches on the forearm also resembled *tinea versicolor*, but differed from this affection in the absence of furfuraceous scaling, the lack of the characteristic yellow color, and the localization of the lesions. *Tinea versicolor* may appear, now and then, on the forearms, but never without extensive patches of the disease on the chest, back, and upper arms.

The fifth case presented a maculopapular eruption which so closely simulated the early eruptions of syphilis that the latter diagnosis, in the hurry of dispensary work, was actually entertained for the moment. The patient's reply to the question, How long have you the eruption?, immediately eliminated syphilis, its duration being more than two years. It simulated a secondary syphilitic rash in its localization, the disseminated distribution of the lesions, their size, and configuration. It differed from the maculopapular syphilide in the fact that the color—raw ham and reddish brown in syphilis—was a deep red in most of the elements; and that the palpating finger could discern little or no infiltration in the papular lesions. In other words, the lesions were *on* the skin instead of being *in* it. The characteristic grouped arrangement of the papules of syphilis was lacking. The palms of the hands and the face were free, as were the mucous membranes. Adenopathy and the other concomitant symptoms of syphilis were absent. There was no indication of a chancre at some previous period.

The eruption resembled lichen planus disseminatus in the general appearance of the exanthem and in the distribution of the lesions. It differed from this disease in the lack of infiltration, absence of the violaceous tint, in being devoid of polyhedral, glistening, umbilicated papules, freedom of involvement of the buccal and lingual mucosæ, absence of pruritus, and in that the areas of predilection in lichen planus—the flexor surfaces of the forearms, the back of the neck, the glans penis, etc.—were not implicated. The tiny linear hyperkeratoses so

frequently observed on the papules of lichen planus were lacking.

Urticaria pigmentosa may at times exhibit an eruption not unlike the one under discussion. But this disease usually (though by no means always) begins in infancy, and the lesions, beside being macular and papular, may also be vesicular in type. The individual lesions are usually deeply pigmented, but the color may vary from salmon yellow to deep brown. Some of the lesions may be surrounded by a distinct pigmented zone. The face, scalp, palms, and soles, practically immune to parapsoriasis, may be involved in this type of urticaria, and the buccal mucosa may also be affected. Fresh lesions may appear frequently, or they may break out in crops at long intervals. Pruritus may be severe, although it is sometimes lacking. Infiltration is a prominent symptom in urticaria pigmentosa. Dermographism is common to both maladies, but is much more pronounced in urticaria.

With the aid of the laboratory, the differentiation of the various types of parapsoriasis from the maladies discussed above, becomes a comparatively simple matter. Aside from the more or less characteristic histopathological picture which obtains in all types of parapsoriasis, we have at our disposal the microscopic findings in relation to bacteria, mycelia, and spores, spirochætæ, etc. The serological tests, inoculation tests, etc., may also, of course, play an important part in the diagnosis of a given eruption.

The study of microscopic sections of the lesions of parapsoriasis has received much attention at the hands of investigators. Arndt, in his recent work, has covered practically the entire subject. All, or nearly all, of the maladies which simulate parapsoriasis clinically, possess a histopathological structure so greatly at variance with the characteristic changes observed in parapsoriasis, that a microscopic differentiation usually entails no difficulties. The remarkable uniformity of the minute structure of parapsoriatic lesions is a circumstance which has been emphasized by nearly all investigators who have had the opportunity to examine sections from a variety of cases belonging to this group.

The comprehensive study of this group made by Arndt led him to the conclusion that the microscopic picture is not absolutely characteristic, and that without knowledge of the symptoms, course, duration, chronicity, resistance to treatment, clinical appearances, etc., of the eruption from which a given section is submitted for study, we are rarely justified in establishing a definite diagnosis of parapsoriasis. He does not wish to imply that the histopathological findings play a subordinate part in the diagnosis, but he maintains that the microscopic appearances are merely an important aid. Such a conservative attitude is characteristic of Arndt, and it is safe to say that the opinions at which he has arrived will be corroborated by other pathologists.

Nevertheless, it must be admitted that the microscopic findings in our five cases present a remarkable uniformity in pathological alterations. This uniformity in structure is all the more striking in view of the marked dissimilitude in the clinical appearances of some of the eruptions, such, for example, as obtains in Case v, compared to Case i.

It has come to be regarded as a pretty well established fact, however, that the structural differences are merely expressions of variations in the age of the lesion, the amount of edema which it presents, its intensity of inflammatory changes, etc., and that the grouping together of these clinically dissimilar dermatoses is justifiable, in view of the microscopic findings.

Taking our five cases collectively, we find that the changes depicted in them deviate hardly at all from those noted by Fox and Macleod, and summarized by them as follows: Dilatation of the subepidermal capillaries; flattening of the papillary bodies; edema affecting the fibrous stroma near the dilated vessels; edema and rarefaction of the collagen; elastin does not stain well;<sup>1</sup> infiltration of small cells like lymphocytes with a few polynuclear leucocytes among them; thinning of the overlying epidermis; interepithelial edema and presence of leucocytes; edema of the granular cells; no stratum lucidum detected; stratum corneum showing tendency to desquamate; only here and there could imperfectly cornified cells be found retaining nuclear remains; where these latter cells were present, the granular layer was deficient.

Regarding the mode of production of these changes, the consensus is that the alterations in the epidermis are of secondary character. The primary changes take place in the upper portion of the corium, in which region the activity of the morbid process is manifested by the marked dilatation of the bloodvessels. Recent authors believe that chronic vasomotor disturbances induced by toxic products play a dominating part in the pathogenesis of the disease.

The course, prognosis, and treatment have already been considered in the description of the cases.

For his permission to incorporate in this report the two cases from the Vanderbilt Clinic, my thanks are extended to Professor Fordyce. For the preparation of the histological sections I am indebted to the technician of the dermatological laboratory in the same clinic. Two of the accompanying photographs were kindly taken for me by Doctor MacKee.

#### REFERENCES.

1. ARNDT: Ueber Brocq'sche Krankheit (Erythrodermie pityriasis en plaques disseminées) nebst einigen Bemerkungen zur Frage der Parapsoriasis. *Arch. f. Dermat. u. Syph.*, c, p. 7, 1900.
2. ANTHONY: The Report of a Case of Parakeratosis Varietata. *Jour. Cutan. Dis.*, xxiv, Oct., 1900, p. 455. 3. BRUGG: Parapsoriasis. *Ibidem*, xxi, July, 1903, p. 315. 4. CORLETT and SCHULTZ: Parapsoriasis: A Resistant Maculopapular Scaly Erythrodermia, with a Report of Three Cases, together with Pathological History. *Ibidem*, xxvii, Feb., 1909, p. 49. 5. FOX and MACLEOD: On a Case of Parakeratosis Varietata. *Ibidem*, xix, Sept., 1901, p. 424. 6. ORMSBY: Erythrodermia. *The Skin*, 1911, p. 1. 7. RAVOGLI: Ueber die Erythrodermia Squamosa. *Journal de M. d.*, xxxviii, July, 1905, p. 109. 8. SUTTON: The Classification of the Chronic Resistant Macular and Maculopapular Scaly Erythrodermias. *Jour. Mo. State Med. Assn.*, Dec., 1913. 9. TRIMBLE: The Chronic Scaly Erythrodermias. *Journal of M. d.*, July 24, 1909, p. 264. 10. UNNA, SANTI, and POLLITZER: Ueber die Parakeratosen im allgemeinen und eine neue Form derselben (Parakeratosis variegata). *Monatsh. f. prakt. Dermat.*, x, 9 and 10, 1890. 11. J. C. WHITE: Case of Brocq's Erythrodermie pityriasis en plaques disseminées. *Jour. Cutaneous Dis.*, xviii, Dec., 1900, p. 536. 12. IDEM: Erythrodermie pityriasis en plaques disseminées. *Ibidem*, xxi, April, 1903, p. 153. 13. WERTHER: Ueber einen Fall von Pitiriasis Ichthyoides (besser: polymorpha) chronica, welcher die drei Typen der Parapsoriasis vereint. *Dermat. Ztschr.*, xxii, 6. June, 1915, p. 320.

24 WEST FIFTY-NINTH STREET.

#### KERION.

A Case Complicated by Abscess.

By JACOB GROSSMAN, M. D.,  
New York.

As uncomplicated cases of kerion are comparatively rare, a report of the following case may prove interesting. Kerion, sometimes called trichomycosis capillaris and tinea kerion, occurs chiefly in children of poor constitution. It is most commonly due to the trichophyton fungus which passes down deep into the hair follicles.

Occasionally it may be caused by the application of irritants to the scalp or may follow eczema or favus. In this case the trichophyton fungus was the cause, as a history of a preceding ringworm was obtained.

CASE. Elsie B., aged six years, two weeks ago, that is prior to her visit to my office, complained of itching and burning in her scalp. The mother paid no attention to this complaint, as a superficial examination revealed nothing abnormal. The itching and burning became progressively worse until the mother became worried and on closer examination discovered a small red scaly spot on the scalp.



FIG.—Author's case of kerion; photograph taken after abscess had been cured.

At that time the spot was the size of a ten cent piece. The mother went to her druggist who advised the application of a carbolic acid ointment. After clipping the hair, the ointment was applied twice daily for two weeks with no relief but with marked progress of the condition.

Three days prior to her visit to my office, the mother accidentally scratched the affected area with a comb; the scratch subsequently served as the portal of entry for the abscess which complicated the condition. The child was brought for the treatment of the abscess and not for the kerion.

The swelling which was situated on the vertex, was round, red, edematous, hot and fluctuating and about the size of a silver dollar. Its surface was uneven and studded with a number of yellowish suppurating points and foramina, out of which a sticky, gelatinous, yellowish fluid oozed. The hair in the affected area was broken off and the ends were split. The hair about the patch was dry and lusterless and very brittle. On opening the swelling, yellowish pus escaped. I may add that the scalp in the affected area was necrotic, probably due, not only to the infection, but also to the persistent overuse of carbolic acid ointment.

#### TREATMENT.

The treatment consisted in incising the abscess, with draining and application of wet dressings.

<sup>1</sup>Elastic tissue unstained in our specimens.

After the wound had healed, treatment for the wound was instituted.

The mother was instructed as to the communicability of the condition and the importance of the child's using her own wearing apparel, including hat, and especially of using her own towel.

The hair was cut short, the affected area was shaved and epilated. The scalp was then scrubbed with soap and water, so as to remove all the scales. Tincture of iodine was then applied.

A sulphur ointment in the following combination, croton oil, one dram, sulphur ointment, one ounce, was recommended. Directions were to rub this into the scalp daily. Epilation and scrubbing with soap and brush were practised once a week.

In three weeks the condition had practically cleared up.

1054 BOSTON ROAD.

## THE ARTFUL ACARUS.

### *Scabies Exposed,*

By WILLIAM P. CUNNINGHAM, A. M., M. D.,  
New York.

Assistant Professor, Hunter Hospital, Dermatological Department;  
Visiting Assistant, Skin and Cancer Hospital.

The whole field of dermatology does not present a disease of common occurrence that is the cause of more confusion than scabies. The fact that it is of common occurrence makes this confusion more serious and costly. If it appeared only at very long intervals the failure to diagnose it would produce but trivial and transitory embarrassment. The physician might urge in extenuation that he could hardly be expected to be familiar with dermatological freaks. As it is, however, the embarrassment is apt to be pretty frequent in any active practice, and it behooves the practitioner to acquire the information by which this may be avoided.

Sabouraud boldly asserts that scabies is a venereal disease because contagion seldom occurs except in bed. He scouts the idea that simple contact as in shaking hands can transmit it. The parasite is noctambular. The first burrows in men are on the penis and in women around the vulva. This view does not appear to be sustained by general experience, for scabies has been found in children who slept alone and, while the genitals are nearly always affected, there are exceptions where they have been exempt at least for a time. The cause is an animal parasite called *Acarus scabiei*. To apply a famous quotation from Kipling to the business in hand, "the female of the species is more deadly than the male," for it is the female parasite that burrows in the epidermis and causes all the disturbance. It digs the furrow, lays its eggs as it travels, and can be found ensconced in the farther end, as in a blind alley. The furrow shows as a little black streak, and the acarus as a white speck at the extremity. The black streak is colored by dirt, the furrow showing gray on being washed. The characteristic and in fact the only lesion produced by the acarus is the furrow. The papules, vesicles, and pustules are manifestations of secondary dermatitis caused by scratching. Yet these

sequelæ are frequently all we can find, the original lesions being swamped, as it were, by the luxuriance of the later ones. In the absence of the furrow, or rather in the circumstance of its being obscured as described, how are we to make a diagnosis? Papules, vesicles, and pustules are very common and appertain to many diseases. Nocturnal itching is significant, but not decisive, as most itching dermatoses are more troublesome at night. This is true of all sensory disturbances, because the absence of diurnal distractions leaves the mind free to focus upon the insistent irritation. The quality of the eruption and the nightly aggravation of the pruritus failing to establish a conclusion, to what other means may we have recourse in our perplexity? The acarus is a parasite of delicate constitution, and abhors the drudgery of digging into dense resisting tissues. It selects the easily penetrable places, such as the penis, the abdomen, the inner aspects of the thighs, the nipples, the axillæ, the web of the fingers and toes, and the anterior surface of the wrist. If we find the evidences of dermatitis in these situations, accompanied by the excoriations of persistent scratching, we can make our diagnosis with perfect confidence. It is not essential that all these situations should be simultaneously or even successively involved. In cleanly people, who bathe frequently, the eruption may be quite limited in distribution, and the correct opinion can be reached only by the significant involvement of *none but scabies areas*. In cleanly people also, the furrows are apt to be dimmed by the removal of the dirt that emphasizes their outline. Let it not be a matter of surprise that we talk of cleanly people having scabies; despite the declaration of the celebrated Frenchman quoted above, scabies is not always contracted in bed and at night. There is abundant evidence of its occurrence in fastidious people, sleeping alone, and undoubtedly affected by accidental contact under unusual circumstances. Admittedly, the proportion of such cases to the grand total is small, and this very fact makes them elusive and confusing. But the peculiar topography, especially of circumscribed eruptions, should resolve the doubt. For, whereas a widespread dermatitis would overstep the bounds usually invaded, and thus obscure the picture, a limited eruption would keep to the tissues irritated by the acarus, and even if scanty, preserve the clinical type. To illustrate; an itching dermatitis affecting the abdomen, penis, and inner surfaces of the thighs, would be more distinctive than a similar eruption generally distributed by carelessness and filth over localities not ordinarily attacked by scabies. Again, a few itching papules about the nipple and anterior edge of the axilla should be more suggestive than a general involvement of the cutaneous surface. A few masterly strokes of the artist's pencil produce a perfectly clear and unmistakable portrait; the slovenly touch of a bungling amateur suffices to efface it. A few lesions coordinately placed will bring out a perfectly true picture of the disease, while the scouring nails of the insensate victim scattering the lesions far and wide may almost destroy its identity.

The disfigurement produced by the incessant traumatism brings about eventually a superficial resemblance to that particular form of dermatitis still de-



nominated "eczema," and it is with this that it is most frequently confounded. To the eye of experience the differentiation is not difficult. The inexpert is bewildered by an avalanche of polymorphous phenomena, raging over the skin without apparent order or restriction. Because of the itching, the thickened plaques here and there, the oozing and the crusting, "eczema" appeal to the general clinician as the likeliest road out of the morass. "Eczema" is attacked with all the vigor of the medical library, but the cause being overlooked, little or no impression is made on the eruption. After two or three changes of ointment, the doctor and patient, in mutual disgust, sever their unsatisfactory relations, and the latter drifts into other and probably just as ineffective hands. If the observer bore in mind the existence of such a disease as scabies, and considered it among the possibilities in the chaotic clutter before him, he would soon lay hold of the end of the thread that unravels the mystery. In an itching dermatosis with nocturnal exacerbations, take note of the distribution, search the interdigital surfaces, the anterior surface of the wrist, the external surface of the elbow, the anterior margin of the axilla, the neighborhood of the nipple, the abdomen below the navel, the groins, the penis or vulva, the inner aspects of the thighs, the buttocks, and the toes, and if you find these areas involved, or even several of them, no matter what may be the nature of the lesion, papular, vesicular, pustular, or ploughed up into the oozing infiltrations of secondary "eczema," make a diagnosis of scabies and assure the sufferer that he will be speedily relieved and shortly cured if he faithfully follows instructions.

Furrows are pathognomonic, but as already observed, furrows are not always discoverable, especially in long standing cases. The distribution is the important element in the differentiation. It has been intimated that this may be established, even when only a few of the customary haunts of the acarus are invaded. Various combinations may be struck that are nearly as decisive as a complete distribution. For instance, fingers, wrist, and penis; abdomen, penis, and inner aspects of the thighs; nipples, axillae, and buttocks; nipples, vulva, and thighs; fingers, toes, and penis; vulva, nipples, and fingers. The wary reader has no doubt detected the omission of the face and head from our description. This is due to the fact that in this country scabies never occurs in those regions, except in nursing babies, and then the anomaly is offset by the discovery of the disease on the mother's nipple. The exemption of the face and head even in extensive cases in adults, admits of no explanation. It cannot be that the acarus avoids regions exposed to the air, for it almost always attacks the fingers; nor is the skin of the face denser than that of the palms, whereon, especially in children, the telltale lesions are apt to extend. We are forced to the conclusion that the acarus, like its human host, is the victim of idiosyncrasies.

Pediculosis corporis is another disease frequently confounded with scabies. In the very nature of things this is confined almost exclusively to uncleanly subjects with whom bathing is epochal, and the changing of underwear a foppish weakness. Nat-

urally any person can acquire the parasite, but the cleanly will quickly be rid of it. It infests the seams of the clothing, and sucks its pabulum from the skin. In consequence its ravages are confined to parts covered by the clothing. This would distinguish it at once from scabies, which rarely overlooks the fingers. Another marked difference is in the distribution, which may be said, in general terms, to reverse that of scabies. To illustrate, the region of the neckband of the undershirt, the waist line where the trousers make pressure, the shoulders, the outer sides of the arms and legs, where the seams are in closest contact with the skin, come pretty sharply in contrast with the hunting grounds of the acarus. In an aggravated case the extension may be almost general, but the sites of predilection will reveal the greatest trauma. A sign of much importance is the parallel scratch marks found on the shoulders of the patient. Now parallel scratch marks have no deep and recondite significance. They indicate a furious assault upon the skin by all the available fingers brought simultaneously into action. Any marked pruritus might call forth this phenomenon. But parallel scratch marks on the shoulders, known to be the habitat of the pediculus, have a peculiar significance that may be regarded as pathognomonic. In searching for the pediculus, do not expect to find it on the skin. It simply invades the skin to suck, and on the signal of danger promptly retreats to the seams of the underwear. Hunt in these seams and you will find it readily enough.

Vesicular urticaria has been mistaken for scabies when the lesions have become infected from prolonged scratching. The manifestations of urticaria are apt to occur anywhere, and therefore may involve the scabies areas. Here will be a combination of intolerable itch, worse at night, and pustular lesions, in the suggestive situations. To distinguish between the two, remember the extreme rarity of scabies on the face and the relative frequency of urticaria there. Search for wheals among the pustules; if they are found, the diagnosis is clear at once. Inquire whether the scratching brings out new lesions *immediately*; this makes for urticaria. The pustules and vesicles of urticaria are readily influenced by treatment, although the tendency of the disease as a whole is tenacious and obstinate. After all, it will be a unique conjunction of circumstances that will so dispose the lesions of an infected urticaria, as to arouse a doubt; but this has occurred and may occur again.

Unrecognized, long continued scabies has more than once been ticketed dermatitis herpeticiformis. With the dermatologist the chance of such an error would be very remote; but as this paper has been written, not for the dermatologist, but for the clinician little familiar with the nicer differences between cutaneous diseases, it is proper to describe the situation as it would appear to *him* and resolve the doubt aroused in *his* mind. Let us note the points of contact and divergence.

The points of contact are: Dermatitis herpeticiformis is a chronic disease. I have seen scabies that had lasted two years, kept under by constant washing but never cured. Dermatitis herpeticiformis may be of general distribution and take in the

scabies, herpes. Both diseases cause intolerable itching. In the present papules, vesicles, and pustules.

The points of divergence are: Dermatitis herpetiformis occurs on the face; scabies never, except in babies. (In Norway scabies is so virulent that it does invade the adult face.) Dermatitis herpetiformis occurs on the mucous membranes; scabies never. Dermatitis herpetiformis has a predilection for the scapulae, elbows, and sacrum. Scabies does not follow this combination. Dermatitis herpetiformis produces groups or clusters of lesions that are diagnostic. Scabies has no such tendency. Dermatitis herpetiformis leaves staining and scarring at the site of departed lesions. Scabies leaves a clear skin.

There is very little likelihood of confounding scabies with any other than the three diseases mentioned. As a matter of fact, its recognition will be easy, if the possibility of its occurrence is not ignored. It is because it is not thought of that it is overlooked.

#### TREATMENT.

The treatment is speedily effective, if faithfully carried out. To illustrate the essential requirements, it will be worth while to relate the manner of handling these cases in the French hospitals. A number of patients having been admitted, they are stripped naked and their clothing is wrapped up, ticketed, and put into a dry air sterilizer. The patients, to the number of twenty or more, are put together in a room where they occupy themselves in soaping and bathing one another. After a thorough scrubbing, they rub into one another the particular ointment in favor at that institution. After this they have another bath. The whole proceeding consumes about three hours. They are then sent out to the room where they receive their clothes, now completely rid of their verminous occupants by long exposure to a high degree of heat. The patients having gone through this course of treatment, are pronounced cured—in three hours! We are not as hopeful of such speedy results, and this method is cited, not for imitation, but to emphasize the measures necessary for success. First and foremost, it will be useless to destroy the parasite in the skin unless we also destroy it in the clothing. Hence the underwear must be boiled before it can be worn again. Wristbands and collars of coats must be soaked in naphtha or the whole garment sterilized by heat. The patient must take a hot bath, and rub himself vigorously with common brown soap to open up the furrows. He must soak in hot water for half an hour. Then he must rub in a parasiticide, for half an hour longer. Now he must put on a suit of underwear perfectly new or sterilized by boiling. This he keeps on for three days and three nights. Every night and morning he rubs in the ointment designed to destroy the acarus. The underwear quickly becomes impregnated with the medicament, which is thus kept in constant contact with the skin. At the end of the third day he takes another hot bath and watches results. If he has been vigorous and faithful, he will be cured. If any of the furrows have escaped the scrubbing and anointing, the process must be repeated. Persistence will soon win.

Sulphur is the great acaricide. It may be used pure or in various combinations. Storax and tar are likewise effective. A combination of the three is made with advantage. Balsam of Peru has much to recommend it, especially in children whose skins might react badly to the stronger applications. Armed with these four remedies, failure can follow only careless or unintelligent manipulation.

After the parasite has been routed out and destroyed, a certain amount of pruritus may persist through habit or the continuance of the dermatitis. This may be allayed by the applications usually employed for acute eczema.

It may be objected that considerable ink has been wasted in retelling such an oft told tale as scabies. But while trite and commonplace, dull and sordid, it nevertheless assumes commanding importance, when unidentified and uncontrolled. The frequency of this occurrence in my own experience, repeated undoubtedly in the experience of every other dermatologist, is warranty enough for the revival, circumstantial description, and reiterated emphasis on this plebeian subject.

616 MADISON AVENUE.

#### PROLIFERATING TUBERCULOUS CYSTITIS.\*

*With a Report of Three Cases.*

BY MAURICE LAVERRIERE, M. D.,  
Lyons, France.

As a preliminary remark to the study of proliferating tuberculous cystitis, I would say that in all the cases of this affection with which I am familiar, the patients had been or were actually affected with important pulmonary lesions.

As in any variety of cystitis, pollakiuria and pain are present in the disease under consideration, but the important point is the slight intensity of the functional symptoms. In one case reported by Pousson and Oraison, micturition took place from ten to twelve times in twenty-four hours; in another recorded by the same surgeons, nocturnal micturition occurred every three to four hours, while in a third, during the day the patient urinated every two hours and only once or twice in the night.

The terminal cystalgia in proliferating tuberculous cystitis is likewise very slight, and can probably be explained by the integrity of the epithelium of the vesical mucosa, because in this variety ulcerations do not exist. On the other hand, the contact of the cystoscope with the bladder walls and urethrovaginal orifice was rather painful.

In the three cases here recorded the bladder capacity was good, the organ being able to contain from 200 to 300 c. c. of fluid. In Pousson and Oraison's cases there was severe hematuria, a symptom which was absent in the three I record.

The urine in these cases contains a considerable amount of pus, but this comes from the diseased kidney, because it rapidly disappears after nephrectomy has been done.

The cystoscopic lesions found in one of our cases are as follows: Between the two ureteral orifices

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and surrounding them completely, exists a layer of rounded granulations varying in size from that of a grain of wheat to that of a small pea. Some are red, others rosy, others white, resembling unequally ripe raspberries. Their epithelial covering appears to be intact. Thick bits of pus hide the left ureteral opening, the right one being easily seen. There are no ulcerations. The situation of the granulations around the ureteral orifices pleads in favor of descending renal infection. In our cases the vesical mucosa was intact, while in those of Pousson and Oraison, the rest of the mucosa was red and generally inflamed.

Ureteral catheterization in our three cases distinctly showed the unilateral renal origin of the pyuria. I here take the opportunity of offering my thanks to Doctor Gauthier for permission to publish the three cases.

CASE I. Female, aged thirty-five years, entered hospital for a severe pyuria which had been present for eighteen months. She had had cough and expectoration for the past eight years. Five months ago Doctor Tixier had detected an enlarged left kidney, but on account of the pulmonary symptoms operation was postponed. Since then, these had improved; there was less fever, and the general health was better.

Examination, February 3d: Lungs. Scattered points of softening in left lung; bronchitis, heart normal. Abdomen somewhat large, without distinct signs of chronic peritonitis. Left kidney enlarged to the size of two adult fists; very little mobility with respiration, so that a perinephritis with a suppurating kidney was diagnosed. Right kidney could not be felt. Bladder capacity 250 c. c. Contact of cystoscope or catheter with bladder walls gave rise to much pain. From ten to twenty micturitions in twenty-four hours with terminal cystalgia. Urine very purulent; total in twenty-four hours 700 c. c. Total urea, 11.35 grams.

Cystoscopy: Lesions limited to the floor of the bladder. Between the two ureteral orifices and surrounding them was a layer of granulations, the description of which has already been given above. No ulcerations. Catheterization of the right ureter with No. 7, and a temporary catheter in bladder. The extension of the bladder lesions to the right ureteral orifice led me to suspect that the renal lesions were bilateral. However, when the first portion of urine was voided, the urine collected from the right kidney was clear, and after centrifugation no leucocytes could be detected. The analysis of 15 c. c. collected in a quarter of an hour gave 14.8 grams of urea and 12.3 grams of chlorides to the litre. Enough was learned to show that the right gland would be sufficient to carry out the functions after nephrectomy of the left. Inoculation of guineapigs was not done because the tuberculous nature of the process was more than probable. However, the type of proliferating cystitis present is most uncommon in urinary tuberculosis.

Operation, February 12th, Doctor Tixier: A perirenal sclerofatty mass was exposed, from four to five cm. thick, in the centre of which a normal sized, pluricavernous kidney was found. The organ was with difficulty removed by morcellation and the renal pelvis was left behind, but a portion of the sclerolipomatous mass was removed. February 24th, twelve days after the operation, the notes say: The first three days after operation there was a serious pulmonary reaction and a slight rise in temperature. Slowly the dyspnea, cough, and expectoration subsided, likewise the fever. The amount of fever, from 250 c. c. the first two days, rose to 500 c. c. on the third, and by the tenth day the patient voided a litre. The urine is now clear, with only a slight deposit. The pollakiuria and cystalgia are greatly improved and urine is voided only three or four times in twenty-four hours.

By March 18th, progressive improvement was noted. The incision, which was left open after the operation, has filled in and the general health much improved. There was apyrexia since March 11th. A guineapig inoculated with a bit of the kidney is manifestly tuberculous.

Cystoscopy, March 20th, a little over a month after the nephrectomy, shows the bladder greatly changed for the better. The interureteral granular layer has almost entirely disappeared, almost normal mucosa having taken its place. One small spot still persists near the left side of the neck. The right ureteral orifice is only somewhat red, while the left is covered by a red granulation the size of a pea, and a paroxysm of coughing causes a drop of yellow pus to issue from it, coming from the ureter.

By May 22, the sclerolipomatous perirenal mass had diminished about two thirds in size; two fistulae were present in the incision. The lungs were better and the patient left the hospital. July 1st, progressive improvement was obvious; there was no nocturnal micturition and perfect control during the day. Urine was clear; vesical capacity 300 c. c. According to the cystoscopy, the little granulation over the left ureteral orifice had vanished, but a drop of pus was seen to adhere to it.

There are three discharging fistulae in the line of incision. The continued parietal and intravesical suppuration is certainly due to the presence of the renal pelvis, left behind because it could not be removed. The pulmonary lesions are stationary.

CASE II. Female, aged thirty-four years, referred by Doctor Mouisset, had had Pott's disease and tuberculous lesions in both apices, now cured. Since the beginning of 1909, had had symptoms of cystitis and severe left lumbosacral pain. Doctor Mouisset diagnosed a renovascular tuberculosis, confirmed by a positive inoculation of the urine in the guineapig.

Examination, July 19, 1909, showed general health to be quite good. Patient said she had lost eight pounds since the commencement of her urinary disturbances, but she was still stout. Appetite good. Strength somewhat diminished. There was a polyfibromatous uterus which did not compress the ureters. Left kidney could not be felt; the lower pole of the right was palpable. On the left the subcostal, costomuscular, and superior strait painful points did not exist. On the right, palpation of the ureter at the superior strait caused a reflex pain at the same spot on the left.

At first there was terminal cystalgia which has disappeared. Normal capacity, 350 c. c. Bladder not irritable. Two nocturnal micturitions, decreased lately from four to five. Total urine in twenty-four hours from 1,500 to 1,800 c. c. uniformly cloudy when voided. By repose, a large whitish deposit. After centrifugation, very numerous leucocytes and numerous tubercle bacilli; no other organisms.

Cystoscopy showed, from one ureteral orifice to the other, the vesical floor to be covered by red granulation of the raspberry type; some were rosy in hue, others almost white. The latter were distinctly edematous. The lesions were more marked on the left. The rest of the bladder was normal; no ulcerations. The ureteral orifices were visible. A ureteral catheter was finally made to pass through the granulations and into the ureter. Unsuccessful on the left. A No. 18 catheter was introduced into the bladder to collect the left urine. Experimental polyuria test was made. From the study of the urine the following conclusion was drawn: Left kidney: Purulent urine; experimental polyuria good, but total urea manifestly insufficient (23 cgm. in two hours). The lesions were advanced. Right kidney: Urine clear; no leucocytes. Polyuria good, total urea small (67 cgm. in two hours). Should be sufficient to carry on functions after left nephrectomy. The lesions in the bladder would probably disappear quite rapidly.



Operation, August 17, 1909, found the kidney to be distinctly tuberculous, but the lesions were not advanced and were discrete. The importance of these lesions was not in relation with the preoperative functional examination. This discordance can be explained by the inhibition exercised over the healthy secretory parenchyma by the young granulations in activity.

The outcome was simple. Complete cicatrization was obtained in one month and the temperature was never up. The urine became clear and the day after the nephrectomy 600 c. c. were voided; this reached 2,000 c. c. on the fifth day and 2,600 c. c. on the tenth.

The patient was seen three months later, when she had gained nine pounds and looked well. Urine was clear without albumin; two nocturnal micturitions. Cystoscopy showed that the granulations had disappeared. The right normal ureteral orifice could be distinctly seen with two small rosy granulations near by, being all that remained of the former lesion. Between the two ureters the bladder floor presented some lenticular areas having a cicatricial aspect.

CASE III. Female, aged twenty-three years, examined January 7, 1910. Coughed a little since taking cold in the summer of 1909. For a year had had a pollakiuria, cystalgia, and right renal pain. Dyspepsia for many years. Had not lost flesh and continued her work as a teacher. At present urinated every two hours in the day time, once or twice in the night, sometimes not at all. Cystalgia and right renal pain had decreased of late.

Examination: General health fair. Signs of an old right sided pleurisy over the entire pleural cavity. No evidence of pulmonary localization in evolution. Left kidney could not be felt by palpation. The right was enlarged and its lower two thirds could be felt. Bladder capacity, 200 c. c.

Cystoscopy showed around the right ureteral orifice a ring of raspberry-like granulations the size of a strawberry. Left ureteral orifice healthy. Remainder of bladder normal; no ulceration. A No. 7 catheter introduced into left ureter and another in the bladder as it was impossible to pass one into the right ureter. The patient was given 500 c. c. of water to drink, and at the end of two hours the urines collected were, on the right, 230 c. c., total urea one gram; on the left, 353 c. c., total urea 1.8 gram. Right urine purulent. Left urine contained a slight excess of leucocytes without real pyuria. The left kidney being functionally good and with compensation hypertrophy, the slight leucocytosis could not be regarded as a contraindication to nephrectomy.

The right kidney still possessed a considerable amount of healthy parenchyma, but if tuberculous it must be removed. Two guineapigs were inoculated January 7th; one died eleven, the other seventeen days later; no tuberculosis, but their intense cachexia led to suspicion of tuberculosis (F. Arloing). On February 5th, Professor Arloing found three tubercle bacilli in a specimen of urine, and two guineapigs were inoculated with the same specimen. On March 5th they were killed and presented manifest visceral and lymphatic tuberculous lesions.

Operation, March 21st, by Doctor Gauthier, was a right nephrectomy. The kidney was more than twice its normal size, and contained two cavities the size of a small apricot and scattered tubercles. The renal pelvis was thickened and dilated, the ureter supple and dilated, without perilipomatosis. The septic sac could be removed without bursting. Separate ligatures were placed on the pedicle. A posterior drain was inserted and the remainder of the incision closed in two layers.

March 23d: No fever; slight pain. Urine almost clear; total in twenty-four hours, 500 c. c. April 7th: Total urine, 1,600 c. c., and from this time on it averaged about

the same. April 17th: Incision completely closed. Temperature normal. April 25th: General health, appetite, and strength excellent. Pulmonary auscultation revealed the same signs of old right sided pleural adhesions. For several days there had been no nocturnal micturition and during the day the patient voided urine every two to three hours. No cystalgia. The twenty-four hour urine collected in a glass was cloudy, but that collected by catheterization was clear. No albuminuria.

Cystoscopy showed the right ureteral region to have cleared up. The orifice could be distinctly seen, although the surrounding mucosa was still somewhat glandular, but the granulations were rosy. The left ureteral orifice was distinct and the surrounding mucosa normal. Between the first cystoscopy, on January 7th, and the nephrectomy, the functional vesical symptoms became worse, this being undoubtedly due to an increase in the proliferating cystitis, because the vesical floor was not completely cleared of the vegetations.

Improvement in this patient is very marked, and the lesions will probably disappear completely. The cystoscopy was well tolerated and the 200 c. c. of solution introduced for this purpose gave rise to no pain.

## CHRONIC URETHRITIS, GONORRHEAL AND POSTGONORRHEAL.\*

### *A Plea for Its Closer Study.*

BY A. STRACHSTEIN, M. D.,  
New York,

Attending Genitourinary Surgeon, Har Meriah Hospital; Assistant Surgeon, Department of Urology, Cornell University Clinic, etc.

Of all affections in the domain of minor urology, that of chronic urethritis stands out preeminently as the one which is most trying to the skill and patience of the urologist. Ricord (1) advisedly stated that we know when a specific urethritis begins, but only the Almighty knows when it ends. It is astounding to find so large a number of patients who for reasons to be considered hereafter, have passed into a chronic state, and because of failure to procure proper therapeutic measures, have become indifferent about their condition and have despairingly abandoned treatment.

My reasons for writing this paper are twofold: First, to arouse a deeper interest among urologists in the subject of chronic urethritis, and, secondly, to impress on the general practitioner that chronic urethritis is by no means a simple affection that will either take care of itself, or end in recovery by the aid of those who are not specially trained in this branch of medicine.

The necessity of the former reason for writing this paper, manifests itself when we consider how few are the papers that are read at our section meetings and what lack of consideration is given to this widely prevailing affection. The latter reason, i. e., to impress on the general practitioner how serious a malady chronic urethritis is, will be well understood when we investigate the disastrous effects brought upon the community by improperly cured patients (2).

When is a case considered to be chronic? Casper (3) and others are of the opinion that when a case of acute specific urethritis does not show any tendency toward abatement at the end of the sixth

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week, it may be said to have passed into the chronic state.

**Etiology.** In order to have a clear understanding of the subject, it is advisable to consider the many etiological factors that are in varied degrees responsible for this malady. These may properly be divided into causes of local and those of general origin. Among the latter, too irritating or strong injections used during the acute state prolongs the existence of the discharge and finally causes it to pass into the chronic state. It is not uncommon to find patients who have been advised by friends to procure protargol or similar salts, without the physician's prescription or directions for its use. The usual result is that they procure a solution which is from four to eight times stronger than would do good. Then there are patients who do not abstain from sexual intercourse during the course of treatment, because as they put it, "things come their way" and it is hard to let them pass. Others say that the wife insists upon coitus irrespective of the outcome. The third group of patients of this class simply become freshly reinfected before the previous attack is eradicated. We frequently meet in the clinics patients who cease treatment and consider themselves cured as soon as the discharge is no longer visible at the external meatus, but to their great disappointment they find that they have erred in their diagnosis and this manifests itself soon after their first indulgence in venery or in alcoholic debauchery. Physical exertion we found to be a repeated factor. Thus, patients whose occupation compels them to walk the greater part of the day or otherwise to be physically active, present invariably protracted cases. For instance, there are patients who get on well when under treatment and a cure is not far off until they attend a dance usually lasting into the early hours of the morning, with the usual effect of not only a setback in the progress of the case, but also of an involvement of the posterior urethra.

Misdirected treatment is perhaps more frequently the cause than all other causes combined (4). Patients are frequently advised to procure a hand syringe for anterior injections, but are not instructed as to its capacity. The result is that they usually procure one that is much too large. This brings about repeated trauma by dilating the acutely inflamed and infiltrated urethra. Intemperance and various debilitating constitutional diseases are among other causes of general origin.

The local causes are as follows: *A narrow meatus.* This condition exists in a large number of patients and its presence prevents free drainage of the continually formed pus in acute urethritis. *Phimosis*, on the other hand, makes it impossible for the patient to carry out proper injections. *Stricture* of the urethra, either congenital or acquired from previous attacks of urethritis, has the same effect as a narrow meatus and is a typical cause of persistence. The existence of a *soft infiltration in the anterior urethra* or a *lacunitis* as well as *patches of abrasion* of the mucous lining of the urethra, especially in the bulb, are further causes. *Paraurethral involvement*, particularly of the glands of Tyson, may prolong a case indefinitely. Finally, *involvement of the prostate* plays an important role in

chronic urethritis and Casper states it to be responsible for eighty-five per cent. of cases (5).

**Bacteriology.** The gonococcus is the underlying cause. When superficially lodged in the urethra it can be easily destroyed when brought in contact with any of the antiseptics at our disposal; but when it penetrates the mucosa into the submucous layer, or when it entrenches itself in any of the glandular annexa that directly communicate with the lumen of the urethra, then the urologist has no easy task to dislodge it. However, Neisser's diplococci appear to die out after a number of months or years and thus convert the gonorrheal into a postgonorrheal urethritis.

**Secondary infection** (6). In many instances the discharge and the filaments contain numerous microorganisms, either alone or in association with the gonococcus. These are streptococci, staphylococci, *Bacillus coli*, and frequently also a short thick rod shaped bacillus appearing in chains. There is a variety of mixed infection in which there exists some relation between the different germs in the sense that one precedes the other and prepares the soil for its fructification. Taking pneumonia as an instance, under the influence of the pneumococcus the pulmonary alveoli lose their epithelium, which is thrown off as exudate and serves as a medium for the tubercle bacillus or other pyogenic germ (6).

Keyes, after considerable study, came to the conclusion that the gonococcus does not live longer than three years in the male urethra (7). The frequency in which gonococci are found in chronic urethritis varies. Thus, Scholtz found them to be present in ten per cent. of cases, while Casper found them in five to six per cent. Brauser found gonococci in ten cases out of a series of 163 (8). I have found gonococci in the prostatic smear six years after the original infection and after a seminal vesiculotomy was performed for gonorrheal seminal vesiculitis. It would be difficult, however, to state whether the patient was not continually reinfected from his wife at more recent dates, although she was considered to be well.

**Infectiousness.** The absence of gonococci in a scanty smear or in the filaments, does not necessarily exclude their presence somewhere in the genitourinary tract. As stated, they may be hidden in any of the glandular annexa. Hence it may be necessary to cause irritation of the urethra in order to bring the gonococci to the surface. This is brought about either by injecting into the urethra a strong solution of silver nitrate one to 1,000 or one in 2,000, or by the patient's liberal use of beer or other alcoholic liquor on the day prior to the examination. Coitus, while not recommended as a means for irritation, has the same effect in bringing some of the gonococci to the surface. Women who are affected with a latent form of gonorrhea, may not transmit the infection to men to whom they are indifferent during cohabitation, but when the act is performed with a male who pleases her and who is capable of arousing a strong orgasm, it causes a copious secretion of the infected glands, which thus empty their infected contents and expose the partner to infection. Smears of the prostate and vesicles are of paramount importance, not only for search for Neisser's diplococci, but also for pus cells and other micro-

organisms. Finger's (9) teachings, which have been accepted by many renowned authorities, are of interest. He holds every case infectious so long as the smear shows the presence of numerous leucocytes, which is an indication that an active inflammatory process is still in progress, even though gonococci cannot be demonstrated. Finger further insists that the following examinations must be resorted to in order to determine the presence or absence of infection: *a*, Daily microscopic examinations of the smear and filaments for from two to four weeks; *b*, there must be absence of pus cells from smear; *c*, absence of gonococci from a provoked discharge; *d*, absence of pus cells and gonococci from the prostatic and seminovescicular secretions.

Kopp (8) reported seven male patients who had been microscopically examined from sixteen to twenty-two times with negative results, yet all infected their wives soon after marriage. Finger and Tauton had patients in whom repeated examinations by all known methods failed to reveal the presence of gonococci, but soon after a single dilatation gonococci appeared in the discharge. The writer has had similar experiences. Patients affected with chronic urethritis frequently call at the office or clinic with a laboratory report in their pocket stating "negative for gonococci." The patient as well as his family physician accepts this to mean that he is free from infection, but the foregoing laborious investigations plainly show what a folly it is to give such an interpretation thereto.

**Pathology.** The pathology of chronic urethritis can be best understood when traced back to the very incipency of the infection. When the gonococcus is lodged in the male urethra, it remains dormant for a time (incubation period). Then it begins to penetrate the epithelium of the mucous membrane, working its way into the submucous coat. The leucocytes begin to extravasate by diapedesis from the bloodvessels of the invaded tissue and travel toward the surface of the urethra, and at once a combat begins between them and the gonococci, thus causing a purulent discharge which consists mainly of numerous dead leucocytes having in their body substance many gonococci. Incidentally the irritation caused by the gonococcus and its toxins brings about a round cell infiltration into the submucous coat, and it is at this point that we reach the parting of the ways. If the acute urethritis goes on toward recovery, regeneration takes place with absorption of the infiltrated cells. If, however, for any reason the irritation persists and the case passes into the chronic state, then the round cell infiltration becomes organized into a permanent structure simulating connective tissue with its usual property of contraction. This newly formed tissue undergoes further changes so that it ultimately resembles dense scar tissue, although not as a consequence of ulceration (10), but rather of hyperplasia. While the process is at first subepithelial only, later it penetrates deeper until it reaches the corpus cavernosum.

The intensity of the infiltration and the ultimate degree of contraction of the newly formed tissue are both responsible for the many varied other pathological changes that are found in the urethra. The shrinkage of this tissue around the lacunæ pushes them outward toward the lumen or causes their com-

plete atrophy by the surrounding pressure. Littre's glands undergo similar changes. The foregoing changes take place in the pars anterior, but the posterior urethra may undergo similar changes in addition to the following: The colliculus may become markedly enlarged and in many cases shown to contain numerous small vegetations so that it assumes a raspberrylike appearance. The ejaculatory ducts may become sclerosed at their openings on the floor of the prostatic urethra, causing mechanical obstruction to ejaculation, which explains the cause of sticking pain during that act. The ducts may, as a result, become transformed into numerous diverticula which do not empty themselves during ejaculation; the result is the occurrence of spermatorrhea brought on with each defecation.

**Diagnosis.** Since the failure to localize the focus of disease is largely responsible for the persistence of the lesion (11), it becomes self evident how important it is to determine the exact cause in each case. After a careful history is procured in reference to previous infections, as well as to the mode of treatment of the actual instance, the following examinations should be made.

1. The discharge. This should be repeatedly examined for, *a*, gonococci, *b*, other microorganisms, *c*, leucocytes as well as their preponderance over epithelial cells. As pointed out above, one or two examinations with negative findings for gonococci should not be considered conclusive. A further search should be made after provocative measures have been resorted to, to bring on an artificial discharge. This can be accomplished by injecting silver nitrate solution one in 1,000 or one in 2,000 and the resulting discharge is examined from three to six hours later.

2. The filaments. The filaments should be spread out on a glass slide with the aid of a platinum wire, and after being properly stained, should be examined microscopically. One should look for leucocytes and gonococci. When they consist of epithelial cells, they may be considered as remains of a postgonorrheal process.

3. The appearance of the urine is of considerable help, although filaments in the first glass and none in the second do not necessarily mean that the anterior urethra alone is diseased and that the posterior is free from disease. The various glass tests are so ably described in the standard works on urology, that we shall omit them here. Increased frequency will often point to involvement of the colliculus or the prostate, hereafter to be considered. The meatus should be inspected as to its size and also whether Tyson's glands are involved. A meatus below 20 or 21 F. should be enlarged.

4. The prostate and seminal vesicles. After micturition the bladder is partly filled, either with boric acid solution or with oxycyanide of mercury one to 5,000, preparatory to rectal exploration of these organs. But beforehand, the patient is instructed to pass part of the solution for the purpose of irrigating the entire urethra so as not to contaminate the prostatic fluid about to leak out. The prostate is first palpated as to size, shape, and consistence. It may be enlarged and tender, but a normal size does not exclude the presence of prostatitis. One side may be dense or nodular, while the other may be soft



and boggy. Normally the seminal vesicles are not palpable, but when chronically inflamed they may be felt like tortuous cordlike bodies running along the lateral sides of the prostate. The prostate and vesicles having been massaged, a microscopic stained smear is now examined for pus and microorganisms. Schlagintweit introduced the following macroscopic method of distinguishing between prostatic fluid, seminal fluid, and pus. Normal prostatic fluid disseminates and gives an opalescent appearance to the water, pus sinks to the bottom, and seminal vesicular fluid floats or hangs in the water.

5. Urethral localization of focal lesions. Having exhausted the foregoing methods of examination, a further search for the cause becomes necessary, since the possibilities for persistence of symptoms are numerous. The aids at our disposal are, *a*, bougies and sounds, *b*, the urethroscope. The bougie-à-boule is of undoubted value as an aid to determine the existence of constricting bands in the urethra or the actual presence of strictures. When resorting to its use, we should select the largest size that the meatus will admit, and note is made as to the size which meets with obstruction as well as the size which passes through, and also the distance of the constriction from the external meatus. The shoulder of the acorn on the bougie-à-boule will show the presence of constriction as it is withdrawn from the urethra. Palpation of the urethra on a sound will frequently reveal periurethral local infiltration or local tender spots, but for these the urethroscope is of more value.

*Urethroscopy.* By the proper interpretation of urethroscopic findings, we have at our command an aid of great service to pursue the further search of pathological lesions in the urethra. In the anterior urethra, exploration should be made for, *a*, soft infiltrations, *b*, hard infiltrations and constrictions, *c*, glandular changes, *d*, local denudations.

*Soft infiltrations.* When the urethroscopic tube is inserted, there may be a tendency to capillary bleeding. The mucous membrane appears considerably hyperemic and in certain locations like the bulb the epithelial lining may be lacking and replaced by easily bleeding granulations. The pale white striations observed in a normal urethra are not visible and the lumen, instead of being centrally situated, is displaced toward one side, showing bulging folds of infiltrated mucous membrane. While the openings of Littre's glands may not be visible, the lacunæ of Morgagni are dilated and choked with a visible drop of mucus.

*Hard infiltrations.* The tube is not easily admitted, the mucous membrane appears pale and presents into the lumen of the tube several thick folds of mucous membrane, but when the process goes on to stricture formation, these folds will no longer be visible. The glandular openings are barely visible.

*The posterior urethra.* This part of the canal may show similar pathological changes with additional ones in the colliculus. This structure undergoes changes in many instances, as described under pathology. These changes may be found in cases of nongonorrheal origin, and may be due to such cases as masturbation or excessive venery, as

is shown in a case detailed by me in a recent article (11).

#### THE COMPLEMENT REACTION

Since the reaction is dependent upon the presence of gonorrheal antibodies, a positive reaction cannot be expected until a sufficient time has elapsed for their development—three to four weeks. Cases that become strictly localized in the anterior urethra, do not become positive at all (12).

It must be borne in mind that a negative reaction does not have the same value as a positive one. This test has shown that from ten to twenty per cent. of cases that were considered clinically cured, are still infected (12). Does a positive reaction mean that there still exists a focus of living gonococci somewhere in the body; or that gonorrheal antibodies may persist for a long time after all gonococci are dead? Schwartz and McNeil think it is due to recent activities of living gonococci. A positive reaction has never been found in a nongonorrheal patient (13). Gonorrheal vaccines, when injected, give positive results when the blood is tested.

#### GENERAL MANAGEMENT.

The general health of the patient should be looked after, since improvement along these lines will aid materially the local condition.

*Local treatment.* The fundamental principle in the treatment of chronic urethritis rests largely upon the nature of the lesion found. Pathology teaches us that this process is characterized by infiltrations that are followed by contractures of varying degree. The need of mechanical dilatation of the urethra therefore becomes apparent in order to bring about absorption of the infiltrate to restore the lumen as far as possible to its normal calibre. The question arises, when to begin the dilatation treatment. Neisser, Janet, and others of equal fame, hold the view that so long as there are gonococci or other microorganisms demonstrable in the discharge, no instrumentation should be resorted to, and that their extermination should be accomplished by proper methods of irrigations before undertaking mechanical treatment. But as previously shown, the mere absence of gonococci from repeated smears is not proof positive that they are absent, hence Wossidlo thinks that in such cases one must trust to luck and start dilatations. He further states that he observed cases in which gonococci were scantily present in spite of persistent treatment by irrigations, but he caused their disappearance by starting the dilatation treatment, with general improvement finally resulting in cure. We had cases in which gonococci were not found at the end of the second dilatation, and the cases went on to recovery, but the third dilatation brought on a profuse purulent discharge containing numerous gonococci without reinfection from without.

Finger reports similar cases. The following rules may therefore be laid down as to when to begin dilatations:

1. When repeated examinations show no gonococci.
2. When persistent irrigation treatment fails to remove the few lingering gonococci, especially when the urethroscope reveals the presence of focal le-

the mucous membrane and when the clinical symptoms show no contraindications.

The extent of each dilatation will largely depend upon the condition of the mucosa as revealed by the urethroscope. If the mucosa is considerably congested, painful, and tender, the dilatation must be started at a low scale and ascend very gradually until the sensitiveness subsides. Should the urethra, however, not be sensitive, we can from the outset dilate up to No. 28 and in each successive dilatation ascend the scale from one to two numbers. When hemorrhage is brought on, it is best not to go higher at the next sitting than half a number, or else remain at the same point as at the previous dilatation; i. e., if the last dilatation was brought up to No. 28 and hemorrhage occurred, we therefore do not go higher than No. 28 at the next sitting. The frequency of each dilatation will largely depend upon the reaction set up in each case. Should hemorrhage arise, we must wait for about ten or fourteen days before the next treatment; but in cases where the reaction is mild, the dilatation may be resorted to once in eight or ten days.

The period to be expended on the dilatation treatment will be governed largely by the amount of improvement that follows and by the urethroscopic appearance of the mucosa. The type of instrument to be selected will depend upon the part of the urethra involved. The ordinary sound may be used for the entire length of the canal, and we can gradually rise in size up to a point where further sound dilatation becomes extremely uncomfortable or inadmissible by the external meatus. We therefore resume further treatment by the use of the Oberlander-Kollmann dilators. Meatotomy should be performed when the small meatus proves to be a hindrance to the treatment.

Since dilatation causes mechanical emptying of the glandular sinuses of their infected contents, it becomes apparent how important it is to irrigate the urethra and remove these contents. With this object in view, Kollmann has constructed his dilator in such a manner that irrigation can be done simultaneously with dilatation. When this cannot be carried out, the urethra should be irrigated immediately after each dilatation, using an antiseptic solution such as silver nitrate one in 10,000 to one in 3,000 according to the sensitiveness of the patient, or a solution of oxycyanide of mercury one in 5,000. The irrigations must also be carried out independently of the dilatation treatment, and are best done every second day. Their purpose is to overcome the chronic catarrhal process of the mucous membrane superficially situated, and to stimulate healing of the denuded epithelium here and there. For this purpose our time honored drug, silver nitrate, heads the list of all those that are of benefit. It should at the outset be used in weak solutions, one in 10,000 to one in 6,000, and gradually raised in strength.

As the largest number of cases involve the whole canal, it is therefore wise to apply the irrigation to its entire length in the following manner: The patient is instructed to urinate and then, through a soft rubber catheter of moderate size, about 150 c. c. of the solution is injected, either with a Janet

syringe or with the irrigator, and then he is told to urinate. When the case is still in the subacute state, we may first use the organic silver salts and then turn to silver nitrate.

When the lesion is confined to the anterior urethra, irrigation can be carried out by inserting a soft rubber catheter into the urethra as far as the bulb, but when the posterior urethra is the main offender, good results will be obtained by the instillation method with the Keyes-Ultmann instillator of 0.5 per cent. silver nitrate. In the extremely obstinate and stubborn cases where silver nitrate does not bring about the desired effect, copper sulphate three to five per cent. instillations will frequently give admirable results, but the patient should be warned of the sharp reaction and extreme discomfort that may last for several hours.

As stated above, the prostate is frequently involved, and unless this gland is attended to, the urethritis will continue indefinitely. Hence a systematic course of massage must be added to our other treatment and should be performed once in about five days. As the prostate may harbor in its glandular sinuses various microorganisms, it becomes apparent how important it is either partly to fill the bladder with some antiseptic fluid which is to be voided immediately after the massage, or to irrigate the entire urethra soon after massage.

As a general rule, a chronic urethritis case requires treatment at least every second day, each kind of therapy at the following interval: *a*, Massage once in about five days; *b*, dilatation once in about eight to ten days; *c*, irrigations every second or third day. This scheme must of course be modified according to the amount of reaction that sets in, or according to indications that may arise. In cases where the smear or prostatic secretion shows secondary infection, the use of oxycyanide of mercury, one in 5,000, is beneficial, but its use is not to be recommended when the patient takes internally the iodides as the two seem to combine to produce mercuric iodide.

*Urethroscopic treatment.* Urethroscopy is an unusually valuable aid in the treatment of chronic urethritis, but its use must be combined with all other means at our disposal (14). While in acute cases its use is contraindicated, yet in chronic urethritis it will most frequently clear up persistent cases. For instance, a case that was regularly and persistently treated for many months, still retained the morning drop and shreds. The urethroscope revealed the presence of denudation of the epithelium in the bulbous urethra, which was covered with minute granulations. This area was touched up with silver nitrate, ten per cent., on a swab through the tube on three occasions with the result that the shreds and morning drop disappeared. Another persistent case showed the lacunæ of Morgagni choked with drops of pus. These were touched up in the same manner with a favorable outcome. I recall two cases that were operated in for seminal vesiculitis, the first, three years ago, and the second, five years ago. After the seminal vesiculotomy, the urine was never clear, but was always moderately cloudy and contained heavy debris and shreds in spite of long treatment at two different clinics. Posterior urethroscopy with the

Wossidlo urethroscope revealed to me in both cases exactly similar findings. There was a distinct pocketlike sinus in the prostatic urethra leading into the prostatic substance. By pressure with the finger in the rectum, considerable debris was expressed from the sinus, enough to becloud the field of vision. These fistulae, in connection with other treatments, were cauterized once in eight days with silver nitrate, twenty per cent., through the urethro-scope with ultimate recovery in both. Similar therapeutic measures are beneficial in cases where the colliculus is enlarged and contains many vegetations which continually throw off shreds, aside from the fact that such a lesion causes urgency of micturition as well as sexual irritation. Furthermore, polypi and other foreign growths in the urethra can be treated successfully only through the urethro-scope.

## REFERENCES.

1. GEORGES LUYB: *Traité de la blennorrhée*. 2. A. STRACHSTEIN: Remarks on Gonorrhea, *Urologic and Cutaneous Rev.*, July, 1887. 3. L. CASPER: *Lehrbuch der Urologie*. 4. FRED. C. CALVIN: *Med. Rec.*, June 29, 1891. 5. H. WOSSIDLO: *Journal des Maladies de M. M. M.*, *Revue Méd.*, Dec. 27, 1887, abstract in *Annals of Surgery*, 1889. 7. EDWARD L. KEYES, JR.: *American Journal of the Med. Sciences*, Jan. 1892. 8. P. MÜLLER: *Urogenital und Tripper der gonorrhoischen Erkrankungen*. 9. P. FINGER: *Die Blennorrhée der sexual Organen und ihre Complicationen*. 10. F. NEELSEN: *Zeitschrift für Dermatologie und Syphilis*, 1887. 11. A. STRACHSTEIN: The Causes of Persistence and Incurability of Certain Affections of the Genitourinary Tract, *Med. Rec.*, April 10, 1915. 12. R. C. OWEN and HENRY SNURE: The Complement Fixation Test in the Diagnosis of Gonorrhea, *Journal of Michigan State Med. Society*, May, 1914. 13. H. T. SCHWARTZ and A. MCNEIL: *American Journal of Med. Sciences*, May, 1911. 14. FRANZ BLUMENTHAL: *Zeitschrift für Urologie*, Jan., 1914.

17 EAST THIRTY-EIGHTH STREET.

## ACUTE OTITIS MEDIA.\*

*Report of a Case in a Seventeen Month Old Child.*

By CLARENCE H. SMITH, M. D.,  
New York,

1st. United Hospital; Surgeon, Bronx Eye and Ear Infirmary,  
Ear, Nose, and Throat Departments; Instructor, Diseases  
of the Ear, Post-Graduate Hospital.

Cases of pyemia of otitic origin are rare enough to warrant the recital of the following report. The extreme youth of the patient, the difficulties of diagnosis, and the measures of treatment, made this case an extremely interesting one.

CASE. FRANK R., aged seventeen months, had been ill since May 22, 1915, with influenza, bronchopneumonia, tonsillitis, and double acute otitis. A myringotomy on each ear had been performed on May 28th, since which time the discharge had steadily diminished, that from the left ear being at all times slightly more profuse. The great toe of his right foot showed an abscess on June 1st. On June 11th, a swelling appeared on the outer aspect of the left elbow. The temperature range between May 27th and June 16th, as shown by the district nurse's chart, varied between 101° and 105° F.

The patient was first seen by the writer on the evening of June 16th. At that time he had a temperature of 103° F., pulse 148, respiration 68. The right ear showed a slight discharge, that from the left was more profuse. Tenderness on pressure over mastoids could not be elicited on either side. There was no enlargement of the glands of the neck. A large abscess could be palpated in the tissues on the outer surface of the left elbow. There was a nearly healed abscess on the dorsal aspect of the right great toe, which had been opened and drained. The child looked extremely ill, the pulse being of very poor quality, and his color being particularly bad.

A tentative diagnosis of pyemia was made, from septic sinus thrombosis, probably on the left side. The left ear

was selected as the more likely source of infection from the appearance of the otitis and the fact that the pyemia from it had been more severe and the discharge more profuse than from the other ear.

The child was admitted to the Bronx Eye and Ear Infirmary the next morning, and a simple mastoid operation was performed on the left side. Very little pathological changes in the mastoid were found, thus for the time obscuring the diagnosis. The abscess over the left elbow was opened and drained. A blood culture was taken. During the next couple of days the child had a septic temperature and over a dozen superficial abscesses in various parts of the body. The blood culture was found to be negative.

Three days later, on the morning of June 20th, the child was again taken into the operating room, and the left sigmoid sinus was exposed. An incision was made and a large organized blood clot with flakes of pus throughout was found. The sinus was exposed for a distance of one and a half inch, and the thrombus visible through this opening was curetted out. A ring curette was then passed into the lateral sinus for about two and a half inches more, until it was thought that the torcular was reached. The clot was curetted out of the sinus up to that point, and still no hemorrhage was obtained. As by this time the condition of the child had become desperate, the operation was discontinued.

On the next day, June 21st, the left internal jugular vein was exposed and ligated above the facial branch, and several enlarged and infected glands were removed at the same time. The blood at this operation, even to the naked eye, was exceedingly pale and watery with diminished clotting power. The quickest and best method of combating this seemed to be by means of transfusion; so that afternoon Dr. G. A. Rueck transfused the little patient with 160 c. c. of his father's blood, in a two per cent. solution of sodium citrate. Two days later 180 c. c. more were given. Heroic measures of stimulation, such as adult hypodermic doses of strychnine and camphor, were used for the next few days. Meanwhile, the condition of the child steadily improved. The temperature range became much modified, and the pulse and respiration ratio gradually came down to normal.

On July 2nd, the whole of the right leg became very much swollen, and an enlargement of the inguinal glands was seen. It was thought that these symptoms were caused by a thrombosis in one of the deep veins of the leg. Most of the swelling subsided in about four days.

The child was discharged from the hospital on July 6th. At that time there was swelling and impairment of motion of the left elbow joint. There was also swelling of the right leg, with an impairment of motion of the hip joint.

The mastoid wound closed completely on August 1st. Doctor Landsman radiographed the elbow joint on August 3rd and reported an area of necrosis in the olecranon process from a septic arthritis. On September 17th, he radiographed the right hip joint and reported findings indicating the presence of a septic arthritis. Examination of the child's joints at the present time shows a complete recovery of the

\*Reported to the Bronx County Medical Society, October 26, 1915.



elbow joint, and a much improved condition of the hip joint.

The points of interest about this case are: 1. The rapidity of infection of the sinus. The ear symptoms were first noticeable on May 27th, and the first metastasis was observed on June 1st. 2. The absence of symptoms of mastoiditis. This was borne out by the freedom from pathological changes in the mastoid. 3. The extensiveness of the thrombus, which certainly reached as far back as the torcular, how much further it is impossible to say, as the distal end was not reached at the operation. It was very fortunate that this was absorbed and did not act as a continuing focus of infection. 4. The use of transfused blood to counteract the septic anemia. The writer has not heard of this therapeutic measure being used often in aural surgery. It was of very material benefit in this case, as after its use an immediate improvement in the color of the patient and the quality of the pulse was seen.

1050 CAULFIELD AVENUE.

### POTASSIUM PERMANGANATE IN THE EXAMINATION OF CEREBROSPINAL FLUID.

By A. I. RUBENSTONE, M. D.,  
Philadelphia.

(in the Clinical Laboratory of the Mt. Sinai Hospital.)

In the examination of cerebrospinal fluid we are sometimes confronted by a problem in the differentiation between those fluids that are absolutely normal and those which show traces of abnormalities. In cases of frank meningitis we already have enough diagnostic and corroborative methods, not only to differentiate the pathological from the normal fluid, but to ascertain the type of meningitis without much difficulty. However, meningeal irritation due to some toxic agent which is present in the body, either during the course of an infection or abnormal metabolism, and which finds its way into the cerebrospinal fluid through the choroid plexus, may not, if very mild, give us chemical evidence of its presence in the cerebrospinal fluid. Indeed all chemical tests now performed on spinal fluid, pathological or normal, give similar reactions, and it is only by the degree of intensity of these reactions that we form an opinion as to whether a given fluid is normal or otherwise. It can, therefore, be readily understood that in such conditions where the chemical substances present in the fluid are but slightly altered, our tests would be doubtful. It is in these borderline cases that we have found the following test, advocated by Boveri, very useful: To one c. c. of cerebrospinal fluid in a test tube, add one c. c. of 0.1 per 1,000 of potassium permanganate, and shake well. Pathological spinal fluid produces a bright yellow color, while normal fluid retains a pinkish violet tinge.

Our experience with this test extends over a period of one year, during which time we have examined over 100 specimens of spinal fluid. We have found that by the use of double the quantities originally advocated our color reactions were much easier to interpret, and we have thus added to the delicacy of the reaction. We also observed that

there was a definite ratio between the rapidity of the color changes and the abnormal state of the fluid. Fluid from undoubted cases of meningitis, tuberculous, syphilitic or suppurative, almost immediately turned the reagent a bright yellow, while mild cases of meningeal irritation, on the other hand, did not decolorize the reagent until two to three minutes after the admixture; so that the time consumed in producing the color change is an index as to the severity of the process present in the cerebrospinal cavity.

It is needless to say that the fluids tested must be blood free as in other chemical tests. We suggest also that a control be made of normal physiological saline and the reagent in order better to compare color reaction.

| Type of cerebrospinal fluid.   | Noguchi globulin reaction. | Ross-Jones test. | Aceto-ferrocyanide. | Potassium permanganate test.                            |
|--------------------------------|----------------------------|------------------|---------------------|---|
| Tuberculous . . . . .          | ++++                       | ++++             | ++++                | Immediate change to bright yellow or within 10 seconds. |
| Syphilitic . . . . .           | ++++                       | ++++             | ++++                | Same as above.  |
| Suppurative . . . . .          | ++++                       | ++++             | ++++                | Same as above.  |
| Meningeal irritation . . . . . | ± or +                     | ± or +           | ± or +              | Change to bright yellow within 3 minutes.               |
| Normal fluid . . . . .         | ± or -                     | +                | ± or +              | No color change after 5 minutes.                        |

#### CONCLUSIONS.

While the potassium permanganate test is not of specific value in the diagnosis of pathological conditions of the spinal fluid, yet we feel that it ought to take its place as an addition to our list of reactions, because it is not only useful in corroborating other chemical tests of the severity of the disease process, but in doubtful cases it may serve as a deciding factor in the differentiation between absolutely normal and mildly abnormal fluids.

#### REFERENCE.

BOVERI: *Monat. med. Wochenschrift*, June 2, 1914.

FIFTH AND REED STREETS.

### Therapeutic Notes.

**A Remedy for Boils and Skin Infections.**—C. W. Allen, in the *New Orleans Medical and Surgical Journal* for July, 1914, states that he was afflicted almost constantly for six months with boils and other ordinary pyogenic skin infections in various forms, often of sufficient number and size to incapacitate him. A large variety of remedies were well tried, uniformly without success. These measures included purely topical applications and deep injections of twenty or thirty per cent. phenol solution into the centre of the infected areas. The latter treatment, the author has become convinced, cannot be recommended as a routine, being useful only in selected cases. Autogenous vaccines and mixed stock vaccines proved without utility in the author's case. Sulphur baths seemed to exert a favorable influence at first, but later apparently lost their effect. Baker's yeast was discarded after several weeks' trial. The use of a freshly prepared solution of dilute nitrohydrochloric acid, ten to fifteen drops in water after each meal, was then suggested by J. N. Roussel. Within a few days im-

provement was noted; well established lesions soon disappeared and those in process of development were aborted. The author highly recommends this remedy, calling attention, moreover, to the peculiar fact that dilute sulphuric and phosphoric acids had already been tried by him without result.

**Treatment of Boils in Infancy.**—M. E. Schubert, in *Münchener medizinische Wochenschrift* for April 7, 1914, recommends the use of the thermocautery in treating furuncles in infants. The procedure presents special advantage in that it insures a continuous free discharge of the pus formed, there being no likelihood of the aperture closing up too soon, with consequent pus retention, as in cases where small incisions have been made. The cautery also prevents extension of the infection through the blood circulation or lymphatics. Its use is unattended with bleeding, a feature of some importance in nurslings. Skin abscesses thus treated show no further tissue infiltration by the second day, and even where eczema exists, the curative process, though somewhat slower, is sufficiently rapid to preclude consideration of this disease as a contraindication to the use of the cautery. Local anesthesia is unnecessary in these little patients, the cauterization apparently causing only very brief discomfort.

**Vaccine Treatment in Tuberculosis.**—R. E. Flack, in the *Charlotte Medical Journal* for February, 1915, makes a strong plea in favor of the use of von Ruck's vaccine in tuberculosis, both as a curative and a prophylactic agent. He reports a series of 490 cases in which this remedy was used, including patients in all stages of the disease. From the physical findings after treatment, together with the disappearance of symptoms, he is led to believe that, in many instances at least, the results obtained with this vaccine are permanent. Of the early cases all were apparently cured. Of the moderately advanced, over one half were apparently cured; and all were greatly benefited, being free of cough and expectoration, showing a gain in weight, and feeling better generally. In the thirty-one advanced cases, the symptoms were ameliorated in all instances but one; appetite and digestion were improved, and in a few patients, the lungs, on examination at the conclusion of the treatment, were found to have cleared up to a marked degree. Among 306 cases reexamined three to eight months after the treatment, no relapses had taken place, and all except the advanced cases were apparently cured.

Careful selection of cases for the vaccine treatment is enjoined. In patients with a temperature of 100° to 100.5° F. the vaccine is usually contraindicated. Where, however, the patient is in a well nourished state, even if he has a temperature of 100° F., the author has found that after the administration of a few small doses of the vaccine the temperature drops to normal, and the ordinary doses can then be tolerated with but little, if any discomfort. Patients of this type often gain rapidly in weight and are promptly relieved of all their annoying symptoms. Even in the advanced cases with poor nutrition, the lessening of distress by the treat-

ment often justifies its employment; cough and expectoration are less troublesome and chest pains not so frequent. Many children, some subject to frequent colds, were given the von Ruck vaccine for prophylactic purposes. Subsequently scarcely one had a cold. The vaccine was equally efficacious in adults suffering from colds and other catarrhal conditions.

**Sea Water in the Treatment of Wounds.**—Maurice de Fleury, in *Bulletin de l'Académie de médecine* for July 13, 1915, asserts, from experience in the treatment of 1,500 wounds, that most of the antiseptics in common use are very frequently entirely useless and sometimes manifestly retard tissue repair. The number of cases in his series in which tincture of iodine, hydrogen dioxide, or potassium permanganate proved of distinct value was small. Sea water, diluted to isotonicity with the tissue fluids, i. e., so as to contain 0.7 per cent. of sodium chloride instead of 3.3 per cent. as in pure sea water, proved to be an excellent fluid for irrigations and dressings in the majority of wound cases. The sea water employed was collected some distance from the shore at a depth of three or four metres, and was sterilized by boiling for twenty minutes and also filtered before use. In irrigating discharging, soiled, and infected wounds, the diluted sea water was freely poured on either hot, lukewarm, or cold, according to indications, and comparative tests in which smaller amounts of hydrogen dioxide solution were employed, led to an impression of the greater efficacy of sea water. Daily copious irrigations exerted a most satisfactory detergent effect, causing the tissues to assume a rosy tint, reducing suppuration, and manifestly accelerating repair. In dressing wounds, sterile gauze and absorbent cotton wet with diluted sea water were used, a layer of nonabsorbent cotton being then applied to slow evaporation. In deep wounds or infective conditions of the extremities, local baths in hot sea water, with or without the addition of a little iodine, were ordered given one or two hours before the surgeon's visit. In atonic, slowly healing wounds, injection of eighty minims to five drams (5 to 20 c. c.) of isotonic or slightly hypertonic sea water, into the surrounding healthy cellular tissues was found to produce a most striking acceleration in the processes of repair. In two cases of extensive infection with septicemia and alarming general condition, intravenous injections of five to ten ounces (150 to 300 c. c.) of diluted sea water were of manifest assistance in lowering the temperature and improving the systemic condition. Wet dressings of slightly hypertonic sea water were found to exert a distinctly favorable influence on the course of lymphangitis and in promoting absorption of hematomas with a tendency to suppurate. Daily immersions in hot sea water to which iodine had been added gave satisfactory results in the treatment of contusions, sprains, synovitis, hyarthrosis, hemarthrosis, periarthritis, and ankylosis. Finally, in numerous superficial wounds with such extensive skin losses that epidermic grafts seemed indispensable, surprisingly rapid repair without grafting was invariably obtained with the aid of sea water dressings.

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## EDITORS

CHARLES E. DE M. SAJOUS, M. D., LL. D., Sc. D.

CLAUDE L. WHEELER, A. B., M. D.

Address all communications to

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NEW YORK, SATURDAY, NOVEMBER 20, 1917

## A STATEMENT.

We have had some criticism from subscribers  
whose opinions we value, because of the original  
communications we have published on autolysin.  
To each of these gentlemen we have replied as fol-  
lows:

We have read your letter of November . . . with much  
interest, but we cannot admit that in publishing commu-  
nications on any possible remedy for cancer, we are doing  
otherwise than our whole duty to our readers, and it is our  
belief that we should be remiss therein if we failed to do  
so. It ought to be unnecessary for us to say that we have  
published the communications without ulterior motive.

Final judgment in such matters rests clearly on the med-  
ical profession, and until the verdict of physicians has  
stamped a treatment "useless," we shall, in every case,  
deem it wise to abstain from written comment.

Many physicians have watched the progress of any treat-  
ment for cancer with warm sympathy, and there is a gen-  
erous desire among the leading men in the profession to  
try any remedy which promises relief.

We beg to state that we are quite free from bias in the  
matter of any remedy for cancer, and we shall be much  
obliged if you will send us your views and criticisms for  
publication. If you have tried the remedy under consid-  
eration, will you kindly tell us your experience?

We are earnestly seeking for such information for our  
readers, as will aid in the great search for a remedy for  
the horrible scourge of cancer, that is yearly destroying  
so many valuable lives, and causing such excruciating suf-  
fering. We make no apology for doing so.

## RESERVE MILITARY MEDICAL SUPPLIES.

In discussing plans for the reorganization of the  
army and navy, it is to be hoped that the Adminis-  
tration and members of Congress will bear in mind  
the grave importance of an adequate reserve of  
medical and surgical supplies. If the United States  
became engaged in hostilities our ports would prob-  
ably be blockaded. We should have to depend,  
therefore, upon domestic sources for all of our sup-  
plies, including those needed by the medical corps.  
A study of the sources whence medical supplies are  
now obtained shows that from seventy-five to ninety  
per cent. of these are either obtained from foreign  
sources, or are dependent in some indirect way upon  
foreign sources. This is clearly shown as regards  
medicinal chemicals by the extravagantly high prices  
to which the majority of such chemicals have ad-  
vanced on account of the war. For instance, while  
surgical gauze is made in the United States, the de-  
mands upon the manufacturers have been so great  
that of an order for a million yards of surgical  
gauze, placed in March, there are still 125,000 yards  
undelivered. Even if those supplies are of domestic  
origin, or could easily be produced in the United  
States, no reserves are on hand, and unless some  
special provision is made, months would elapse after  
the outbreak of war before the demands of the army  
and navy could be met. We are now suffering from  
a marked shortage in surgical instruments, and if  
we required increased quantities of these, as would  
happen in the case of mobilization, we should sim-  
ply be left without instruments.

It may be that a radical change of political policies  
is necessary in order to provide for an adequate re-  
serve of military medical supplies; if so, there is all  
the more reason that the matter should have instant  
and earnest consideration. If so much delay is in-  
volved under present conditions in filling an order  
for surgical gauze, we can readily imagine what de-  
lays would be entailed in filling other and larger  
orders should the necessity arise for mobilization of  
our forces.

## A GRAVE HOSPITAL QUESTION.

A craze for mobilizing things has apparently en-  
tered the minds of our politicians. It is reported  
that there have been proposals in the budget of the  
board of estimate to combine the Seaview Tuber-  
culosis Hospital and the county almshouse or poor  
farm, and to turn them into one institution for the  
sick and the decrepit. This is a drastic change, or  
rather a wild leap in the dark. Its intention, if not  
its effect, would appear to be to take two wholly  
different institutions and classes of the sick and  
centre them in one. Nothing could be more un-



natural and unsanitary than the gravitation toward each other of two such powers of disease as poverty and consumption. It is a disorderly plan in its conception, and an unpleasant agglomeration of the poor, the unfortunate, the sick, and the senile, is suggested, despite the tendency of medicine, as a humanitarian science, to separate them. On this separation depends the safety of a community, and on the safety of the community depends, obviously, the safety of its members.

It is time to make an end to the dangerous deception that such a plan is economical. We learn from a well informed correspondent that it is quite the reverse; that it will, if carried out, cost the city a considerable sum. But, even if a few thousands could be saved, what is the prospect, not in the angelic minds of politicians, but in the brutal world of facts? Through the coalescence of poverty and disease a great deal more will be spent than is necessary under a hygienic system. The economic argument on behalf of treating the tuberculous and the pauper in one hospital really rests on a misconception. It reduces medical service to an absurdity, which its advocates have never for a moment understood. The scientific thinker, whether layman or physician, is the first to admit that it would be ruinous for the cause of health if a physician not trained to treat tuberculosis and its complications was put in charge of these sick people. Most reasonable advocates of economy admit this from a clearer knowledge of the facts than the political cranks and egotists have so far displayed. The vision of a fine hospital in disorder, of the sick untreated, of the pauper and decrepit gathered together with disease, the whole system of hospital work, research, finance and management depleted of labor and proper medical service, is not a vision of the scientific economist. In short, the proposal in the budget discredits our economists. Apart from this it may have a bad effect on the voter, and will put antagonism into those strong sections of the public whose interest in the consumptive has been active and fearless.

#### THE SIGNIFICANCE OF DIPHTHERIA CARRIERS.

In an investigation by Goldberger (Hygienic Laboratory *Bulletin* 101) on the presence of diphtheria carriers in the general population of Detroit, following shortly on an epidemic, he found that approximately one per cent. of the persons examined as representative of the entire population, harbored diphtheria bacilli generally, and that approximately one tenth of one per cent. bore virulent strains; this, in a city of about half a million. With the slight

reservation allowed for the few cases in which carriers themselves developed mild diphtheritic infection, all the instances mentioned occurred in persons previously and continuously healthy, over whom there could have been no reason to enforce a quarantine. Yet carriers are most to be reckoned with in the spread of this disease in epidemic proportions. For, even where no diagnosis is made and where no isolation is carried out in active cases, they are yet kept from contact with a large number of persons because of the forced separation consequent upon the usual physical prostration which accompanies the disease. The range of communication at least is much restricted. In healthy carriers, themselves unaffected by the bacilli, there is no such restriction. They are at liberty, in meeting the sensitive or the otherwise vulnerable, to establish many foci of the disease. When it is attempted to trace the source of the epidemic the trail leads blind.

That the minority only of the carriers harbored virulent strains is of no congratulatory significance, since it is not unusual for mild contagion to be translated into severe types in new or virgin soil, or for the virulence to increase after recultivation or regrowth in successive media or in successive individuals.

It is noteworthy that in a rather small city of comparatively sparser settlement than some of the larger centres of population, where contact between individuals is from a comparatively greater distance and where, therefore, the quantity of the contagion carried and its virulence or quality are attenuated, the carrier population is still rather large. In the more congested communities, with a greater degree of personal contact, even the same number of carriers harboring the same percentage of virulent strains of bacilli would produce a greater number of contacts more likely to develop into active cases because of the low vitality and resisting qualities and generally unsanitary conditions which prevail in congested places.

In the city of New York, with its population of over five million, the same percentage would amount to a large number. If well distributed, they would seem to be a constant of epidemic conditions. Besides, for larger cities other observers have found a much larger number of carriers—about two per cent. On the other hand, within recent years, there has been no epidemic commensurate with any such percentage of carriers or foci of infection. This can be ascribed only to the natural resistance of the body, to the fact that germ infections are not air borne but are confined in their method of communication to contact with persons or materials bearing the infective agency, and not so much to the number of active cases kept out of the circulation of the com-

ment by the present highly developed health boards. Infections from patient or carrier are rather droplet infections carried to healthy individuals because of ignorance or carelessness. Unless the droplet with its bacterial content is very soon taken up by the susceptible, it is harmless because of the vulnerability of this bacillus. It is, again, rather preventive medicine in the form of general hygienic instruction which will eventually eradicate this disease.

### THE INDICATIONS FOR LUMBAR PUNCTURE IN THE NEWLY BORN.

As in the adult, lumbar puncture is resorted to in the newly born for either diagnostic or therapeutic purposes, to bring about decompression of the nervous centres. In hydrocephalus, however, puncture of the ventricles is much preferable to lumbar puncture. It is above all in cases of meningeal hemorrhage in the newborn infant, however, that will be found the indication for rhachiocentesis. In some cases the lesion is due to some special form of debility, but a difficult labor necessitating obstetrical interference is the factor in the vast majority of cases, and these etiological notions will greatly aid in the diagnosis.

As to the clinical picture, it is represented by the syndrome of apparent death of the infant; but apart from the typical case, there is always a presumption in favor of meningeal hemorrhage when the infant presents an intense cyanosis of the head with convulsions followed by coma.

In typical cases or those following a difficult labor, the diagnosis of meningeal hemorrhage is an easy matter, but there are others in which it is a delicate question, having to be distinguished from asphyxia due to some disturbance of the fetal circulation, anemia from rupture of the cord, and particularly from tetany, tetanus, and hydrocephalus, and here lumbar puncture is clearly indicated. It is quite logical to suppose that should lumbar puncture be resorted to in every case where the infant presents signs of asphyxia at birth, even of mild degree, the number of cases of meningeal hemorrhage would be greatly increased.

Beside its great diagnostic use, rhachiocentesis is of considerable therapeutic value, because not only does it give the diagnosis of meningeal hemorrhage, but it may also stop the loss of blood. While decompression by intracranial surgical interference has given a few happy results, lumbar puncture, from the decompression to which it gives rise, has resulted in the favorable termination of numerous cases. Consequently, it is with reason that Gastinel, in his recent study on lumbar puncture as a thera-

peutic measure, says (*Progrès médical*, 1914): "In meningeal hemorrhage of the newborn, the removal of the cerebrospinal fluid is a precious therapeutic means; these hemorrhages result from an external mechanical cause, usually the application of the forceps. Hypertension results and lumbar puncture produces a rapid improvement of the symptoms by decompressing the nervous centres."

It should be remarked that after the subsidence of the symptoms which follow the withdrawal of cerebrospinal fluid, the patient should be carefully watched for some days, and should the temperature rise or if convulsions recur, rhachiocentesis should be again resorted to without delay. Of seventeen cases collected by Trouveller (*Thèse de Paris*, 1914), ten ended in recovery, but the reason for the seven failures is not clear.

### THE LATE WILLIAM GILBERT GRACE.

Outside of our readers in Canada, and perhaps in Philadelphia and in Richmond borough, this city, where some proportion may be interested in the ancient English game of cricket, few of them probably ever heard of W. G. Grace, who died on October 23d, in his sixty-eighth year, at his home, Eltham, Kent. To cricketers, however, his name has been a household word for over forty years, during which time he continued to be the champion player of the world. The *Lancet* for October 30, 1915, reminds us that Grace was a graduate in medicine, being L. R. C. P., Edinburgh, and M. R. C. S., England, and that his medical knowledge helped to conserve his powers as a splendid example of physical energy in a game which demands strength, a perfect eye, good wind, and that alert activity that leaves most of us before we are thirty. He had seasons of particular success, but from the medical point of view the interesting thing is that during so long a period he was always preeminently a good player, his least successful years being failures only by comparison with his own high standard. Grace was the son of a physician and had three elder brothers, all physicians and all ardent cricketers.

### A FAR FLUNG MALARIA.

In the *British Medical Journal* for October 23, 1915, J. A. M. C. H. Reid and H. E. Humphreys, of the R. A. M. C., report on six cases of benign tertian infection in English and Scotch soldiers, none of whom had ever left Great Britain before the outbreak of the war. Some of the men had been encamped near the Indian troops, some had not. One patient was attacked in Portsmouth before leaving for France, where he had relapses. The writers think that the probable explanation of these cases is that infection was conveyed by mosquitoes either from Indian troops or troops who had been abroad. The last case is rather more interesting than the others, inasmuch as the patient was quite certain that his first attack occurred while he was stationed

in England. The fact that for some time he was in a large seaport town where he was likely to come in contact with troops from abroad is to be noted. On the other hand, it is possible that infection may be conveyed by some other means.

## PRESCRIPTIONS FOR NARCOTICS CAN NOT BE REFILLED.

Shortly after the regulations for the enforcement of the Harrison antinarcotic act were promulgated by the United States Government, a supplementary ruling was issued to the effect that physicians who wished to have a prescription containing narcotic drugs refilled, could do so by merely giving the number without going through the formality of writing out the prescription in full. A new ruling has been issued revoking this permission and requiring that every prescription containing any of the narcotic drugs named in the act must be an original prescription, and must conform to all the requirements of the act, including the name and age of the patient, and the full name, license number, and office address of the prescriber. Our readers will find that druggists will decline to renew prescriptions containing narcotic drugs which do not conform to the foregoing requirements, and will understand that this attitude on the part of the druggists is necessitated by the ruling in question. The new ruling does not change existing regulations at all except to forbid the renewal of prescriptions by merely giving the original numbers assigned them by the dispensing druggists.

## Obituary.

EDWARD LIVINGSTON TRUDEAU, M. S.,  
M. D., LL. D.  
of Saranac Lake, N. Y.

Doctor Trudeau died at his home, Saranac Lake, on November 15th, of pneumonia, in his sixty-eighth year. He was born in New York, October 5, 1848, and graduated from the College of Physicians and Surgeons in 1871. Subsequently he received the honorary degrees of Master of Science from Columbia in 1899 and of Doctor of Laws from McGill in 1904. He began practice in this city upon graduation, but the seeds of tuberculosis soon drove him into the country, where, first in America, he promul-

gated the theory that in continuous fresh air lay the salvation of the consumptive. His own affliction compelled him to pass his life in the Adirondacks, because even short trips to the city, where he had many admiring and warm friends, brought on warning symptoms. In the mountains, first at Paul Smith's, he undertook a general practice among the guides and woodsmen and, moving in 1877 to Saranac Lake, also gradually built up the handsome sanatorium which is conducted on a semicharitable basis and has become one of the famous resorts in the world for the tuberculous. In 1894 he founded the research laboratory, the first of its kind in America; it was once completely destroyed by fire, but was reconstructed on a superb scale owing to the almost unlimited funds supplied by Doctor Trudeau's now numerous

and influential friends. He was president of the Eighth Congress of Physicians and Surgeons at Washington in 1910, and was even then so weak that he addressed the meeting with difficulty. Owing to his pioneer work in consumption and to his many fine qualities of mind and heart, Doctor Trudeau attracted to the sanatorium an immense number of distinguished patients, who also became his friends, among them Robert Louis Stevenson, who wrote some of his most characteristic essays when the thermometer was below zero. Another friend was E. H. Harriman, whose wealth was always at the service of the invalid specialist. He was the typical physician in many ways, and beside conducting a

charitable practice among the inhabitants of the Adirondacks, he managed the sanatorium without salary. In 1871 he married Miss Charlotte G. Beare, of Douglaston, L. I., who, with one son, survives him. Doctor Trudeau was a man of many extraordinary qualities, including that notable simplicity of character which attracts the kind of friendship which is enthusiastic and anxious to make existence happy for its object.

## News Items.

**Southern Medical Association.**—At the annual meeting of this association, held in Dallas, Texas, November 10th, 11th, and 12th, Dr. Robert Wilson, Jr., of Charlotte, N. C., was elected president, and other officers were elected as follows: Dr. Coleman F. Taylor, of Fort Worth, first vice-president; Dr. Guy Hunter, of Baltimore, Md., second vice-president; Dr. Seale Harris, of Mobile, Ala., reelected secretary-treasurer.



THE LATE DR. E. L. TRUDEAU.



**Diamond Candy Company Prosecuted by Department of Health.**—In connection with the unfortunate fire in the factory of the Diamond Candy Company, North Sixth Street, Brooklyn, it may be of interest to point out that the department of health recently prosecuted this firm for selling candies containing paraffin. The case was tried in the Court of Special Sessions, on November 7th, and the defendant was found guilty and ordered to pay a fine of \$100.

**A Wassermann Clinic for the Bronx.**—The Department of Health of the City of New York calls attention to the fact that a Wassermann Diagnostic Clinic has been established at the Bronx Borough office, 3731 Third Avenue, where the drawing of blood for the complement fixation tests for syphilis and gonorrhea, the taking of smears, etc., will be carried out. Physicians who desire to avail themselves of the service offered, are respectfully urged to refer their Bronx cases to this office. The hours are 11 a. m. to 1 p. m. daily, Sundays and holidays excepted.

**Ohio Valley Medical Association.**—The following officers were elected at the annual meeting of this society, held Wednesday and Thursday, November 3d and 4th, under the presidency of Dr. E. O. Smith, of Cincinnati, Ohio: President, Dr. G. M. Young, of Evansville; first vice-president, Dr. William Shimer, of Indianapolis; second vice-president, Dr. J. R. Pennington, of Chicago; third vice-president, Dr. W. F. Boggess, of Louisville; secretary and treasurer, Dr. Benjamin F. Floyd, of Evansville. The next convention will be held in Evansville, in November.

**Doctor Park to Lecture on Microbes.**—A course of lectures on the Haunts and Habits of Microbes will be given to employees of the board of health by Dr. William H. Park, director of the Bureau of Laboratories of the Department of Health. These lectures will be given on alternate Saturdays, in the afternoon, in the laboratory of the University and Bellevue Hospital Medical College, beginning November 20th. The object of the lectures is to familiarize inspectors of the sanitary and food inspection departments with some of the advanced scientific aspects of

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Monday, November 22d, North Branch of the County Medical Society, Section in General Medicine of the College of Physicians, Medical Society of the Woman's Hospital; Tuesday, November 23d, West Philadelphia Medical Association; Wednesday, November 24th, County Medical Society; Thursday, November 25th, Pathological Society; Friday, November 26th, Northern Medical Association, Neurological Society, South Branch of the County Medical Society, Medical Club (directors).

**Red Cross Christmas Seals Distributed.**—On November 28th, shipments of Red Cross Seals were made to 500 agents in various parts of the State of New York, bringing the total number of seals distributed up to 15,000,000. Rochester, which last year won the national pennant awarded to the city selling the largest number of seals per capita in any city of its size in the country, has placed a first order of 3,000,000; Buffalo heads the list this year with an order of 5,500,000; Syracuse and Yonkers, 750,000 each; Troy, Albany, Poughkeepsie, and Binghamton plan to sell 400,000 each.

**The Death Rate in New York.**—Registrar Guilfoyle, of the Department of Health of the City of New York, reports that there were 1,324 deaths during the past week with a rate of 12.34 per 1,000 of population, against that of 1,276 deaths in the corresponding week in 1914, an increase in the absolute number of deaths of 48, and an increase in the rate per 1,000 of the population of 0.2 point.

The most noteworthy features of the mortality during the week were the decrease in the number of deaths reported from the acute infectious diseases, and the increase in the deaths reported from the diarrheal and respiratory diseases. The mortality from organic heart disease and pulmonary tuberculosis remains approximately the same. The mortality of children under one year of age was considerably above that of last year, the total reaching 232 against 183, an increase of 49 deaths. The death rate for the first forty-six weeks of the year 1915, based upon a revised estimate of the population, was 13.59 per 1,000 of population

**Röntgen Ray Association of Greater New York.**—At the annual meeting of this association, held at the New York Academy of Medicine, Tuesday evening, November 9th, the following officers were elected: President, Dr. George Sloan Dixon; vice-president, Dr. Sinclair Tousey; secretary, Dr. I. Seth Hirsch; treasurer, Dr. Archibald P. Evans.

**The Renewal of Prescriptions Containing Narcotic Drugs.**—The United States Commissioner of Internal Revenue has issued the following notice: "Relative to the matter of renewal of narcotic prescriptions through indicating thereon the druggist's serial number, you are advised that it has been decided by this office that the continuance of this practice cannot be permitted under the Act of December 17, 1914, as it would be inconsistent with the ruling contained in Treasury Decision No. 2213. Hereafter, the name and address of the patient, the date, the names of all the ingredients and quantities, the full name and address of the physician, and his registry number must appear on all prescriptions calling for narcotic drugs, or prescriptions, or remedies coming within the scope of this law."

**Disease and Crime.**—At the anniversary meeting of the New York Academy of Medicine, held Thursday evening, November 18th, the subject of disease and crime was discussed. It was pointed out that the time had come when ethics, the law, and medicine should join hands to form a constructive program, aiming to do for crime what had been done for disease through systematic study and classification leading up to effective measures of prevention and intelligent individual treatment. George W. Wicksham, Esq., president of the Bar Association of New York, spoke on the concern of society in the problem of crime. The Hon. Thomas Mott Osborne, warden of Sing Sing Prison, discussed the part which penal institutions might be made to play in the solution of the problem. Judge Harry Olson, chief justice of the Municipal Court of Chicago, delivered an address on the progress that had been made and what the future promised.

**Personal.**—Dr. Richard C. Cabot, of Boston, will be one of the lecturers this year on the Edward W. Bok Foundation at Williams College.

A member of the Missouri State Medical Association was recently found guilty of fee splitting and offering to split fees, and was expelled from the society. The expelled member also loses his membership in the American Medical Association.

Dr. Bronson Crothers and Dr. E. T. F. Richards, of St. Paul, joined the Harvard unit that sailed for the war zone on November 18th. Dr. J. F. Hammond, another St. Paul physician, has been in the British Army hospital service for several months.

Dr. Cecile L. Greil, of New York, one of the survivors of the Ancona disaster, was returning to New York from Bari, Italy, where she had been called by the Russian Red Cross for special hospital duty.

**Medical Society of the County of New York.**—The 110th annual meeting of this society will be held in Hosack Hall, New York Academy of Medicine, Monday evening, November 22d, under the presidency of Dr. Howard Lilienthal. Dr. Joseph Wiener will read a paper on Diagnosis and Treatment of Postoperative Complications of Appendicitis, which will be discussed by Dr. Charles L. Gibson, Dr. Charles N. Dowd, Dr. Alexis V. Moschowitz, Dr. Franz J. A. Torek, and Dr. George E. Brewer. Clinical Varieties and Therapy of Precordial Pains Due to Organic Cardiovascular Disease is the title of a paper which will be presented by Dr. Selian Neuhof. Among those who will take part in the discussion of this paper are Dr. E. Libman, Dr. Harlow Brooks, Dr. Alexander Lambert, and Dr. Warfield T. Longcope. At the executive session which precedes the scientific session, the annual election will be held, the following candidates having been nominated as officers and censors: For president, Dr. Frederic E. Sondern and Dr. Howard Lilienthal (declined nomination); for first vice-president, Dr. J. Bentley Squier and Dr. William S. Gotthelf; for second vice-president, Dr. Charles H. Peck; for secretary, Dr. John Van Doren Young; for assistant secretary, Dr. Daniel S. Dougherty; for treasurer, Dr. Charles H. Richardson; for censors (three to be elected to serve two years), Dr. Howard C. Taylor, Dr. Willy Meyer, Dr. Floyd M. Crandall, and Dr. Howard Lilienthal (declined nomination).

## Pith of Current Literature.

## CORRESPONDENZ-BLATT FÜR SCHWEIZER AERZTE

September 4 and 11, 1919.

**Juvenile Osteochondritis deformans in the Hip Joint.** by Georges A. Guye and H. J. Schmid.—Guye gives a detailed study of four children in whom the cleft in the hip joint was abnormally wide. Schmid discusses the röntgenographic features. The proportions between the head and neck of the femur were destroyed at the expense of the former. The neck was broader than normal. The cause is uncertain, but the treatment consists in extension of the limb, rest in bed, massage, sun baths, and promotion of the general health.

September 8, 1919.

**A Convenient Procedure in Sulphur Disinfection.** by L. Klocmann.—Attention is called to the fact that the addition of an equal part of chlorate of potassium will cause the sulphur to burn more readily than when it is ignited alone.

## BERLINER KLINISCHE WOCHENSCHRIFT.

May 31, 1919.

**Cold Feet,** by P. G. Unna.—The patients here considered frequently suffer from cold feet during the autumn, winter and early spring; the suffering and discomfort materially restricts work and rest. The primary causes are: Increased tone of the local cutaneous arteries and wet shoes or sweating of the feet. Abnormal sweating leads to rapid dissipation of the heat. In treatment, the stockings should be made moist proof with the following preparation: Collodion twelve parts, colophonium four parts, castor oil four parts, alcohol sixteen, and ether sixty-four parts. This preparation makes the socks somewhat hard and stiff but it prevents them from absorbing moisture, while irritation of the skin from the hardened cloth produces capillary dilatation. The inner lining of the shoes should also be made moist proof with the preparation just described, or by saturation with oil. Lastly the moisture should be prevented from escaping from the skin of the sole by frequent anointing with some suitable fat or oil. The shoes should be two sizes too large to avoid constriction and to permit the use of two pairs of socks, the inner thin, the outer thick wool. Further, anklets to protect the superficial arteries from the direct effects of the cold should be worn over the socks.

**Simultaneous Inoculation with Typhoid and Cholera Vaccines,** by K. E. F. Schmitz.—A few careful experiments led to the conclusion that the reaction was no greater than when the vaccination was undertaken separately for each disease and that the immunity produced against each disease was higher than with separate inoculation. In addition, the injections could be given at weekly intervals, the whole period of inoculation thereby being reduced from five to three weeks.

**Antiformin in Examination of Tissues and Organs,** by Carlo Martelli.—A fine emulsion of the tissue for examination should first be made by cutting it into very thin pieces with a razor or microtome. To this emulsion should be added twenty

parts of a solution of antiformin of from ten to thirty per cent. strength, and the whole incubated from one to twenty-four hours. After incubation the fluid should be centrifugated, the residue washed and centrifugated three times with normal salt solution. The entire residue from a whole lymph node can thus be secured on cover glasses and when suitably stained can be examined for tubercle bacilli. Not only are tubercle bacilli resistant to antiformin, but also the same was found to be true of the Much granules, which fact further links them with the bacilli. A series of tissues examined by this technic gave surprisingly good results for tubercle bacilli, these even being found in one case in which guinea-pig inoculation proved negative.

## MEDIZINISCHE KLINIK.

October 2, 1919.

**Psoriasis and Related Diseases,** by J. Jadasohn.—No material advances have been made in the treatment of psoriasis or seborrheic eczema, but some remedies deserve discussion. A strictly vegetarian diet has been advocated on the belief that the diseases were caused by flesh foods. It is conceivable that such a change in diet might influence the nutrition of the skin so as to make psoriasis impossible, but clinically the vegetarian diet has not been effective, except in rare instances. The same thing is true of the use of arsenic preparations internally, although more cases respond favorably to this treatment than to diet. In psoriasis one must be specially careful with arsenic, for the disease seems to confer a susceptibility to its toxic actions, particularly to the development of herpes zoster and cardiac weakness. In seborrheic eczema the response is still less favorable. The best remedy is x rays or thorium x salve, but both agents tend to increase the residual pigmentation and should be used with care, or not at all, for single isolated plaques in exposed skin areas. In external drug therapy several effective drugs are combined in a single application whereby greater effects may be secured with less likelihood of marked local irritation. Sulphur, white precipitate, calomel, pyrogallol and chrysarobin are true antipsoriatic drugs, and two or more of these may well be combined in a single salve. Treatment with these preparations should be begun with very dilute applications and the concentration should be slowly increased until a slight irritative reaction is secured. Each patient must be treated individually and his susceptibility determined. In the swarthy pyrogallol may be used for lesions of the hairy portion of the head, but in the fair the slower acting white precipitate must be employed. In seborrheic eczema sulphur, ichthyol, resorcin, or white precipitate gives the most satisfactory results, although recovery is more rapid when it is possible to employ chrysarobin or pyrogallol in dilute forms. Before using either of these drugs, the condition must be brought into the dry stage by the use of ichthyol or resorcin salves. For neither disease is there any certain means of prophylaxis so far as the return of lesions is concerned.

**Hemostasis by Thrombokinetic Action of Muscle,** by Robert Pamperli.—Where ligation of vessels cannot be performed, the best results in checking hemorrhage have been secured by the ap-

plication for one or more minutes of thin slices of fresh muscle removed from some convenient place in the same patient. Homologous muscle tissue seemed to have a specific coagulating power greater than heterologous muscle. Operations and injuries involving the parenchymatous viscera, the cranium, or the brain and its sinuses provide the greatest field for the use of this method of hemostasis. The advantages are the promptitude of action and the ready accessibility of a sterile and effective hemostatic which needs no preparation for use.

#### PRESSE MEDICALE.

**Extraction of Metallic Foreign Bodies from the Lung.**—G. Marion. Recent experience in a military hospital has convinced the author that removal of bullets or shell fragments from the depths of the pulmonary tissues, far from being a difficult and dangerous procedure, is a very easy and safe one, which should be undertaken regularly in such cases. Removal of projectiles at a depth of seven cm. in the lung was found no more of a task than that of projectiles superficially situated. Foreign bodies should not be allowed to remain in the lung; even if but slight dyspnea is later complained of, an encysted abscess is likely to be found if the lung is opened. In the removal of these bodies, prior accurate localization with the x rays is essential. An incision parallel with the ribs is made over the foreign body, and the nearest rib resected for a distance of four or five cm. Before the lung is incised, it is fixed to the thoracic wall and the lung parenchyma by three or four catgut sutures, a rectangle of lung bounded above and below by ribs and laterally by the cut extremities of the resected rib being thus held to the chest wall. After incision of the lung, the finger is pushed directly into the lung tissue. Foreign bodies of the lung are readily felt, even at a distance. The lung is either torn through with the finger, or the tissue containing the foreign body is drawn toward the wound with Kocher forceps and the body removed with the grooved director or bistoury. A tampon impregnated with strong phenol is then inserted directly into the pulmonary tissue and an ordinary dressing applied. In none of the twenty-six cases operated in by the author did anything more serious than a little cough and bloody expectoration follow the procedure. The tampon was withdrawn on the fourth or fifth day. Complete healing in two to four weeks uniformly followed.

**Pharmacological Effects of Colloidal Gold,** by H. Busquet.—A blue preparation of colloidal gold was used. Toxicity tests in rabbits demonstrated the low toxic power of colloidal gold, the dose required to produce death being—with the difference in weight between the rabbit and man taken into account—eleven hundred times larger than the therapeutic dose generally used in the human subject. In the dog, a dose fifty times larger than the therapeutic amount caused marked slowing and strengthening of the heart beats, independently of the vagus mechanism. The drug was found to pass from the blood into the tissue cells and to remain in the system for a long period in the form of undissolved groups of particles. Experimentally it had no anti-

septic effect. Its beneficial action in septic states is evidently not produced through a direct influence on bacteria or their toxic products.

#### BULLETIN DE L'ACADÉMIE DE MÉDECINE.

September 7, 1915.

**Local Treatment of Fusospirillar Infections,** by C. Achard and E. Welter.—Not only salvarsan and neosalvarsan, but also galyol, or tetraoxydiphosphaminodiarsenobenzene, an organic arsenical introduced by Mouneyrat in the treatment of syphilis, were found of value in infection with fusiform bacilli and spirilla, such as ulcerative stomatitis, noma, mercurial stomatitis, various dental affections, scorbutic ulcerations of the mouth, erosive balanoposthitis, and certain kinds of gangrenous wounds and rebellious ulcers. Among the illustrative cases reported is one of Vincent's angina, in which local applications of galyol rapidly brought relief from pain, disappearance of the exudate and a drop in the temperature. The tonsils remained, however, large, red, and slightly painful for some time. Bacteriological examination of the tonsillar mucus showed that, while the fusiform and spirillar organisms had been eliminated by the treatment, pathogenic cocci still remained. The treatment may thus serve in differentiating the kinds of infection responsible for local inflammatory disorders. Galyol may be applied in the form of a mixture in definite proportions with glycerin or oil; or, the cotton applicator may be merely dipped in glycerin and then passed over the powdered galyol before use.

**Magnesium Chloride as an Accelerator of Phagocytosis,** by Pierre Delbet and Karajanopaulo.—A solution of 12.1 parts of dried magnesium chloride in 1,000 parts of water was observed to increase the phagocytic power of the white cells, even more *in vivo* than *in vitro*. In one experiment 500 normal polynuclear cells engulfed seventy-one colon bacilli, whereas 500 polynuclears obtained from a portion of the same animal in which magnesium chloride solution circulated by intravenous injection, engulfed 308 bacilli. Intravenous injections have not as yet been given in man, but dressings and hypodermic injections of the solution were employed with apparent benefit. The authors believe that the thigh of a soldier in whose case amputation had been decided on for arthritis of the knee with crushing of the patella and external condyle was saved by the use of magnesium chloride. Sodium chloride solution, Locke's solution, and sea water diluted to isotonicity were likewise observed to increase phagocytosis, but to a far less degree than magnesium chloride solution.

#### RIFORMA MEDICA.

October 23, 1915.

**Nitrogen Metabolism in Exudates,** by F. Alzona.—Exudates are in proportion to the nitrogen introduced by the food if absorption and renal function are normal. This is also true of transudates from stasis. Differentiation between exudates and transudates is not clearly defined although their causes are quite different. The two processes are akin in a physical nature, involving abnormal permeability of the vessels and filtration of blood serum.



## REVISTA DE MEDICINA Y CIRUGIA PRÁCTICAS

October 14, 1935.

**Acute Primary Mastoiditis**, by D. I. Fernandez Seco. Primary mastoiditis is rare, which justifies the report of a case occurring in a girl aged ten years in whom there was no evidence of any middle ear condition. The right ear was pushed away from the mastoid region by a mass which was not only red but which gave fluctuation on palpation. The Wilde incision was made; an enormous quantity of pus was evacuated and the cavity curetted.

## NORDISKT MEDICINSKT ARKIV.

September 26, 1935.

**Fibroloma of the Bladder**, by Gustaf Grönberger.—These cases are so rare that the following observed in the Maria Hospital in Stockholm is one of thirty-seven reported in literature, two being from the Mayo Clinic in a series of 114 bladder tumors. The patient, a woman of forty-four years, had eight years previously a sudden hematuria without other symptoms, but later increased frequency of micturition occurred on walking and standing. This gradually grew worse and four years later was complicated by ardor urinae and turbid urine. On entering the hospital, the patient's condition had become unbearable and the voiding of urine was so difficult that only in certain postures could it be accomplished. Examination revealed a swelling over the symphysis pubis, and palpation showed this to be separate from the fundus uteri. The cystoscope revealed a tumor in the anterior bladder wall the size of a hen's egg. Suprapubic cystotomy was undertaken and the tumor extirpated with the aid of a cystoscope introduced through the incision. Recovery was uneventful, the patient leaving the hospital in two months. The fibroloma had a short, thick pedicle and showed ulceration of the apex. These tumors are in structure similar to uterine myomata and like these may undergo degeneration. In the reported cases, thirty-one tumors were benign, the other six being malignant, atypical liomata. In six, hematuria was the initial symptom. They vary in size from a small nut to a child's head; one of this latter size, reported by Blanchard, was mistaken for a uterine tumor, with operation and death. Their occurrence in men and women is equally frequent, and the ages of the patients were from twelve to sixty-three years.

## BRITISH MEDICAL JOURNAL.

October 23, 1935.

**Tetanus Treated in Military Hospitals**, by David Bruce.—Out of a total of 231 patients treated, 133 died, a mortality of nearly fifty-eight per cent. This was for the British home hospitals, while for the overseas hospitals under British control the mortality was slightly over seventy-eight per cent., probably owing to the fact that some of the most severe cases could not be transported. Several methods of administering antitetanic serum were employed, either alone or in various combinations, such as subcutaneous injection, intramuscular, intravenous, or intraspinal injection, or two of the methods simultaneously. The most satisfactory results were secured with the combination of intraspinal and sub-

cutaneous injections, or by injections into the spinal theca alone. The serum was used prophylactically in a few patients, all of whom recovered, although they developed symptoms of the disease subsequent to the injection. The conclusion seems warranted that the therapeutic use of antitetanic serum is of little if any value, although its intraspinal administration seemed to indicate some slight beneficial effect. This does not mean, however, that its therapeutic use should be abandoned in the present state of our knowledge, since such use is not detrimental and its valuelessness has not been certainly established. Its great field of usefulness, however, lies in the prophylaxis of the disease, for which purpose its value has been proved. Baccelli's phenol injections were tried in thirty-three cases without avail; the injections neither modified the symptoms nor reduced the mortality. Magnesium sulphate injections, according to the method of Meltzer, were tried in nine cases, but the results were unfavorable and the method proved very dangerous. In all cases in which infection with the tetanus organism is suspected thorough surgical treatment should always be given at once.

**Hemolytic Action of the Urine**, by C. S. McKee.—An emulsion of red blood cells is prepared in the proportion of one drop of fresh blood to four c. c. of 0.85 per cent. salt solution. Small test tubes are arranged, each containing fifteen drops of each of the urines to be tested, and into each is placed one c. c. of the red cell emulsion and the whole mixed and incubated at 37° C. for two and a half hours. The tubes should be shaken at intervals during this period and note made of the appearance of hemolysis. It was found that if fifteen drops of urine failed to produce hemolysis, larger amounts would also fail, so this was adopted as the optimum amount. If a given sample of urine caused hemolysis, the hemolytic activity of the sample was measured by preparing gradations from one to ten drops in tubes each containing one c. c. of the blood emulsion, and incubating as before. The hemolytic power was not purely a quantitative one, for urines were encountered in which laking followed earlier when one or two drops were used than when fifteen drops were tested, and occasionally when fifteen drops caused laking, thirty drops did not cause it. In a very large series of observations urine from a healthy person was never found to lake red cells. The substance, or substances which cause hemolysis have not been determined, but the phenomenon has been observed with considerable constancy in a number of morbid states. The urine in cases of pernicious anemia frequently produced hemolysis, but its intensity and occurrence fluctuated in such cases, and it did so quite without relation to changes in the course of the disease. In other types of severe chronic anemia, in gout, erysipelas, acute rheumatic fever, late tuberculosis and some cases of syphilis, the phenomenon was also encountered frequently. The urine from cases with severe burns always produced hemolysis which persisted until death or until recovery was advanced. Hemolysis was common in some types of extensive skin disease, and in sepsis, and was constant in cancer with wasting. It was obtained regularly in cases with acidosis, such as the acidosis of childhood, acidosis associated with

starvation, prolonged general anesthesia, diabetes, and eclampsia. It was determined that the hemolytic action of the urine did not depend alone on the reaction of the urine, although most of the powerfully hemolytic specimens were alkaline. Acid urines tended to lose their hemolytic powers on standing for one or two days, but the alkaline ones did not thus change. Sodium bicarbonate added to hemolytic urine prevented the phenomenon, and the same was true in some cases when the drug was given to patients in large doses.

## LANCET.

**Treatment of Cerebrospinal Fever,** by H. D. Rolleston.—The results of different methods of treatment were studied in 163 cases which yielded a mortality of nearly fifty-five per cent. The cases which were treated by lumbar puncture and intraspinal injection of antimeningococcic serum alone, gave a materially higher mortality than that of the entire series. The failure of the serum was not due to its being started too late in the disease. Its use was, therefore, abandoned, or it was combined with the simultaneous administration of other remedies. In a series of cases treated with serum and the simultaneous intramuscular injection of soamin the mortality was not reduced, but another series treated with soamin alone showed a marked reduction in mortality—to nearly half that of the first series. Hexamethylenamine was given in a small series of cases, but without benefit. A short series of cases were treated with autogenous vaccines, but the results, though strikingly good, were not definitely attributable to their use, as other measures were also employed.

**Traumatic Asphyxia,** by W. W. Linington.—The patient, a girl eleven years old, was caught between the wheel and guard of an automobile and her abdomen was severely compressed for several minutes. When taken up, she was in collapse, but soon recovered. The striking phenomenon was an intense lividity of the entire head and face above the clavicles, with the exception of the ears. The discoloration was due to a multitude of fine punctiform hemorrhages, but no macroscopic hemorrhage was present. The intense lividity increased during the next day or two and involved the ears and small areas in both axillae. Recovery took place in two weeks. The condition has been noted occasionally before, but it is rare owing to the usually fatal nature of severe prolonged abdominal compression. The mechanism of the condition seemed purely mechanical and to be due to paralysis of the veins, venules, and capillaries from overdistention. The sharply restricted area involved is accounted for by the fact that the veins from the head and neck have few valves which are, for the most part, quite insufficient, and by the fact that they empty into the superior vena cava, the orifice of which is not protected against regurgitation as is the case with the inferior vena cava. Owing to the prolonged stasis of the circulation through the paralyzed veins the blood in them is deprived of all of its oxygen and the extreme blueness results.

**Effect of Nauheim Baths on the Heart,** by Leslie Thorne Thorne.—Careful clinical and instru-

mental observations showed that the proper administration of Nauheim baths in cardiac cases increased the contractility of the ventricular musculature, improved its tone and increased the conductivity of the bundle of His. Cases with dilated, weakened hearts with associated elevated blood pressure gave the best results. The presence of valvular disease did not constitute a contraindication to the use of the treatment.

## CHINA MEDICAL JOURNAL.

September, 1915.

**Splenomegaly: Report on a Hundred and Four Cases in South China,** by G. D. Whyte.—In spite of a careful consideration of the symptoms and an examination of the blood, it is impossible to say whether these patients were suffering from malarial cachexia, histoplasmosis, or some condition hitherto undescribed. One or more cases of splenic anemia may have been included. If they are cases of malarial cachexia, the ratio of the leucocytes to the hemocytes, which has been found useful for differentiation in India, does not apply to patients in South China.

**Splenectomy in Kala azar,** by Samuel Cochran.—Three cases are reported, all of which showed an immediate and marked increase in hemoglobin. The leucopenia was abolished, there being a tendency to a moderate leucocytosis. One patient survived only seventeen days; the other two were in considerably better health. In one the liver had shrunk to normal size. Both have added weight. The temperature curve in both was more nearly normal. Parasites are still found, though in one case the number seems to be smaller.

## BOSTON MEDICAL AND SURGICAL JOURNAL.

November 4, 1915.

**Medicine: A Profession or a Trade,** by Hugh Cabot.—Accumulation of detail has rendered inevitable a division of medicine into specialties, so that the place of the general practitioner is being taken by medical groups which have developed either about a hospital as a centre, or about some individual who has surrounded himself with assistants and associates equipped with special knowledge. In its most finished form the medical group is represented by a hospital with medical and surgical chiefs, chiefs of special departments and subordinates, but the number of these hospitals is comparatively small. Yet the principle is widespread. Almost every internist or surgeon of large practice is in fact the head of a group of specialists who examine his patients and on whose collective opinions his own diagnosis, prognosis, and treatment rest. Such groups require vastly more income than did the individual general practitioner, and this increase of the cost of medical practice has fostered the growth of advertising, fee splitting, and the general exploitation of patients for money. This development threatens the professional character of medicine; there is danger of its being converted into a trade. To avoid this danger, it is necessary for all practitioners to receive salaries, and this means that either medical practice shall be taken over by the State, or shall be placed under the management of institutions and hospitals. State management prob-

ably would be inefficient, so Cabot favors the development of group medicine with the hospital as a centre, not necessarily treating all patients in institutions, but having visits made by members of the staff, the younger members working in the outlying districts, living there if necessary, but always keeping in close touch with their hospital centres and being promoted as experience and opportunity dictate. This he thinks would be feasible even in the country. The younger practitioners would have the more laborious work, the older members would occupy the positions requiring sounder judgment and fuller development; the development of individuals along the lines best suited to them could be permitted, the best in competition for scientific achievement would be preserved, while at the same time would be avoided the scandal of inhuman charges, of indecent exploitation of suffering humanity by the sharks of the profession, and the tragedy of the impecunious young doctor.

**Therapeutic Value of Injections of Whole Blood,** by J. Spencer Davis.—Blood is withdrawn by a twenty c. c. Luer glass syringe attached directly to a neo needle. The needle is introduced into a vein of the arm of the donor and as soon as the syringe is filled with blood, the neo needle is removed, a straight needle applied, and the blood is injected into the loose tissue of the abdominal wall. The smallest quantity capable of producing a noticeable response is one c. c., but in many cases this is insufficient. Three or four ounces produce as good an effect as a pint. Blood when kept in the syringe until clotting has begun, seems to cause a greater response than when it is injected immediately. Normal saline mixed with the blood seems to be of no assistance, but mixture with a solution of sodium citrate causes blood to produce a greater leucocytic response. The response is not so great when the blood is taken from the patient himself as when taken from someone else, but if it is changed by the admixture of a strong sodium citrate solution, the leucocytic increase is much greater. Results are reported in pneumonia and empyema, sciatica, hyperthyroidism and multiple arthritis, malnutrition and anemia, diabetes and neuritis, and diabetes and sciatica.

**Successful Treatment for Acute Infections of the Airways,** by Irving Wilson Voorhees.—The course of acute respiratory diseases can be greatly shortened by direct instillations of aromatic drugs, of which a solution of menthol in oil is the most effective. The quick result is striking in many cases, the procedure is absolutely harmless, and it is of the highest value in treating the throats of professional singers.

#### JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

November 6, 1915.

**Variation in the Platelet Count,** by W. W. Duke.—In normal persons, under constant conditions the platelet count is relatively uniform. In disease the count was variable, some observers reporting high, others low counts for the same disease, and still others reporting both high and low counts for a given disease in different subjects. Experiments undertaken to modify the platelet count in animals showed that diphtheria toxin caused an

immediate fall in the platelets when given in large doses, while small doses caused first a rise and later a fall. Tetanus toxin produced less effect. Killed typhoid bacilli in large doses given subcutaneously raised the count. Large doses of benzol at once reduced the count, small doses caused first a rise, then a fall, or a rise only. Massive doses of x rays caused a fall, smaller doses a rise. Tuberculin gave results similar to those obtained with typhoid bacilli. From these experiments the conclusion was that any agent which in small doses caused a rise in the count would produce a fall if given in large doses. These facts harmonize with the general actions of stimulants, which usually act as depressants in large doses. The changes in platelet counts in diseases can be explained on this basis. Where the toxin is very active or very abundant it will act as a poison to the bone marrow and cause a fall in the platelet count. Where it is feeble or present in small amount, it will cause a rise, with or without a later fall. The rise during convalescence may be regarded as due to the neutralization of the toxin. The variability of the results of different observers can be laid to the differences in the severity of the different diseases and cases studied.

**Chenopodium in Uncinariasis,** by William A. Bishop and O. T. Brosius.—Oil of chenopodium was employed alone in a series of cases of uncinariasis, while in another series it was given alternately with other well known vermifuges for comparison. The results and relative effectiveness of the different drugs were measured by daily counts of the numbers of worms expelled in the stools. Chenopodium was found to be decidedly more effective than other remedies, including thymol. Its administration was also much simpler and the patient was, therefore, much more likely to undergo repeated administrations to accomplish a complete cure. Doses of eight minims each were enclosed in capsules and each course of treatment consisted in the administration of two capsules every two hours for six hours. The last dose was followed in four hours by two ounces of castor oil. No dietetic restrictions are necessary and the treatment can be repeated every three days until a cure is effected. For children the dose can be calculated by Young's rule. The drug seemed to be quite without danger in the doses here recommended.

**The Blind Dental Abscess,** by Henry Ludwig Ulrich.—Routine examination of the teeth of all patients in a hospital medical service was made to determine the frequency of blind dental abscesses, and the same routine was extended to include a number of private patients. A little over sixty-eight per cent. of all artificially devitalized teeth were found to have special abscesses. In a total of 1,350 dead teeth examined, eighty-three per cent. were found to have abscesses. Of 159 cases bacteriologically examined, 150 showed *Streptococcus viridans*, either in pure culture, or as the dominant organism. The special abscess may not be the primary focus of infection, in fact it probably is not, but is rather only one of the locations of least resistance in which the organisms circulating in the blood find it easy to lodge and multiply. That the abscesses may, however, give rise to acute exacerbations of disease has been proved beyond doubt. Clinical analysis was made



of seventy-six of the cases. Five clinical groups may be defined: 1. A rheumatoid group. 2. A cardiovascular group. 3. An asthenic group, closely allied to Group 1. 4. A gastrointestinal group. 5. A genitourinary group. The diversity of the clinical manifestations due to a common etiological factor have led to the term, streptococciosis, to include all types. Rheumatoid conditions were found in fifty-one per cent., heart lesions in forty-seven per cent., secondary anemia in forty-three, tonsillar involvement in forty per cent., and other conditions in a variable proportion of the cases. The dental foci should be removed and the patients should be treated with an autogenous vaccine, which is readily obtainable from culture of the dental abscesses.

**Postoperative Röntgenography**, by James T. Case.—Unfavorable results were found very frequently, particularly after operations for the relief of intestinal stasis. Acute obstruction of the small intestine was very common after various abdominal operations, particularly after gastroenterostomy and was apparently due to a sort of sphincteric action developing in the small intestine three to six cm. below the opening. In lateral intestinal anastomosis the two coils of intestine often failed to cooperate in action and produced a stasis. Following appendectomy cecal stasis was frequently observed and some degree of this often remained permanently about the site from which the appendix had been removed. The majority of cases of ileocolostomy performed for the relief of intestinal stasis were ultimate failures, though many of the patients had some relief for a short period after operation. In the majority of the patients a reversed colonic peristalsis was present leading to a permanent large colonic residue which could not be evacuated by any means. In these cases ileac stasis was common. This latter could be prevented by the formation of a one way valve and by insertion of the ileum as near as possible to the blind end of the remaining colon. Unless this was done, the end result was infinitely worse in the vast majority of cases than the initial condition for which operation was performed.

#### MEDICAL RECORD.

November 7, 1915.

**Scientific Doubt in Surgical Diagnosis**, by John B. Roberts.—A case of horse shoe kidney diagnosed and operated in as an appendicular abscess and also a case of concealed hemorrhage which post mortem was revealed to be intrahepatic, show that occasionally cases occur in surgical work where an accurate diagnosis is impossible before operation. In the treatment of fractures care must be taken not to rush to the open operation until the ordinary methods have been given a fair trial. Furthermore interval operation should not be promiscuously advised inasmuch as there is even in these cases considerable operative risk. All tumors of the breast in women should not be considered malignant nor should a sweeping operation be done until an accurate diagnosis has been made by a competent pathologist. Healthy tonsils should never be removed, as they are not actually unnecessary organs.

**Bone Grafting and Arthroplasty**, by George H. Sexsmith.—The principal cause of success in bone surgery is asepsis. The requisites of successful bone

and joint surgery are asepsis, technic, thorough understanding of the anatomical condition and a mechanical turn in the operator. No fracture compound or otherwise, should be operated upon with the use of any internal appliance before seven or ten days have elapsed from the time of the injury. Exceptions are fractures around the joints and cases where soft parts are in danger of being injured by the pressure of displaced fragments. Inlay bone grafts are preferable to metal plates and this method has greatly improved the prognosis in Pott's disease. Arthroplasty has been perfected by Murphy to such an extent that it is now possible in many cases to give useful weight bearing and movable joints. The main principle in arthroplasty consists of interposition between the bones of some substance which will prevent bony union, and the best one is a pedicled flap of fat and capsular tissue of the joint. It may be necessary to remove some bone to allow this interposition and the raw bony surface must be completely covered.

**Neglect of Injuries to the Nose**, by D. Bryson Delavan.—Fracture of the nose, especially common in football, also in boxing, is frequently neglected, as repair is rapid and prevents replacement after a few days. The grand opportunity for best results is either immediately or within a few hours after the accident. Neglect of nasal fracture results in lifelong deformity with respiratory obstruction, reflex irritation and sinus infection.

**Quinine after Rectal Operations**, by Edmond Bonnot.—The technic, which is new, consists in injecting ten grains of quinine hydrochloride in two ounces of water at 100° F. through a soft rubber tube into the rectum, which is clamped for one hour to prevent fluid from escaping. This is repeated after six hours and the tube is then withdrawn. The next day the patient is given one and a half ounce of castor oil. The result is that there is no pain or tenesmus even when the bowels move, and there is free escape of gas. The patient never requires morphine, while thirst, nausea and vomiting are favorably influenced.

#### LANCET-CLINIC.

October 30, 1915.

**The Adrenaline Reaction and Its Bearing on Treatment in the Gastric Crises of Tabes**, by Bayard Holmes.—Intramuscular injection of 0.5 c. c. of one in 1,000 adrenaline solution was found to cause a paradoxical drop of thirty to forty mm. Hg. in the blood pressure in cases of tabetic gastric crisis. Complete relief from the pain was simultaneously experienced. The pressure rose again and the pain returned in from half an hour to fifty minutes. A similar paradoxical lowering of pressure had already been observed in dementia præcox and by Newberger in cerebral syphilis and menstruating women. The facts that an animal in which betainazolyethylamine—a toxic amine contained in ergot—has been injected shows the same paradoxical action of adrenaline when the latter is subsequently introduced, and that the toxic symptoms due to the amine are removed when the adrenaline is injected, suggested to Holmes that betainazolyethyl-

ylamine might be present in the system as a result of intraintestinal putrefaction in tabetic gastric crises, and that adrenaline might bring relief in the same way as it does in the animal experiment just referred to. Examination of the stools in such cases did demonstrate the presence of a relatively large quantity of the amine. Between attacks, on the other hand, none of the amine was found. The further clinical observation that amyl nitrite and chloral hydrate relieve the pain of the gastric crisis is held also to support the author's theory, as these drugs, respectively, split up and bind the amine, in each instance thereby destroying its toxicity. The paradoxical adrenal reaction is to be considered useful as a means of diagnosis in cases where a surgical operation for the relief of pain, presumably tabetic, is contemplated.

**Surgical Treatment of Gastric and Duodenal Ulcers**, by J. R. Wathen.—Only a few years ago gastroenterostomy was considered the ideal procedure in chronic gastric and duodenal ulcers. Carefully reviewing the entire subject, Wathen found the best authorities now fairly well agreed that gastroenterostomy alone will permanently cure only a small percentage of cases. Cases free from pyloric obstruction are less curable unless temporary or permanent closure of the pylorus is effected. All gastric ulcers, on account of the risk of subsequent cancerous disease, should be resected with the knife or actual cautery. Duodenal ulcers should, where possible, likewise be resected. The Finney operation and partial pylorotomy have a larger field of usefulness than was formerly supposed.

# AMERICAN JOURNAL OF ORTHOPEDIC SURGERY.

October, 1925.

**Arthritis urica; Relationship of Its Arthritic Findings to Those of Certain Other Types of Chronic Multiple Arthritis**, by George R. Elliott.—The writer differentiates the uratic type of arthritis from the various other types of chronic multiple arthritis. In his study of the uratic type, he notes the absence of joint destruction, condensation of bone and the localized areas of biurate of sodium. He thinks metabolic studies are of considerable value.

**Quiet Hip Disease**, by Henry Ling Taylor and William Frieder.—The authors give a description of osteochondritis of the hip or Perthes's disease taken from a study of nineteen cases. It is a distinct clinical entity, is benign and common, and is a cause of one type of osteoarthritis of the hip.

**Osteochondritis deformans juvenilis (Perthes's Disease)**, by Nathaniel Allison and Ellsworth F. Moody.—The symptoms, diagnosis, etc., of Perthes's disease are described with eight cases, all of which were treated by fixation of some type or recumbency. Three other cases with similar symptoms are presented, the lesions of which involve epiphyses of other bones. The authors believe that the condition is due to a circulatory disturbance.

**Limitations of the X Ray in the Diagnosis of Certain Bone and Joint Diseases**, by Albertus Cotton.—This paper calls attention to certain limitations of the x ray in the diagnosis of disease and the amount of involvement present owing to the fact that differences in the composition of struc-

tures of the same density cannot be shown; the x ray being of little value in the incipency of certain diseases and often misleading in the later stages. Clinical aid is necessary.

**Association of Static Disturbances in Children**, by DeForrest P. Willard.—The author, in a study of 111 cases with some static abnormality of the lower extremities, found that in eighty-seven per cent. there was accompanying deformity of the spine.

**Resection of the Transverse Process of the Fifth Lumbar Vertebra for the Relief of Painful Back**, by Wallace Blanchard and Charles A. Parker.—A case is reported in which the transverse process of the fifth lumbar vertebra was impinging upon the ilium causing severe symptoms which were not relieved by mechanical treatment. In operating, an incision was made over the centre of the transverse process and the tip removed by means of careful chiseling. Patient made a complete recovery with entire relief of symptoms.

**Study of Juxtaarticular Sarcoma**, by Percy Willard Roberts.—In nine cases of juxtaarticular sarcoma the difficulty of making an early differential diagnosis between tuberculosis and sarcoma was made clear. Symptoms and signs, other than those resembling a case of tuberculosis, which would lead one to suspect a sarcoma are, early local tenderness, pain which is unrelieved by fixation, rapid change developing in successive x ray photographs, a lesser degree of deformity in proportion to the amount of destruction in the spine cases, early, extensive and dense induration, not having a tendency to abscess formation, in the hip cases.

**Typhoid Spine with Autopsy Findings**, by J. Torrance Rugh.—The author dwells upon the autopsy findings of a case which manifested typhoid spine after an attack of typhoid fever. The patient lived for seven years after the initial illness. It was noted from the microscopical study of the part affected that the intervertebral disc, between the third and fourth lumbar vertebrae, was replaced by dense connective tissue with complete absence of cartilage.

# ARCHIVES OF DIAGNOSIS.

July, 1925.

**The Schick Diphtheria Reaction**, by A. Levinson and M. L. Blatt.—The results of a series of tests performed on 208 children are reported. The technic was the same as employed by Schick, excepting in the mode of preparation of the toxin, which consisted in diluting a strong diphtheria toxin with nineteen parts of normal saline solution and then diluting further with 28.5 parts of the same solution. The injections were made in the scapular region, and an area of erythema and induration measuring at least 0.5 by 0.2 cm. was required as an indication of a positive result. The conclusion was reached that the Schick reaction is valuable in dispensary as well as in private practice. At least twenty-four hours should be allowed to elapse before a decision is reached as to whether in a given case, the result is positive or negative. The examination should be repeated in twenty-four hours, and if possible also several days later. From sixty-one to seventy-eight per cent. of the Schick reactions

performed by the authors were negative. Since a high percentage of children thus possess natural immunity to diphtheria, antitoxin administration can be dispensed with in many cases if the Schick test is applied. All cases with a positive Schick reaction on exposure to diphtheria should be given antitoxin. The reaction was found, as a rule, negative in children under six months of age, and frequently also in those under twelve months.

**Value of Pituitary Extract in Distinguishing between False and True Labor Pains**, by S. W. Bandler.—In view of the known fact that pituitary extract augments uterine contractions during labor, but exerts no effect before labor pains come on, the author used the drug in doubtful cases with the object of determining whether uterine pains were real or false. The procedure proved of great value in several instances. It was found by experience that if, in doubtful pains, a third of an ampoule of pituitary extract is given hypodermically three successive times at half hour intervals and no regular rhythmic pains then come on, the patient is not actually in labor. On the other hand, not infrequently the administration of pituitary extract brings on regular rhythmic labor pains, and the patient goes on into and through labor just as she would have under ordinary circumstances.

## Proceedings of Societies.

### ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES.

*Twenty-fourth Annual Meeting, held at the Hotel  
Raleigh, Washington, D. C., September  
12 to 15, 1915.*

The President, Colonel JEFFERSON R. KEAN, M. C., United States Army, in the Chair.

**History of Military Surgery.**—Secretary BRECKINRIDGE, at the public meeting, spoke of the duties of army surgeons in Frederick the Great's army and told of the losses in the crusades due to lack of medical supervision. He emphasized the necessity of any power of first rank having a thoroughly efficient medical corps, and brought out the resourcefulness of the military surgeon in devising means to counteract the effects of weapons of destruction. He terminated by showing how the money spent on the Medical Department of the Army was fully vindicated by the work of such men as Reed, Gorgas, and Russell.

Doctor LEACH, in his welcome, made a categorical review of prominent phases of surgical science from Xenophon to the present day, mentioned over eighty prominent physicians and their deeds, and dwelt at length on the high lights in the history of the Medical Corps of the United States Army and Navy and the Public Health Service.

Surgeon General RUPERT BLUE, first vice-president of the association, replied briefly and appropriately.

**Presidential Address.**—Colonel JEFFERSON R. KEAN, in the annual presidential address, presented as the dominant thought of his theme the lessons of the present European war. The ratio of killed to wounded in the Prussian and Boer wars was not as

great, nor was infection in those wars so deadly as in the contemporary crisis; open wounds and free drainage were the surgical lessons of the present great war. In spite of infection, sixty to seventy per cent. of British wounded and eighty per cent. of German wounded were being returned to the front. Typhoid and typhus had both been kept well in check. The problems of the military surgeon had been more those of siege warfare than of mobile armies, and with the advent of motor ambulances evacuation had been simplified. The development of the English army had been of greatest interest because it, like theirs, depended on volunteer service. This army consisted of four branches: the Regular Establishment, the Territorials, the New or Kitchener's Army, and the Colonials. The Colonials had their own medical establishments, while the Royal Army Medical Corps was the regular body. The need for medical officers had been acute, but the requirements not exacting. Requirements, as stated in the *British Medical Journal*, were that candidates for commissions must:

1. Be registered practitioners and furnish a certificate of good character from a person of position and responsibility.
2. Engage to serve twelve months, or until their services might no longer be necessary, whichever should happen first. Age not to exceed thirty-five years, except under exceptional circumstances. To furnish a medical certificate that they were in good health physically and of sound constitution and fit for hard physical work.

The British were doing for their volunteers what the Americans did for theirs in the last war—taking all comers and trusting to luck as to their qualifications; in this respect the Medical Reserve Corps would give a great advantage in a future war. Commissions of Lieutenant Colonel and Surgeon General were being given for consultants in general and base hospitals. The United States could place two divisions of regulars and eight or ten of organized militia in the field, but there were not enough medical officers to handle this number. For service in the field, young and trained men were necessary. The speaker dwelt on the plan of having places in the reserve corps filled with recent graduates, who, after a couple of years of training, would be transferred to the inactive list, and then settle down to civil practice, and concluded by outlining Doctor Rodman's plan for a National Board of Examiners, adding that he hoped reservists of twelve years' standing would be given the rank of captain, which did not carry with it the suggestion of immaturity and inexperience which went with the present title of lieutenant.

**Asphyxiating Gases as a Weapon in Warfare.**—Dr. GEORGE A. LUNG, medical inspector, U. S. Navy, stated that the chemical attack, which included asphyxiating gases and flame, made its first appearance about the fifth century, B. C. Greek fire was invented in the fourth century and contained pitch, resin, asphaltum, or petroleum, sulphur, and quicklime, and probably saltpetre. Upon ignition this compound developed benzine and produced explosions. Asafetida, oxide of cacodyl, codol, scatol, and bisulphide of carbon had been tried, but never proved very satisfactory. In 1870,



a French chemist prepared a fulminate of potash to repel the German invaders. When chemists learned how to liquefy gases, new possibilities presented themselves, such as liquid sulphuric acid, chlorine, bromine, nitrous binoxide, and carbon dioxide. Carbon dioxide, nitrogen, and hydrogen excluded a supply of oxygen. Carbon monoxide and cyanogen were so powerful that less than one per cent. in the air would cause death. These gases were all intensely irritant to the respiratory mucous membranes and mechanically interfered with respiration. In the campaign in Flanders, last spring, the principal gases were chlorine, bromine, vapor of formol, nitrous vapor, and sulphurous anhydride. Fires lighted in front of the trenches caused the gases to become disengaged and the wind carried the fumes, but often carbonyls were used, also cylinders and explosive shells which released gases. Chlorine was manufactured cheaply and could be indefinitely preserved. It volatilized quickly with a vapor heavier than air. Bromine was not so useful because of greater expense of production. Sulphur dioxide was not effective enough, although liquid sulphur dioxide was often used in hand grenades. Nitrogen tetroxide had been used, also liquid carbon dioxide. Burning inflammable gas was more formidable at short range, but shelter from it was more easily found. Liquid chlorine gas was brought to the trenches in steel cylinders under seventy-six pounds pressure. There was an outlet pipe which dipped into the gas, and whose other end projected eight and a half feet. Upon opening the valve, the liquid gas was ejected by its own pressure and formed a greenish yellow mist. As the liquefaction pressure was low, many cylinders had to be used to produce a large volume of the gas. A mixture of one per cent. of chlorine was dangerous and five per cent. fatal. One litre of chlorine rendered 70,000 cubic feet of air unfit to breathe. Chlorine and bromine provoked spasms of the glottis and inflammation of respiratory mucous membrane which might prove rapidly fatal. The irritation caused abundant expectoration tinged with blood. Many died vomiting blood and all passed bloody urine. Eyes watered and the eyelids swelled, the cheeks became violaceous red, and the features drawn. Dyspnea and coughing set in, often with stitches in the side and painful and jerky speech. Often bronchopneumonia or gangrene of the lungs set in. Out of 112 patients in the Lille hospital, two had hemoglobinuria for several days, while several had persistent albuminuria and most of the patients passed concentrated high colored urine containing much biliary pigment. Often the sputum became rich in microbial flora, especially after gangrene of the lungs set in when anaerobes became plentiful. In a death from pneumonia, there was found congestion of the entire respiratory tract, injection of the digestive tube, massive degeneration of the liver, spleen, and kidneys, and massive pneumonia of the right lung with gangrene at the base. An English physician said that the outpouring of mucus was so extreme that a patient stood in danger of being drowned in his own secretions. Often death was due to acute bronchitis and its secondary effects. Those who were not killed immediately, had a lin-

gering and painful death, while the few who survived were permanently injured and became invalids for life. The effect of the gas was to fill the lungs with a watery frothy matter which gradually increased and rose till it filled up the whole lung and came up to the mouth—it was suffocation and slow drowning. It was the most awful form of scientific torture. The use of gas not only destroyed the enemy, but enabled his position to be occupied. In one instance the full effect of the gas was experienced at a distance of 3,000 yards and could even be smelled three miles away. Mechanical fans were futile, such as aeroplane propellers, etc., and hot air currents and ammonia were just as likely to be wafted back and increase the damage. The best prophylactic measure yet devised had been the mask combined with a neutralizing chemical. The mask to be effective, must have within its meshes either hyposulphite of sodium or common washing soda in moist condition. The formula recommended by the Academy of Medicine in Paris was: Sodium hyposulphite, 1,000 grams; sodium carbonate, 200 grams; glycerin, 150 grams; water, 800 grams. However, there was no specific medicinal remedy. There had always been a cry against every new method of destruction. First it was fire arms, then mines and torpedoes, then aerial bombs, poisoned food and wells, although nothing yet had been said against malignant bacteria. The German War Book advised "the fullest, most dangerous, and most massive means of destruction" as obtaining results fastest and therefore the most humane. It is really a case of all was fair in love or war.

**Lack of Protection after Antityphoid Vaccination.**—Dr. HENRY J. NICHOLS, captain, M. C. U. S. army, said that the Widal test was not trustworthy, because, after vaccination, not only might positive reaction persist for a year or more, but also a latent Widal reaction might actually be made positive by other infections. The recovery of typhoid bacillus from the blood urine, or feces, or an autopsy with a demonstration of anatomical lesions, was practically the only sure way of specific diagnosis of typhoid fever after vaccination. In the case of the English army in India, when two doses were used, immunity began to disappear within two and a half years. At present one revaccination with three doses four years after the first vaccination seemed sufficient. The question of the best strain of bacillus was still under discussion, but Rawling's strain as used in the army seemed most effective. Vaccination was most effective the first three months after its manufacture, and after eight to twelve months became inert. A sensitized vaccine made less of a demand for reaction and hence produced less immunity. The reason that vaccination was more successful in the army than in civil life, was probably the use of a better vaccine, although modern sanitation might have some slight influence.

**Brian Surgery in War.**—Doctor JACOB, lieutenant colonel, surgeon general of Illinois, believed that for compound fractures of the skull all that was necessary was to remove whatever splinters were present and to smooth the edges. If the fracture was depressed, then the fragments must be elevated sufficiently to relieve pressure. Loose frag-

parts not entirely detached should be preserved. Hemorrhage was generally profuse and radical surgery should be undertaken only at field or evacuation hospitals. Grave injuries of the skull were not necessarily fatal. Operative procedure must be carried out under the strictest aseptic precautions. For patients suffering from brain injuries transportation after operation was highly injurious, and absolute quiet was essential for ultimate recovery. Considerable loss of scalp should be remedied by transplantation, provided that there was enough healthy scalp left to allow sliding of a flap, otherwise resort should be had to skin grafting later on. Transplants from the tibia, ribs, or scapula might be utilized for scaffolding the skull defect. If parts of the scalp, bone, and dura were destroyed, leaving the brain exposed, they could tamponade lightly with gauze moistened in normal saline solution and renew as often as occasion required. All probing and blind manipulating should be avoided. Often there were no indications of a septic meningitis and yet there were pressure symptoms. This evidenced subdural hemorrhage, and incision of the dura was imperative. The dura should be sutured. Hemorrhage from the diploe could be controlled by gently crushing together the outer and inner plates of the skull with a bone forceps. An equipment consisting of a trephine, a hammer, a few sharp chisels, and a rongeur forceps were all that was needed for skull surgery. Russian felt was good to prevent hernia, applied in a pliable state, when it hardened into a protective mould.

**Points in the Prevention of Asiatic Cholera.**—Dr. ALLEN J. McLAUGHLIN, surgeon, U. S. P. H. S., said that with a thorough knowledge of the carrier and the bacteriological technic, the prevention of cholera became easy. In Germany, in 1905, and in Manila, in 1908, examination of healthy persons showed about seven per cent. to be bacillus carriers. In the Bilibid prison an outbreak occurred almost annually. Upon examining 264 inmates, seventeen were found to be carriers, or about 6.44 per cent. This was quickly suppressed by compelling thorough disinfection of the hands under guard, upon leaving the latrines and before eating. He had personally never known a bacillus carrier to harbor cholera vibrios for longer than twenty days, and generally not over ten days. He gave a table of observers who had noticed duration from ten to sixty-nine days. One person in Germany had vibrios for six months and this suggested infection of the gall-bladder and biliary passages—especially since the appearance was intermittent. In this particular case a saline purgative brought them out after a three weeks' negative reaction. Autopsy had found infection in biliary passages, so it seemed as though there existed long time carriers in cholera as well as in typhoid. A five day quarantine was not rigid enough for such persons unless a bacteriological examination was made of their stools. Under this system 150 stools could be examined very thoroughly in a day. Frank cases of cholera were less of a menace in spreading the disease than the carrier. Atypical cases often existed unsuspected in children. Diagnostic procedures might be limited to securing from the feces a pure culture of vibrio and its agglutination by an anticholera serum of at least one

to 4,000 titre. Enriching fluid should always be used, as vibrios were scarce in carriers. They should avoid the use of gelatin and use agar plates, three per cent., neutral to phenolphthalein. The so called cholera red reaction was valueless. Hanging drop procedures were time consuming and of little value because they were indefinite. He had never found freshly isolated cholera vibrios affected, even in dilutions of one to ten, by any except anticholera serum, in which they gave instantaneous agglutination of one to 200 and one to 1,000 or in one hour with dilutions at least one to 4,000. He never found a cholera vibrio freshly isolated from the human body which showed hemolytic properties or any marked variation in morphology; but practically, in strains freshly isolated, were found normal orthodox cholera vibrios which would respond to agglutination tests in a normal and orthodox manner. In addition to ordinary laboratory equipment only the following was needed: Cholera material, agar plates, peptone solution, anticholera agglutinating serum of a titre not less than one to 4,000. Cholera material was planted in peptone solution and placed direct on agar plates which were streaked from the solution after three, six, or twelve hours. The vibrio colony was tested in drops of one to 200 cholera serum on a glass slide for quick diagnosis, to be confirmed by a quantitative agglutination to the limit of agglutinability later. For the quarantine officer all cumbersome methods and unnecessary corroborative technic must be eliminated: For saving of time, test tubes were used instead of large flasks for peptone solution. Goldberger media increased the vibrios, but did not cause them to be overgrown, and this medium would be a greater restriction on the passage of Asiatic cholera through quarantine.

**Preparations of the Medical Department for Battle.**—Dr. A. FAURENHOULT, surgeon, U. S. navy, itemized the relief for wounded on shipboard as follows: 1. Each fleet was allowed a sufficient number of medical transports. 2. After action each ambulance vessel placed on designated ships trained men to supplement the ship's medical staff and to clear it of wounded and useless men. Medical personnel should not be placed in exposed positions in order to give immediate aid, because it exposed to loss men whose services would be needed at close of action; 3, the construction of modern vessels completely shielded most of the wounded behind armor; 4, intercommunication during action was difficult. To return men to action quickly, practical instruction should be given to the entire fighting force in efficient first aid; ample dressing material placed about the ship; ambulance parties organized; personnel and material protected; and temporary dressing stations established. Time under fire was short and wounds in this kind of warfare generally caused insensibility and not profuse hemorrhage. In big gun ships the construction was that of isolation and ambulance functions would begin only during a lull or at the end of action. At this time members of the crew would be available, so it was not necessary to detail three to five per cent. as stretcher bearers during action. The men at the temporary stations should be skilled in laying bare and sealing wounds and in principles of transportation other than by

stretcher. Protection should be amply given to material so that an operating room might be rigged up. The sick bay and permanent operating rooms might be demolished, therefore other spaces must be designated in advance. Location near the galley was advisable, for it was near running water, drains, ovens, etc., and had fresh air and light. Hospital men should be divided into various corps, to assemble and judge of precedence of wounded; to sterilize instruments; to swab with iodine; to give anesthetics; to apply dressings; to attend to aftertreatment; to act as clinical clerks. Nursing watches should be established and arrangements for diet made with the commissary department. The problem of berthing must be carefully studied out in advance, and would tax the ingenuity of the surgeon. The engine and fire room forces must not be overlooked. Each hospital corps man should have a haversack containing dressing material, fracture boards, tourniquets, etc.; some should have canteens of water and coffee. First aid packages on the sardine can principle should be hung near every gun, and all isolated positions should also be supplied with such packages. Stretches should be of wire splint with ten feet of line attached to the head in order to facilitate passing through hatches. These should be placed about the ship to save storing and in order to be handy for accidents during coaling and handling of stores. Forty per cent. of casualties generally meant out of action. In recent engagements vessels had fought until sunk and the percentage of drownings had been high. Anesthetics, cotton, gauze, muslin, ligatures, and adhesive plaster should be obtained in triple amounts. However, gauze and cotton could be replaced by oakum and waste; stock ligatures could be replaced by thread and other material from the general stores.

**Sanitary Troops—State and Federal.**—Major I. HARRY ULLRICH referred to the 1913 *Field Service Regulations* defining sanitary troops and to various army regulations detailing their duties. The first office of a medicomilitary officer was that of sanitarian and he must see to the sanitation of water, corrals, kitchens, etc. Theoretical knowledge of material and duties was not sufficient—there must also be a practical knowledge of material and personnel. The War Department looked with favor upon the actual field application of the theory acquired by study, yet why was it that in carrying out problems, the sanitary troops were so often left out, especially among the State troops. A unit of ninety-three officers, 486 men, ninety wagons, and 508 animals could not meet demands made upon them with no practical experience in cooperating with the line. In the transportation of the wounded, the sanitary troops were confronted with military problems based upon terrain and troops, the answers to which could be gained only from practical experience. Straub gave the proportions of battle casualties as twenty per cent. killed; eight per cent. nontransportable; thirty-two per cent. requiring transportation (twenty per cent. sitting up, two per cent. recumbent); twenty-eight per cent. able to walk to dressing station and field hospital; twelve per cent. able to march to advanced base. The loss in battle ranged from ten to twenty-five per cent., and disease often depleted the ranks another five to ten per cent. Present traditional mule drawn vehicles were slow,

inadequate, and expensive, and the cost of unnecessary suffering and loss of life from such methods was inestimable. An ambulance drawn by eight mules meant at least \$1,000, while a small automobile with an ambulance body could be purchased for considerably less. The motor ambulance occupied less space and attention and was more mobile. At Tobyhanna there was one of the first practical co-operative drills between sanitary troops and artillery. This camp was unusually beneficial and such institutions should occur every year and be lengthened to two weeks. Divisions should be concentrated together. Maryland was the second brigade of the seventh division, which comprised the District of Columbia, Maryland, New Jersey, Delaware, Virginia, and West Virginia, but this division had never been assembled. By not being assembled, there had never been a commander nor a chief surgeon appointed, yet this division if called on would have to work together. Who was there that they knew to take the responsibility? Nobody had ever been tried. The army now had six ambulance companies and six field hospitals, therefore it was obvious that experience was needed for both Federal and militia medical officers. The best way was to assemble complete divisions so that proper coordination could be carried out. The sanitary personnel of a division was large and how could a commanding officer ever hope to get the best service possible when he himself was probably not familiar with the practised workings of his organization? Sanitary troops must institute all practical sanitary measures so that fighting forces suffered no depletion in strength from unavoidable causes. This function was purely military. As the medical officer was subordinate to the commanding officer, it was the duty of the latter to see that the sanitary troops assigned to him had an opportunity to participate in war game maneuvers and to have trained troops. Sanitary troops must be regarded by both Federal and militia services as more than an interrogation point. Most militia line officers thought that medical officers were solely for the purpose of examining recruits, which was merely a side issue. The hospital corps man did not include the duties of a laborer, digging trenches and latrines, and running incinerators, and medical men should see that line men did not have this impression.

(To be continued.)

## Letters to the Editors.

### STUDIES IN NOMENCLATURE.

WILLIAMSTOWN, MASS., November 1917.

To the Editors.

From the minor editorial article, *Studies in Nomenclature*, in your issue for October 2d, I can only understand that an attempt was being made to give a Latin name to an association, in which name the Latin verb *nocere*, or its opposite, should form the main part and foundation. As the second part of the name is to be *association*, which is a noun substantivum, and as such must be qualified by the first part, and since verbs cannot qualify nouns, and *nocere* is a verbum; it must be evident that the first part cannot be a verb, but either a noun in genitive, or else in apposition, or the verb must be changed into an adjectivum, or into an adverbium.

The present condition of the subject is such that



[illegible]

The further adjectivum forms are the participia, to wit: Participium praesentis, *nocens*, -*tis*; praeteriti: *nocitus*, -*a*, -*um*; Futuri activi: *nociturus*, -*a*, -*um* and Futurum pas-

These are all the forms of *nocco*, available for qualification. No other forms are known to be in use.

forged from it. Yet, evidently that was the object of F. I. Allen, of Cambridge, quoted in the clipping, as having suggested the "obvious and most euphonious form *innocasso*."

The gentleman named is entirely and doubly mistaken.  
The name of my countryman is not, as he says, I kill; and the  
word which is the Greek word, I am sure, means, and ought  
to mean, I am going to do it, though you think me a Greek.

Foot

But he did not mean the *root*, he meant the *stem*, a very different thing. The main stem of *noceo* is *noc*; the secondary stems, serving for the formation of the Modi and the Tempora of the conjugation, are found in the Tempora

At the suggestion of F. J. Allen of Cambridge, that any association should be called *innocassociation*, is not only un-Latin and ungrammatical, but entirely ignorant, because the *u*, which he thinks to be a stem ending, is, with *i*, the Tempus ending of the Tempus praeteritum perfectum indicativi, *nocui*, present through all the Tempora praeterita, as: *noc-uisti*, etc.; *noc-ueram*, etc.; *noc-uero*, etc.; *noc-uerim*, etc., same as in all regular verbs of the

PUEBLO, COL., *November 8, 1915.*

In the JOURNAL for October 16, 1915, there appears an editorial article on page 815, A Green Background in the Operating Theatre. It is stated that Sir Berkeley Moynihan is using the green sheet.

Permit me to say we have used a black sheet for a long time and find it most satisfactory. It emphasizes the field of operation and is restful to the eyes. One may endure a white sheet for a single operation, but for several operations the colored sheet is certainly a relief. When the surgeon suffers from reflected light the patient is necessarily affected. Inasmuch as a patient never sees the operating room, but is anesthetized in an adjoining room, there is no reason for considering the effect of color on him during operation.

May I add that our operating room is lined with lead—six pounds to the square foot on ceiling and sides, and twelve pounds to a square foot on the floor—left in its natural color. There is no reflected light, which is great advantage to the operator; but better, the room can be and is sterilized with steam after operations, especially if there is an infected case. Walls of mosaic, glass, slate, tile, cement, or plaster, are ruined by the application of steam; not so with lead. We began the use of lead in our operating room over twenty years ago. We have tested it for lead poisoning and proved that there is no danger from this source.

With a sloping ceiling that carries the water to the side, our operating room may be used immediately after sterilizing, without fear of drops of water from the ceiling finding the field of operation.

The room in which anesthetics are administered is painted green and decorated with pictures and frames in sepia and other browns—colors which, psychologists say, are least irritating to the brain.

Pardon me for taking this liberty, but I want to say we have simply tried to keep up with the good work of the East, and may I add that Doctor Lorenz stated to his class in Vienna, after visiting and operating in Minnequa Hospital, that he found away out on the wilds of the United States one of the best hospitals he ever saw? Pardon this egotism—but I can't help it.

Under separate cover I am sending you our latest annual report, which describes and illustrates our operating room.

B. W. CORWIN, M.D.

We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

By LINETTE A. PARKER, B.Sc. (Columbia University),  
R. N., Bachelor's Diploma in Education, Teachers' Col-  
lege; Instructor in Nursing and Health, Teachers' Col-  
lege, Columbia University, New York. Illustrated with  
30 line drawings and 3 plates. Philadelphia and New  
York: Lea & Febiger, 1915. Pp. vii-311.

It is so important for a nurse to have an intelligent understanding of the handling of drugs that she should neglect no opportunity to increase her knowledge in this respect. Linette A. Parker has offered a work on materia medica and therapeutics which it is our pleasure to recommend. While it is primarily intended as a textbook for student nurses, experienced nurses would do well to familiarize themselves with its contents. As a manual it possesses all the essential qualifications—clearness, simple style, logical arrangement of text matter, and numerous illustrations, some of which are especially fine examples of color printing. The problems and the suggested topics for review are also valuable study helps. One chapter is devoted to experiments, the performance of which will obtain for the nurse a clearer comprehension of some of the principles studied.

The exhaustive nature of the book will not permit of a general outline of its contents, but we will make mention of two "parts" to which we were particularly attracted. One relates the origin of drugs, emphasizes the precautions which the nurse should observe in their administration, and gives a general outline of first aid treatment in poisoning including a list of the common poisons and their antidotes. The other describes the action of various drugs on the different systems of the body. The author does not give detailed descriptions of the physical properties of drugs, believing that "familiarity with their appearance can be gained only by actually seeing them."

Of value is the chapter on Legislation Concerning Poisonous and Habit Forming Drugs, and the sections treating of such therapeutic measures as psychotherapy, hydrotherapy, electrotherapy, ray therapy, and treatment by serums and vaccines.

*Orthopädische Behandlung Kriegsverwundeten.* Von k. u. k. Oberstabsarzt Prof. Dr. HANS SPITZY, Kommandant des k. u. k. Reservespitals No. XI (orthopädisches Spital und Invalidenschulen) und k. u. k. Assistenzarzt Dr. ALEXANDER HARTWICH, Wien. Mit 144 Textabbildungen. Berlin und Wien: Urban & Schwarzenberg, 1915. Pp. x-214.

Those who recall the visit to this country of Hans Spitzzy, in 1904, when he accompanied Professor Albert Hoffer, will be interested in his account of the application of elementary orthopedic principles to soldiers wounded in the European war. The very unusual opportunity is afforded by the military hospitals of restoring function and adapting tools and appliances to large numbers of soldiers who have been incapacitated by the casualties of war. The methods employed are those well known to every orthopedic surgeon who has encountered the same problems when they have followed injuries sustained in manufacturing, railroad, and commercial life.

The illustrations are good, the press work is attractive, and the book will prove of service to those about to begin army medical service and unfamiliar with modern orthopedic procedures.

*Outlines of Internal Medicine.* For the Use of Nurses. By CLIFFORD BAILEY FARR, A. M., M. D., Instructor in Medicine, University of Pennsylvania; Assistant Visiting Physician, Philadelphia General Hospital; etc. Illustrated with 71 Engravings and 5 Plates. The Nurses Textbook Series. Philadelphia and New York: Lea & Febiger. 1915. Pp. vii+408. (Price, \$2.)

Farr's volume serves the double purpose of a textbook for nurses in training and a work of reference. Doctor Farr has sought to emphasize points which will be of particular

value and interest to the nurse, such as etiology, pathologia (including course, complications, and prognosis), prophylaxis (based on etiology), diet, and physical modes of treatment, the latter naturally being of more importance to the nurse than medicinal treatment. Such measures as cupping and hot packing, however, are omitted as nonessential, on the assumption that the nurse has already become familiar with those procedures through her works on general nursing. But brief discussions of rare diseases are included, which, to quote the author, may be unimportant from the nurse's standpoint, but are of value in that they give her a broader view and stimulate her interest in her profession. They also enhance the reference value of the book.

The volume is interesting and readable. Unlike most nursing textbooks of this nature, technical terms have not been avoided, although they have usually been defined when they first occur. The subjects presented are given unusually fine illustrative treatment.

*Compend of Medical Chemistry, Inorganic and Organic, including Urinary Analysis.* By HENRY LEHMANN, A. M., M. D., Professor of Chemistry in the Woman's Medical College of Pennsylvania and in the Wagner Free Institute of Science, Philadelphia. Sixth Edition, Revised. Philadelphia: P. Blakiston's Son & Co., 1915. Pp. vi-241. (Price, \$1.)

This compend contains such of the essentials of chemistry as are considered of importance by the author. Naturally, opinions differ as to what the medical student requires; but since the present volume is in its sixth edition, it has probably been found useful to some readers. The section in clinical chemistry is particularly brief and sketchy.

*Installation of Subways and Subway Cars.* By ROBERT G. KLOTZ, M. E.

In this small brochure the author proposes the installation of a fan system at each station with ducts so arranged that their openings will lie opposite the ventilator openings in the cars. By this means it is proposed to blow a current of fresh air into each car while it is at rest at the stations, and this fresh air is to be distributed within the car by the ceiling fans now provided. When a train is not at the station the air will be blown in and will flow over the tracks and the platform, providing ventilation. The plan certainly appears to be both simple and economical, but it is difficult to believe that it will be effective in any considerable measure in providing suitable ventilation for our crowded underground avenues of transit.

## Interclinical Notes.

The *Outlook* for November 10th discusses editorially the movements of the Red Cross in the various countries of Europe involved in war and in Mexico; movement in the last country has been hitherto—temporary only, the *Outlook* hopes. Apparently Carranza is too proud to accept charitable nursing from foreigners. It seems to us that under the circumstances the Red Cross, instead of getting angry, may withdraw gracefully with the classical remark, "We should worry."

\* \* \*

We learn from a trustworthy source that this famous epigram of resignation—"We should worry"—which took its origin on the East Side of New York and was first heard on our vaudeville stage from the lips of a clever comedienne, has become the best known catchword of the trenches in Europe, where, apropos and malapropos, it rivals in force, vivacity, and frequency, the roar of high explosives. It even greets the surgeon who is obliged to inform the soldier that his leg must come off.

\* \* \*

In *Commerce and Finance* for November 10th, Richard Spillane reprints a letter from China, in which there is an appeal for the services of a veterinary surgeon "at the regular missionary salary." If anyone of our numerous readers who are graduates in comparative medicine, feels like an adventure in the Far East, he may address Dr. Joseph Baile, Dean of the College of Agriculture and Forestry of the University of Nanking, Nanking, China. He will learn a great deal about many cattle plagues, particu-

larly rinderpest; he must be a good Christian, but will not be expected to preach.

\* \* \*

Doctors are absent from the November *Red Book*, always excepting the Young Doctor of Sir Gilbert Parker's Wild Youth, who continues to have exciting adventures in the Northwest, where, in spite of the vast snowclad solitudes, there seems always to be some sort of crime in process of incubation or execution. Philo Gubb has another wonderful disclosure to make in this issue; the ingenuity of this burlesque detective series by Ellis Parker Butler is really remarkable. Meredith Nicholson and our medically accurate friend, Rupert Hughes, have serials in course of publication.

\* \* \*

Escape from handcuffs and leg irons is a form of white magic which, if not invented in the United States, has received its greatest development here; American exponents of this trick have escaped from the best English, German, and Russian irons, put on by the respective police. It is interesting to read in O'Donoghue's *Story of Bethlehem Hospital*, that in 1814 an American patient named Norris, suffering from homicidal mania, gave so much trouble to the asylum authorities by the easy way in which he escaped from all handcuffs, that it was found necessary to devise a special apparatus to meet his case, an affair which prevented him from moving more than one foot in any direction. Pictures of Norris in this apparatus created so much sensation in England as to lead to radical revision of the laws regarding the chaining of the demented patients of Bedlam.

\* \* \*

The following neat verses appear in the *Prescriber* (Edinburgh) for October:

Twinkle, twinkle, little stye,  
Shining on my patient's eye!  
For your treatment I have come,  
Troublesome hordeolum!

Shall I first your form engulf  
With a wash of zinc sulph.  
Or, as once I did before,  
Lave you with some acid. bor.?

No—my plan will be to treat  
With a little gentle heat;  
Till your form's developed, then  
Cut—and (do not) come again!

## Meetings of Local Medical Societies.

MONDAY, November 22d.—Therapeutic Club, New York; Medical Society of the County of New York (annual).

TUESDAY, November 23d.—New York Psychoanalytic Society; New York Dermatological Society; Metropolitan Medical Society of New York City; Buffalo Academy of Medicine (Section in Pathology); New York Medical Union; New York Otological Society (annual); New York City Riverside Practitioners' Society; Valentine Mott Medical Society, New York; Washington Heights Medical Society, New York.

WEDNESDAY, November 24th.—New York Academy of Medicine (Section in Laryngology and Rhinology); New York Surgical Society; New York Society of Internal Medicine; Schenectady Academy of Medicine.

THURSDAY, November 25th.—New York Academy of Medicine (Section in Obstetrics and Gynecology); Ex-Intern Society of Seney Hospital, Brooklyn; Medical Union, Buffalo; Hospital Graduates' Club, New York; New York Physicians' Association.

FRIDAY, November 26th.—New York Society of German Physicians; New York Clinical Society; Manhattan Medical Society; Brooklyn Society of Internal Medicine; Italian Medical Society of New York; Academy of Pathological Science, New York; Hospital Graduates' Club, Brooklyn.

SATURDAY, November 27th.—New York Medical and Surgical Society; West End Medical Society; Harvard Medical Society; Lenox Medical and Surgical Society.

## Official News.

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the week ending November 12, 1915.*

**Anderson, T. B. H.**, Assistant Surgeon. Relieved from duty at Chicago, Ill., and ordered to proceed to New Orleans, La., on active duty. Granted ten days' leave en route to new station. **Billings, W. S.**, Surgeon. Granted ten days' leave of absence from October 14, 1915, to November 13, 1915, in accordance with the Surgeon General's Regulations. **Carrington, Paul M.**, Surgeon. Directed to report to a board of medical officers convened at the marine hospital, San Francisco, Cal., November 17, 1915, for examination to determine his fitness for promotion to the grade of senior surgeon; granted four days' leave of absence en route to station. **Fox, Carroll**, Surgeon. Granted five days' leave of absence from November 9, 1915. **Lombard, M. S.**, Assistant Surgeon. Relieved from duty in plague eradication measures in New Orleans, and ordered to report to the medical officer in charge of the Marine Hospital, Chicago, Ill., for duty and assignment to quarters. **Perry, J. C.**, Senior Surgeon. Granted one day's leave of absence, November 6, 1915. **Prieb, Paul**, Passed Assistant Surgeon. Leave of absence for twelve days en route to station amended to read seven days' leave of absence from October 26, 1915. **Schereschewsky, J. W.**, Surgeon. Directed to proceed to Milwaukee, Wis., for conference with the industrial commission of Wisconsin in regard to the proposed studies of industrial sanitation in that State. **Scott, E. W.**, Assistant Surgeon. Leave of absence for one month from October 6, 1915, amended to read "twenty-six days' leave of absence from October 6, 1915." **Sutton, Don C.**, Assistant Surgeon. Granted ten days' additional leave of absence from November 12, 1915. **von Ezdorf, R. H.**, Surgeon. Detailed to represent the Service at the conference on the prevention of mosquito-borne diseases, at the Department of Health, New York, N. Y., November 17, 1915. **Wertenbaker, Charles P.**, Surgeon. Directed to proceed to Waynesboro, Va., and await orders.

#### Board Convened.

Board of medical officers convened at the marine hospital, Detroit, Mich., for the physical examination of an alien. Detail for the board: Surgeon H. W. Wickes, chairman; Acting Assistant Surgeon K. L. Weber, recorder.

### United States Army Intelligence:

*Official list of changes in the stations and duties of commissioned and other officers serving in the Medical Corps of the United States Army for the week ending November*

**Allen, William H.**, Captain, Medical Corps. Relieved from duty in the Philippine Islands, to take effect on or about March 4, 1916, and directed to proceed to the United States. **Brooke, Roger**, Major, Medical Corps. Reports arrival at Fort Leavenworth, Kansas, for duty. **Doerr, Charles E.**, Captain, Medical Corps. On temporary duty at Fort McIntosh, Texas. **Ford, Joseph H.**, Major, Medical Corps. Reports arrival at Fort Hamilton, New York, for duty. **Foster, George B.**, Captain, Medical Corps. Reports arrival at Fort Banks, Massachusetts, for duty. **Fuller, Leigh A.**, Major, Medical Corps. Reports arrival at Fort D. A. Russell, Wyoming, for duty. **Gibson, Paul W.**, Captain, Medical Corps. Reports arrival at Fort Slocum, New York, for duty. **Griffin, Frank C.**, First Lieutenant, Medical Reserve Corps. Granted one month and fifteen days' leave of absence. **Jervey, A. J.**, First Lieutenant, Medical Reserve Corps. Reports relief from active duty at Fort Moultrie, South Carolina. **Jordan, Edward H.**, First Lieutenant, Medical Reserve Corps. On active duty and ordered to report to the commanding officer, Western Department, for duty. **Lincoln, Henry F.**, First Lieutenant, Medical Reserve Corps. Reports arrival at Jackson Barracks, Louisiana, for duty. **McLellan, George H.**, Captain, Medical Corps. Granted ten days'

leave of absence. **Meraux, L. A.**, First Lieutenant, Medical Reserve Corps. Reports departure from Jackson Barracks, Louisiana, and departure on one month and fifteen days' leave of absence, from November 5th. **Metcalf, Don H.**, First Lieutenant, Medical Reserve Corps. Relieved from active duty in the Medical Reserve Corps. **Mudd, Leo C.**, Captain, Medical Corps. Relieved from duty in Hawaiian Department, on or about March 22, 1916, and directed to proceed to the United States. **Pierson, Robert H.**, Captain, Medical Corps. Reports on two months' leave of absence, which will be spent in Rochester, N. Y. **Williams, Allie W.**, Major, Medical Corps. Reports on seventeen days' leave of absence with address at Columbus, Ga.

Each of the following officers, after arrival in the United States and upon expiration of their leaves of absence, will report as follows: Captain Howard Clarke to Fort Lawton, Washington; First Lieutenant Ziba L. Henry, Medical Reserve Corps, to Presidio of Monterey, California, and Captain William R. Davis, Medical Corps, to Fort Meade, South Dakota.

## Births, Marriages, and Deaths.

### Married.

**Allen—Ralph.**—In Erie, Pa., on Wednesday, November 3d, Dr. Charles W. Allen, of Washington, D. C., and Miss Katherine Louise Ralph. **Ellison—Newhall.**—In Swampscott, Mass., on Wednesday, November 3d, Dr. Daniel J. Ellison, of Lowell, and Miss Anna Gale Newhall. **Fleming—Day.**—In Boston, Mass., on Monday, November 1st, Dr. Patrick J. Fleming and Miss Mary M. Day. **Howard—White.**—In Winter Hill, Mass., on Wednesday, November 10th, Dr. Herbert H. Howard and Miss Ruby Gertrude White. **Kiser—Coleman.**—In Dover, Ohio, on Tuesday, October 19th, Dr. William E. Kiser, of Bellaire, Ohio, and Miss Gertrude H. Coleman.

### Died.

**Baldwin.**—In Pine Hill, N. Y., on Thursday, November 4th, Dr. G. S. Baldwin, aged fifty-six years. **Barber.**—In Rochester, N. Y., on Tuesday, November 2d, Dr. Harry W. Barber, aged thirty-five years. **Bradbury.**—In Canon City, Colo., on Wednesday, October 27th, Dr. James M. Bradbury, aged seventy-six years. **Burdette.**—In Lenoir City, Tenn., on Friday, November 5th, Dr. G. M. Burdette, aged seventy-eight years. **Chisholm.**—In Philadelphia, on Saturday, October 30th, Dr. William Wallace Chisholm. **Colby.**—In Boston, Mass., on Monday, November 1st, Dr. Edward P. Colby, aged seventy-six years. **Curtis.**—In Wilmington, Del., on Wednesday, November 10th, Dr. Ira C. Curtis. **Custis.**—In Grindstone Island, St. Lawrence River, on Thursday, November 4th, Dr. J. B. Gragg Custis, aged sixty years. **Fout.**—In Kempton, Md., on Tuesday, November 2d, Dr. Raymond C. Fout, aged thirty-seven years. **Gill.**—At sea, on Wednesday, November 3d, Dr. James Scott Gill, ship's surgeon to the R. M. S. *Scandinavian*. **Harter.**—In Grand Rapids, Mich., on Monday, November 1st, Dr. F. D. Harter, aged forty-three years. **Hasse.**—In Santa Monica, Cal., on Saturday, October 30th, Dr. H. E. Hasse, aged seventy-nine years. **Holliday.**—In Monmouth, Ill., on Saturday, November 6th, Dr. W. S. Holliday, aged sixty-five years. **Jaffa.**—In Denver, Colo., on Tuesday, November 2d, Dr. Perry Jaffa, aged forty-six years. **Kuhn.**—In Brooklyn, N. Y., on Friday, November 5th, Dr. George Richard Kuhn, aged sixty-eight years. **Lee.**—In East St. Johnsbury, Vt., on Friday, November 5th, Dr. Howard Lee, aged sixty-four years. **Murphy.**—In Baltimore, Md., on Thursday, November 4th, Dr. James M. Murphy, aged ninety-three years. **Perkins.**—In Kendallville, Ind., on Sunday, October 31st, Dr. Francis M. Perkins, aged twenty-six years. **Reutter.**—In Duncannon, Pa., on Saturday, October 30th, Dr. Harry Daniel Reutter, aged fifty-four years. **Secov.**—In Jeffersonville, Ind., on Sunday, October 31st, Dr. Solomon H. Secov, aged seventy-four years. **Willis.**—In Lexington, Ky., on Saturday, November 6th, Dr. Robert L. Willis, aged sixty-eight years. **Wolcott.**—In Boston, Mass., on Tuesday, November 9th, Dr. Grace Wolcott, aged fifty-seven years.



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## Original Communications.

### A SANITARY STUDY OF CONDENSED MILK.

By WILLIAM H. PARK, M. D.,

New York,

Director of Bureau of Laboratories, Department of Health.

M. C. SCHROEDER, M. D.,

New York,

Assistant Director, Department of Health.

AND PAUL BARTHOLOW, A. B., M. D.,

New York,

Of the Department of Therapeutics, Columbia University.

#### BACTERIOLOGICAL CONTENT AND THE CHEMICAL ANALYSIS.

By Dr. William H. Park and Dr. M. C. Schroeder.

The plan of investigation pursued in this study of condensed milk included:

1. The bacterial content of the milk used in preparing condensed milk.
2. The process used in condensing the milk, with especial reference to its effect on the bacteria.
3. A sanitary study of the condenseries.
4. The number of bacteria in the different brands of condensed milks offered for sale.
5. A review of the chemical analyses of condensed milks.

#### VARIETIES OF CONDENSED MILK NOW ON THE MARKET.

- I. Sweetened condensed milk made from whole milk with the addition of cane sugar.
2. Unsweetened condensed milk made from whole milk.
3. a, Evaporated milk made from whole milk.  
b, Evaporated milk made from skim milk.
4. Skimmed condensed milk—sweetened.
5. Skimmed condensed milk—unsweetened.

#### CONTAINERS USED IN MARKETING THE PRODUCT.

1. Small tin cans hermetically sealed.
2. Small tin cans with removable inset caps.
3. Pint and quart glass bottles for family trade.
4. Forty quart cans for confectioners' trade.
5. Large barrels for shipment in bulk.

In the course of this study, samples were analyzed from the raw milk used for condensing, from the milk as it was passing through the condensing process, and from the condensed milk marketed in the various types of containers. The importance of condensed milk as a food product, and the necessity that it should be standardized and controlled both chemically and bacteriologically, is realized when

we consider the amount consumed and the number of plants producing it. In New York State alone there are thirty-seven condenseries. Condensed milk is also largely manufactured in the west, in Holland, Switzerland, and Denmark; and much of this milk finds its way to the New York market.

The total number of pounds of milk received at ten condenseries visited was 415,000 pounds a day. This is but a very small fraction of the milk used for condensing purposes throughout the country.

#### BACTERIAL CONTENT OF MILK USED IN PREPARING CONDENSED MILK.

In obtaining the samples required for this study, ten creameries were visited. The creameries selected comprised two groups. In the first the manufacture of condensed milk was incidental to the trade of shipping raw milk to New York city. In the second group, the manufacture of condensed milk was the regular and established business of the firms.

The analysis of the samples showed that the amount of bacterial contamination of the milk varied. In the case of the general trade in raw milk, we found that many of the lesser firms employed an inferior quality of milk for condensing, and that the superior grades were shipped to New York city. This use of inferior milk for condensing seems to be the practice of all but the very best manufacturers.

Lack of space prevents our presenting the individual bacterial results obtained, but some of the milk delivered to the condenseries had a bacterial content of several millions to the c. c. In Table I, the bacterial average is shown.

| Inspection number. | Number of samples of raw milk taken. | Average number per c. c. raw milk. |
|--------------------|--------------------------------------|------------------------------------|
| 1                  | 1                                    | 1                                  |
| 2                  | 1                                    | 1                                  |
| 3                  | 1                                    | 1                                  |
| 4                  | 1                                    | 1                                  |
| 5                  | 45                                   | 94,000                             |
| 6                  | 1                                    | 1                                  |
| 7                  | 1                                    | 1                                  |
| 8                  | 1                                    | 1                                  |
| 9                  | 1                                    | 1                                  |

Average, 414,500

#### METHODS USED IN THE MANUFACTURE OF CONDENSED MILK.

The following methods employed in the manufacture of condensed and evaporated milks have been selected as representative of the mode of manufacture.

# METHOD OF MAKING UNSWEETENED CONDENSED MILK.

The milk goes from the mixing vat to a kettle, where it is heated to 170° F. in twelve minutes. From there it goes to a vacuum pan, where it is kept at temperature of 132° F., and a vacuum of twenty-six inches for nearly three hours. At the end the temperature is raised to 190° F. in order to thicken the milk by further evaporation. The vacuum then runs down to about nine inches.

The milk is then drawn off into forty quart cans containing sterilized paddles of wood. The cans are then placed in cold water and revolved. The paddles are stationary while the cans revolve. The milk is thus constantly stirred and cools in a short time. The paddles and cans are scrubbed and sterilized before using. After cooling to 60° F., the cans are put in the ice house and the temperature lowered to 32° F.

The general process of making sweetened condensed milk at many factories is similar to the foregoing, but there are numerous minor differences. The description that we have just given is a summary sketch of the ordinary manufacture, which can better be understood if studied in detail. The method of adding sugar is a point of primary importance. The keeping qualities of condensed milk depend upon the management of this detail, and the success of this process prevents the possibility of deterioration, which cannot occur when the sugar has been added in the requisite quantity and in the requisite state of refinement. This, obviously, is an important detail, profitable alike to consumer and manufacturer. For the public the effect of sugar in preserving milk and its effect or rather its physical and chemical characteristics as a medium of bacterial growth have been set forth in a rigidly scientific way by Owen (*Centralbl. f. Bakt.*, 40, 10, 1914), from whose studies the exact conditions under which sugar becomes a suitable medium emerge very clearly, throwing light on a much misunderstood subject.

The case is opposite with evaporated milk, which depends for its preservation on thorough sterilization in the cans. Here there is no need to add sugar, but the article, when the cans are opened, is liable to change like fresh milk or cream. The keeping qualities of evaporated milk are generally underestimated. As a matter of fact this product is sufficiently sterilized in the cans to keep for a long time, even in hot climates, as we are told by Beveridge (*Journal of the Royal Army Medical Corps*, 1914).

## 2. PROCESS USED IN MAKING EVAPORATED MILK.

"For unsweetened evaporated, the milk is heated in the kettle to 212° F. in about ten minutes and held there five minutes, then drawn into the vacuum pan, where it is kept at 130° F., vacuum 26 inches, for one hour or one hour and twenty minutes.

The requisite degree of condensation is determined by the hydrometer.

From the pan, the milk is discharged into a glass lined tank, then pumped through cooling coils till temperature is about 60° F. It then passes to an-

other glass lined tank as a holder, then to the can filling machines.

The tin cans ready for filling are in boxes. Girls take them up, invert them quickly, give them a sharp knock on the edge of the box, and feed them into the conveyer. The rest of the process is automatic. The cans are filled, pass on to the heading machine, and discharge into iron trays which are then placed in the great sterilizer—230° F. for thirty minutes. Here the trays revolve like a Ferris wheel for thirty minutes, then are taken out, cooled, kept about two weeks and examined for any imperfect cans, and then labeled as required."

A tabulation of the principal factors in condensing milk at the ten condenseries visited is given in Table II.

TABLE II.  
Temperatures.

| No. | Milk heated to spec. degrees F. | No. of minutes spent in heating. | Held in vacuum pan—Temperature, degrees F. | Time, hours. | Time <sup>1</sup> condensing, hours. | Containers.       |
|-----|---------------------------------|----------------------------------|--|--------------|--------------------------------------|-------------------|
| 1   | 150-160                         | 10                               | Not stated                                 | 1½           | 2                                    | Forty quart cans  |
| 2   | 160                             | 15                               | 150-160                                    | 2½           | 2¼-2½                                | Forty quart cans  |
| 3   | 185                             | 0                                | 140  | 2-2½         | 2½                                   | Small tins        |
| 4   | 180                             | 6                                | Not stated                                 | 1½-2         | 2                                    | Forty quart cans  |
| 5   | 185                             | 8-10                             | 145  | 3-3½         | 3½                                   | Forty quart cans  |
| 6   | 176                             | 5-10                             | Not stated                                 | 3            | 3                                    | Forty quart cans  |
| 7   | 160                             | 9                                | 122-123                                    | 1½           | 1½                                   | Forty quart cans  |
| 8   | 160                             | 8                                | 120  | 1            | 4                                    | Forty quart cans  |
| 9   | 170                             | 12                               | 152  | 3            | 3                                    | Forty quart cans  |
| 10  | 212                             | 10                               | 130  | 1-1½         | 1-1½                                 | Small containers. |

<sup>1</sup>According to quantity.

<sup>2</sup>Held here for five minutes.

This is shown in combination with the condensed milk factor in Table III. This variation is due not only to the different degrees of heat used but also to the quality of milk before its use.

The variations in the different factors show clearly and must have some effect upon the nutritional value of the product.

If we consider the degree of heat to which the milk is subjected, it would seem that the product would come forth with few bacteria, but samples taken of this finished product show a variation of bacterial content from 300 bacteria per c. c. to 82,000 bacteria per c. c. (See Table III.) This variation is shown in combination with the condensed milk factor in Table III. The variation is due not only to the different degrees of heat used, but also to the quality of the milk used for condensing purposes.

When we remember that condensed milk usually has twice the density of ordinary whole milk, and that therefore the bacterial counts may be divided by two, the product, judged from the bacteriological standpoint might be considered fairly good. It must not be forgotten, however, that most of the condensed milk is marketed in small cans and stored for an indefinite period, and, while the sugar present may assist in preserving the condensed milk, it may under conditions pointed out by Owen, serve as a culture medium for certain types of bacteria.

Further investigations are being made concerning the type of bacteria which may be found in the finished product.

The survey made of the sanitary conditions surrounding the handling of milk at the condenseries showed that, as a rule, the milk was handled in the proper way.

In another place we have pointed out the method of manufacturers who are sincerely engaged in improving these details and who, as we said, were active improvers, since they have introduced exact sanitary processes and rules of modern hygiene. Unhappily exceptions were found, for example, in the case of manufacturers who did not have strict methods of cleaning and sterilizing the machinery leading from the vacuum pans, or in the handling of the small cans or containers in which the condensed milk was shipped. The containers were not subjected to washing or sterilizing before filling, simply being up-ended and having the dust shaken out before the milk was filled in. This method of handling the cans seems poor, when the fact is considered that the lettering

TABLE IV.  
Bacterial Content of Condensed Milk in Forty Quart Cans  
Lactose neutral red fermentation tubes.

| Sample number. | Bacterial count per c. c. | Agar | Lactose neutral red fermentation tubes. |
|----------------|---------------------------|------|---|
| 1.....         | 10                        | M    | 100 per cent.                           |
| 2.....         | 1,500,000                 | M    | 100 per cent.                           |
| 3.....         | 269,000                   | M    | 100 per cent.                           |
| 4.....         | 269,000                   | M    | 100 per cent.                           |
| 5.....         | 269,000                   | M    | 100 per cent.                           |
| 6.....         | 269,000                   | M    | 100 per cent.                           |
| 7.....         | 645,000                   | M    | 100 per cent.                           |
| 8.....         | 340,000                   | M    | 100 per cent.                           |
| 9.....         | 3,388,000                 | M    | 100 per cent.                           |
| Total.....     | 379,270,000               |      |   |

Attention is called to the high bacterial content of several of these samples.

#### CONDENSED MILK SOLD IN GLASS CONTAINERS.

Much of the condensed milk sold in New York city is put up in glass containers. This trade con-

TABLE III.

| Inspection number. | Milk heated to degrees F. | Number of minutes spent in heating. <sup>1</sup> | Held in vacuum pan—Temp. degrees F. | Time.      | Time <sup>2</sup> condensing. | Disposition of product; source. | Bacterial content. |
|--------------------|---------------------------|--|-------------------------------------|------------|-------------------------------|---------------------------------|--------------------|
| 1.....             | 150-165                   | 10 min.  | Not stated                          | 1½ hrs.    | 2 hrs.                        | Forty quart cans                | 20,000             |
| 2.....             | 160                       | 15 min.  | 115                                 | 2½ hrs.    | 2½-2½ hrs.                    | From kettle heated              | 10,000             |
|                    |                           |  |                                     |            |                               | From forty quart cans           | 21,000             |
|                    |                           |  |                                     |            |                               | From kettle heated              | 4,700              |
| 3.....             | 185                       | 6 min.   | 115                                 | 2-2½ hrs.  | 2½ hrs.                       | From forty quart cans           | 1,000              |
|                    |                           |  |                                     |            |                               | From kettle heated              | 1,000              |
|                    |                           |  |                                     |            |                               | From forty quart cans           | 1,500              |
| 4.....             | 185                       | 6 min.   | Not stated                          | 1½ hrs.    | 2 hrs.                        | From kettle heated              | 1,800              |
|                    |                           |  |                                     |            |                               | From forty quart cans           | 14,000             |
| 5.....             | 185                       | 8-10 min.  | 115                                 | 3-3½ hrs.  | 3½ hrs.                       | From evaporating pan in vacuo   | 16,000             |
| 6.....             | 170                       | 5-10 min.  | Not stated                          | 3 hrs.     | 3 hrs.                        | From evaporating pan in vacuo   | 20,000             |
| 7.....             | 160                       | 10 min.  | 122-123                             | 1½ hrs.    | 1½ hrs.                       | From evaporating pan in vacuo   | 8,500              |
| 8.....             | 160                       | 8 min.   | 120                                 | Not stated | 4 hrs.                        | Coming from pan                 | 12,000             |
| 9.....             | 170                       | 12 min.  | 132                                 | 3 hrs.     | 3 hrs.                        | Going to forty quart cans       | 3,300              |
| 10.....            | 212 <sup>2</sup>          | 10 min.  | 133                                 | 1-1½ hrs.  | 1-1½ hrs.                     | From kettle heated              | 3,000              |
|                    | 230 <sup>2</sup>          | 30 min.  |                                     |            |                               | Going to small cans             | 40,000             |
|                    |                           |  |                                     |            |                               |                                 | 82,000             |
|                    |                           |  |                                     |            |                               |                                 | 60,000             |
|                    |                           |  |                                     |            |                               |                                 | 3,400              |
|                    |                           |  |                                     |            |                               |                                 | 40,000             |

<sup>1</sup>According to quantity.

<sup>2</sup>Held here for five minutes.

<sup>3</sup>Held in small containers.

on the labels implies that the product is sterile. We quote as follows: "Milk put up by this brand is thoroughly sterilized by the latest and most improved method, thus insuring it against disease germs or any other form of impurity." As a matter of fact, most of these cans are not flamed or sterilized before filling; they are sealed, labeled, and passed to the dealer for disposal to the consumer.

With respect to the contamination of the finished milk, the following instance is noted. The bacterial content of condensed milk which had been held a number of days in forty quart cans for shipment showed a progressive rise from possibly 3,000 bacteria per c. c. until after thirteen days there was a bacterial content of 2,640,000 bacteria per c. c. These conditions are emphasized still further by the results obtained in the bacteriological analysis of condensed milk samples taken from forty quart cans in New York city. This condensed milk is intended, as a rule, for confectioners. A limited number of these samples were taken and the results are given in Table iv.

The total number of samples of condensed milk taken was eight. The average bacterial count on agar was 47,408,750 bacteria per c. c. *Bacillus coli* was present presumptively in eight samples in one to 10,000 c. c. dilution.

sists wholly of unsweetened condensed milk. The bottles in which it is sold are half pint, pint, and quart bottles. As this milk contains only the increased proportion of sugar due to its evaporation, it keeps poorly (Beveridge, *loc. cit.*). It is condensed and usually bottled in the country; but sometimes it is shipped to the bottling plants in the city. This method of handling unsweetened condensed milk is rapidly finding favor.

A small number of samples of this milk were purchased and brought to the laboratory in the original containers. The results of the bacteriological analyses are shown in Table v.

TABLE V.  
Bacterial Content of Condensed Milk in Bottles

| Sample number. | Bacterial count per c. c. | Lactose neutral red fermentation tubes. | Color change. |
|----------------|---------------------------|---|---------------|
| 1.....         | 10                        | M                                       | 100 per cent. |
| 2.....         | 1,500,000                 | M                                       | 100 per cent. |
| 3.....         | 269,000                   | M                                       | 100 per cent. |
| 4.....         | 269,000                   | M                                       | 100 per cent. |
| 5.....         | 269,000                   | M                                       | 100 per cent. |
| 6.....         | 269,000                   | M                                       | 100 per cent. |
| 7.....         | 645,000                   | M                                       | 100 per cent. |
| 8.....         | 340,000                   | M                                       | 100 per cent. |
| 9.....         | 3,388,000                 | M                                       | 100 per cent. |

The average bacterial count of unsweetened condensed milk was: Agar, 1,150,644 bacteria per c. c.;



acid colonies on Linfo's medium, 807,022 bacteria per c. c.

#### ANALYSIS OF SWEETENED CONDENSED MILK IN CANS.

In making a study of this type of condensed milk, we thought it best to examine as many different brands as could be procured. It was ascertained that there were forty-six brands on the market. These brands were manufactured at condenseries in Switzerland, Holland, Denmark, and the United States. Nineteen companies were represented in the ownership of these condenseries. It is not easy to put in a few words the differences in quality of these brands. The best names stand for that aggregate of qualities by virtue of which one can be almost exactly like another. This is the condensed milk commonly used for infant feeding. There are other brands intended for other uses. With respect to some of these brands, it may be added that the same milk is marketed for different countries under different names. In the course of our study, we ascertained, too, that a practice in vogue in some condenseries was to manufacture and can the condensed milk and then by affixing different labels, market the product as a different brand of condensed milk. The value of the constituents of the condensed or evaporated milk was given in many instances as follows: "The contents of this can, mixed with an equal amount of water, will be found to be equal to or exceed the whole milk standard."

#### MARKING CANS WITH THE DATE OF MANUFACTURE OF THE CONTENTS.

A careful study of the label showed that while some of the milk is labeled in code with the date of production, there was nothing on the label by which the consumer could judge of the age of the milk.

Condensed milk containing bacteria and kept a long time may undergo changes of color. The most common change is the evolution of tyrosin. How far combination with the metal of the cans takes place is unsettled, though the researches of Beveridge and Walker (*Journ. of Ind. Eng. and Chem.*) do not afford much evidence that such combinations occur. As regards salts of tin, it is apparent from the experiments of Lehmann and more recently of Salant, that animals tolerate large quantities without symptoms. Von Jaksch thinks the almost complete absence of clinical data obliges us to avoid any dogmatic statement on this subject.

#### BACTERIOLOGICAL ANALYSIS OF FORTY-SIX BRANDS.

From two to eight samples of each brand were analyzed, making a total of 114 samples. The bacteriological results are shown in Table vi.

The average bacterial content on agar was 283,158 bacteria per c. c.

Members of the *Bacillus coli* group were present in twenty-seven per cent. of the samples examined in 1/100 of a c. c. or less.

Some of the individual averages of the condensed milk are extremely high, one sample having 1,000,000 bacteria per c. c. and another 8,000,000 bacteria per c. c.

The process used in condensing seemed satisfactory, so that the only explanation that suggested itself was that the more resistant forms developed after the milk left the vacuum pan, also that the

types of bacteria were those which thrive on sugar media.

The evaporated milk shows as a rule a much lower bacterial content than the condensed milks. Many brands contained but few bacteria. This may be due to the fact that evaporated milk is heated to a higher temperature than condensed milk; and that it receives a second sterilization in the cans after sealing.

TABLE VI.

| Bacteriological Analysis of Condensed Milk in Small Containers. |              | Bacteriological content.                         |              |                                       |
|---|--------------|--|--------------|---------------------------------------|
|   |              | Bacteria per c. c.                               |              | L. N. R. F. T.                        |
| No. of samples.   | Sugar added. | Agar plates.                                     | Endo plates. | Members of Bac. coli group present in |
| 1   | Yes          | Not stated                                       | 11,183       | +                                     |
| 1   | Yes          | Not stated                                       | 47,420       | +                                     |
| 1   | Yes          | 1 part C. M., 1 part water = whole milk standard | 1,116,814    | 695,000                               |
| 8   | Yes          | 1 part C. M., 1 part water = whole milk standard | 19,500       | — in 1/100 c. c.                      |
| 4   | Yes          | 1 part C. M., 1 part water = whole milk standard | 93,100       | 114,300                               |
| 2   | Yes          | 1 part C. M., 1 part water = whole milk standard | 31,200       | 12,500                                |
| 2   | Yes          | Skimmed milk standard <sup>2</sup>               | 2,800        | 500                                   |
| 6   | Yes          | = whole milk standard <sup>2</sup>               | 5,366        | —                                     |
| 2   | Yes          | = whole milk standard <sup>2</sup>               | 109,250      | 10,000                                |
| 2   | N.S.         | Exceeds whole milk standard                      | 1,450        | 3,200                                 |
| 2   | Yes          | = whole milk standard                            | 12,500       | 2,150                                 |
| 2   | Yes          | Not stated                                       | 785,000      | 112,000                               |
| 2   | No           | = whole milk standard                            | 2,500        | 950                                   |
| 2   | No           | Not stated                                       | 43,150       | 800                                   |
| 2   | No           | Not stated                                       | 550          | 350                                   |
| 2   | No           | Not stated                                       | 50,750       | 50,300                                |
| 2   | No           | Not stated                                       | 49,000       | 49,250                                |
| 2   | No           | Not stated                                       | 18,750       | —                                     |
| 2   | Yes          | Not stated                                       | 10,550       | 3,100                                 |
| 2   | Yes          | Not stated                                       | 129,500      | 102,500                               |
| 2   | Yes          | = whole milk standard                            | 10,000       | 3,300                                 |
| 2   | Yes          | = whole milk standard                            | 2,600        | 950                                   |
| 2   | No           | = whole milk standard                            | 1,100        | 150                                   |
| 2   | No           | = whole milk standard                            | 600          | 1,750                                 |
| 2   | No           | = whole milk standard <sup>2</sup>               | 700          | 200                                   |
| 2   | Yes          | = whole milk standard                            | 4,250        | 750                                   |
| 2   | Yes          | = whole milk standard                            | 34,300       | 18,150                                |
| 2   | Yes          | Not stated                                       | 8,000,000    | 21,750                                |
| 2   | No           | = whole milk standard                            | 2,750        | 700                                   |
| 2   | No           | = whole milk standard                            | 1,850        | 250                                   |
| 2   | No           | = whole milk standard                            | 600          | 100                                   |
| 2   | No           | = whole milk standard                            | 450          | 150                                   |
| 2   | No           | = whole milk standard                            | 1,500        | 250                                   |
| 2   | No           | = whole milk standard                            | 2,300        | 200                                   |
| 2   | No           | = whole milk standard                            | 3,400        | 8,150                                 |
| 2   | No           | Not stated                                       | 400          | 2,000                                 |
| 2   | No           | = whole milk standard                            | 2,000        | 1,550                                 |
| 2   | No           | Not stated                                       | 1,300        | 100                                   |
| 2   | No           | Exceed legal standard                            | 500          | 300                                   |
| 2   | Yes          | Not stated                                       | 14,600       | 13,950                                |
| 2   | Yes          | = skimmed milk standard                          | 5,950        | 2,450                                 |
| 2   | Yes          | = skimmed milk standard <sup>3</sup>             | —            | —                                     |
| 2   | Yes          | Not stated                                       | 5,600        | 100                                   |
| 2   | Yes          | = skimmed milk standard                          | 183,100      | 8,200                                 |
| 2   | Yes          | Not stated                                       | 8,500        | 1,900                                 |

<sup>1</sup>Lactose neutral red fermentation tubes.

<sup>2</sup>Diluted—one part of condensed milk to one part of water in all cases.

<sup>3</sup>Diluted—one part of water to one part of condensed milk.

#### CHEMICAL ANALYSIS OF CONDENSED MILK.

Through the courtesy of Mr. Atkinson, chief chemist of the Department of Health, who placed his records at our disposal, we have been able to incorporate in this report a record of condensed milk analyses of the past three years.

There are variations of composition, the same brands being somewhat different in the proportion of sugar, fat, and proteid. Of course, the condition of the cows, even the countries where they are bred, the period of lactation, have close relation to these variations when not due to the degree of evaporation or the addition of cane sugar. This subject has

been studied at the experiment station of Purdue University. Mr. Atkinson's records support this natural explanation, though the cane sugar varied from 33.15 to 49.85 per cent. Milk sugar showed wide variations— from 7.57 to 15.31 per cent. The proteids varied from 6.73 to 13.59 per cent.

It is now clear from the tables of Mr. Atkinson that the variation of sugar is the most wide. The point is that fluctuations in the quantity of sugar do exist, even if we agree with Muller that the estimation of sugar may vary by about two and three per cent. in its results. (*Mitt. a. d. Geb. d. Lebensmitteluntersuchungen*, III, p. 317, 1912.) The test for sugar, according to the writer, has a considerable margin of error, and he suggests a new one which he thinks is free from fault. Some manufacturers are aware of this fluctuating composition of condensed milk and of the difficulty of prescribing it under these circumstances, if it is to be wholly suited to delicate and fragile children, and are taking measures to avoid the fault. This whole question needs fuller investigation.

TABLE VII.

| Chemical Analysis of Sweetened Condensed Milk |       | Can.   |        | Milk. |           | Total |         |
|---|-------|--------|--------|-------|-----------|-------|---------|
| No. of brand.                                 | Year. | sugar. | sugar. | Ash.  | Proteids. | Fat.  | solids. |
| 1   | 1912  | 40.36  | 12.93  | 1.12  | 8.20      | 10.77 | 73.88   |
| 2   | 1912  | 40.36  | 12.93  | 1.12  | 8.20      | 10.77 | 73.88   |
| 3   | 1912  | 40.36  | 12.93  | 1.12  | 8.20      | 10.77 | 73.88   |
| 4   | 1912  | 40.36  | 12.93  | 1.12  | 8.20      | 10.77 | 73.88   |
| 5   | 1912  | 40.36  | 12.93  | 1.12  | 8.20      | 10.77 | 73.88   |
| 6   | 1912  | 40.36  | 12.93  | 1.12  | 8.20      | 10.77 | 73.88   |
| 7   | 1912  | 40.36  | 12.93  | 1.12  | 8.20      | 10.77 | 73.88   |
| 8   | 1912  | 40.36  | 12.93  | 1.12  | 8.20      | 10.77 | 73.88   |
| 9   | 1912  | 40.36  | 12.93  | 1.12  | 8.20      | 10.77 | 73.88   |
| 10  | 1912  | 40.36  | 12.93  | 1.12  | 8.20      | 10.77 | 73.88   |
| 11  | 1912  | 40.36  | 12.93  | 1.12  | 8.20      | 10.77 | 73.88   |
| 12  | 1912  | 40.36  | 12.93  | 1.12  | 8.20      | 10.77 | 73.88   |
| 13  | 1912  | 40.36  | 12.93  | 1.12  | 8.20      | 10.77 | 73.88   |
| 14  | 1912  | 40.36  | 12.93  | 1.12  | 8.20      | 10.77 | 73.88   |
| 15  | 1912  | 40.36  | 12.93  | 1.12  | 8.20      | 10.77 | 73.88   |
| 16  | 1912  | 40.36  | 12.93  | 1.12  | 8.20      | 10.77 | 73.88   |
| 17  | 1912  | 40.36  | 12.93  | 1.12  | 8.20      | 10.77 | 73.88   |
| 18  | 1912  | 40.36  | 12.93  | 1.12  | 8.20      | 10.77 | 73.88   |
| 19  | 1912  | 40.36  | 12.93  | 1.12  | 8.20      | 10.77 | 73.88   |
| 20  | 1912  | 40.36  | 12.93  | 1.12  | 8.20      | 10.77 | 73.88   |
| 21  | 1912  | 40.36  | 12.93  | 1.12  | 8.20      | 10.77 | 73.88   |
| 22  | 1912  | 40.36  | 12.93  | 1.12  | 8.20      | 10.77 | 73.88   |
| 23  | 1912  | 40.36  | 12.93  | 1.12  | 8.20      | 10.77 | 73.88   |
| 24  | 1912  | 40.36  | 12.93  | 1.12  | 8.20      | 10.77 | 73.88   |
| 25  | 1912  | 40.36  | 12.93  | 1.12  | 8.20      | 10.77 | 73.88   |
| 26  | 1912  | 40.36  | 12.93  | 1.12  | 8.20      | 10.77 | 73.88   |
| 27  | 1912  | 40.36  | 12.93  | 1.12  | 8.20      | 10.77 | 73.88   |

Chemical Analysis of Evaporated Milk

| No. of brand. | Year. | Fat. | Total solids. |
|---------------|-------|------|---------------|
| 1             | 1912  | 8.40 | 28.12         |
| 2             | 1912  | 8.40 | 28.12         |
| 3             | 1912  | 8.40 | 28.12         |
| 4             | 1912  | 8.40 | 28.12         |
| 5             | 1912  | 8.40 | 28.12         |
| 6             | 1912  | 8.40 | 28.12         |
| 7             | 1912  | 8.40 | 28.12         |
| 8             | 1912  | 8.40 | 28.12         |
| 9             | 1912  | 8.40 | 28.12         |
| 10            | 1912  | 8.40 | 28.12         |
| 11            | 1912  | 8.40 | 28.12         |
| 12            | 1912  | 8.40 | 28.12         |
| 13            | 1912  | 8.40 | 28.12         |
| 14            | 1912  | 8.40 | 28.12         |
| 15            | 1912  | 8.40 | 28.12         |

| Chemical Analysis of Evaporated Milk | Year. | Cane sugar. | Milk sugar. | Ash. | Total solids. |
|--------------------------------------|-------|-------------|-------------|------|---------------|
| 1                                    | 1912  | 40.36       | 12.93       | 1.12 | 73.88         |
| 2                                    | 1912  | 40.36       | 12.93       | 1.12 | 73.88         |
| 3                                    | 1912  | 40.36       | 12.93       | 1.12 | 73.88         |
| 4                                    | 1912  | 40.36       | 12.93       | 1.12 | 73.88         |
| 5                                    | 1912  | 40.36       | 12.93       | 1.12 | 73.88         |
| 6                                    | 1912  | 40.36       | 12.93       | 1.12 | 73.88         |
| 7                                    | 1912  | 40.36       | 12.93       | 1.12 | 73.88         |
| 8                                    | 1912  | 40.36       | 12.93       | 1.12 | 73.88         |
| 9                                    | 1912  | 40.36       | 12.93       | 1.12 | 73.88         |
| 10                                   | 1912  | 40.36       | 12.93       | 1.12 | 73.88         |
| 11                                   | 1912  | 40.36       | 12.93       | 1.12 | 73.88         |
| 12                                   | 1912  | 40.36       | 12.93       | 1.12 | 73.88         |
| 13                                   | 1912  | 40.36       | 12.93       | 1.12 | 73.88         |
| 14                                   | 1912  | 40.36       | 12.93       | 1.12 | 73.88         |
| 15                                   | 1912  | 40.36       | 12.93       | 1.12 | 73.88         |

## CONCLUSIONS.

Having thus completed a preliminary study of the bacteriological and chemical content of condensed milk, the following conclusions present themselves:

1. That the minimum standard for milk suitable for condensed milk should be definitely enforced.

2. That the present method of making condensed milk offers a wide latitude in preparation, and must of necessity offer a wide difference in the finished product.

3. That a considerable portion of the condensed milk has a high bacterial count because of growth of bacteria left alive by the heating process or added through contamination after it leaves the holder or vacuum pan.

4. That steps be taken to make standards which shall cover the following points:

a. Quality of milk to be used for condensing purposes as shown by bacterial and chemical tests.

b. The process of manufacturing condensed milk, including sanitary conditions.

c. The prevention of bacterial infection of the milk after it has been condensed.

d. Requirements both chemical and bacteriological of the finished product as offered to the consumer.

e. Statements on label of can which shall show the approximate percentage composition.

## CLINICAL STUDY.

By Dr. Paul Bartholomew.

Apart from questions of bacteriology, it may very safely be said that the test of condensed milk is a knowledge of the sources of the milk from which it is made, of precise details of manufacture, of its composition and effects in application, in short, of all those subjects which constitute what we may call, for the sake of convenience, a clinical study. When such a method of study is neglected, the physician has to draw upon imperfect experience; he really is obliged to resort to second hand articles and prospectuses. If by clinical study be understood the investigation of the original milk, of the fat, sugar, and proteid of the condensed product, it appears to be obvious that when the physician has made such a research he has attained the requisite therapeutical knowledge.

By the almost unanimous consent of physicians, condensed milk, as a food for babies, always retains an artificial character; human milk, therefore, should take its place in common usage. How much or how little we may deviate from this rule depends on circumstances; but we may rest assured that no intelligent person would think of denying that many of the brands of condensed milk described in this re-

port are misused for mother's milk. We are not thinking of the best specimens or of acknowledged brands, which have their good, as well as special uses, in asking what should be the first essential of a condensed milk. We are thinking of the dozen or more of infected brands that represent the outer ring of unscrupulous manufacturers. To the question of what is the first essential of a good condensed milk, various answers will probably be given. One physician will insist on a low sugar content, another on a high percentage of fat, a third on the ratio of proteids and salts. A few only will insist on a low bacterial count.

The bacterial count has already been described. A mistaken idea that condensed milk must be sterile, and that it is a heinous fault when it is not sterile, has led to much misconception. Sterility, however, is only one of its virtues; it bears a close affinity to the quality of the original milk, but, on the other hand, good condensed milk is not necessarily sterile.

*chem. Ges.*, xv, 1882). Similarly, it is stated by Cassedebat (2): "Facts allow us to affirm that the alteration is not of bacterial origin, since no dead or living organisms are found." In the excellent researches published in the *Arbeiten aus dem Kaiserlichem Gesundheits-Amt*, Weber (3) showed that bacteria could be found in the so called sterilized milks. Dold and Garrat (4) examined condensed milks for *Bacillus coli*; it was absent from their cultures, but they isolated streptococcus from eight samples. No pathogenic bacteria were found. Klein (5) examined eight samples. He writes: "All proved nonsterile." In a later work (6), he detected in broth cultures a number of different bacteria. The counts, however, were extremely low. Somewhat similar results were reported by Gordon and Emslie (7). In a recent report, Delépine (8) remarks: "The number of bacteria found in our experimental condensed milk was distinctly smaller than that found in a number of samples of con-

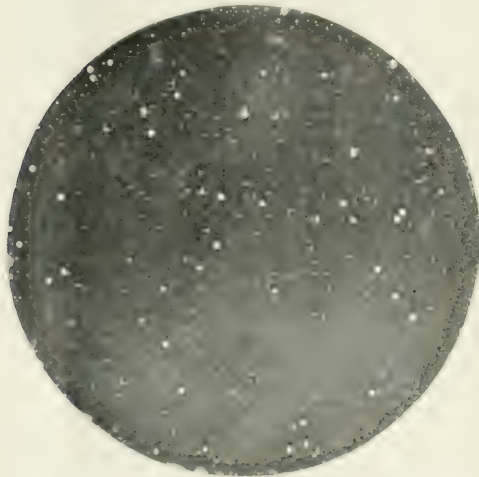


FIG. 1.—Agar culture of condensed milk.



FIG. 2.—Agar culture of condensed milk.

This is the meaning of the remark of Gordon and Emslie in the Report of Coutts to the Local Government Board, 1914: "The actual number of organisms is only of minor importance, the important point is that none of the milks proved sterile." Any one reading this passage would think that a million bacteria in a c. c. of milk signified nothing. The fallacy here seems to have so stereotyped itself as now to be almost universal. Careless writers frequently state that condensed milk is sterile, by which they mean that if it is not sterile, it ought to be, owing to the process of heating. The truth is that the best brands of condensed milk are not sterile, but the number of bacteria agrees with the proper standards. Hence an analysis of the special bacteriological quality of condensed milk by previous writers may be here introduced.

#### HISTORICAL OUTLINE.

The changes in condensed milk were formerly ascribed to chemical processes. (Cf. Loew, *Veränderungen der kondensierter Milch*, *Ber. d. deutsch.*

denz milk examined in my laboratory in previous years. . . . The number of bacteria had seldom been found to fall below 1,000 per gram." He collected samples that contained less than 100 bacteria per gram. He explains this small number as follows: "Although bacteria may remain alive for a considerable time in sweetened condensed milk they do not as a rule multiply in it, but in view of the differences mentioned above I thought it best to estimate again the number of bacteria contained in our experimental samples after allowing nearly four months to elapse after the preparation of the milk. The plates made on June 16th yielded nearly the same results as the plates made on February 24th."

The differences in his "experimental" samples and in market samples were due to the better manufacture of the former. "This explanation seems all the more probable because the condensery, where our experiments were conducted, was extremely well equipped. Great cleanliness prevailed everywhere, and all the operations were conducted very sys-



tematically." As to the species of bacteria found in his experiments, he says: They had "the characters of *Bacillus mesentericus* ruber and *Bacillus mesentericus vulgaris*." He carried out feeding experiments on animals with no very clear result. In conclusion, he finds that "the total number of bacteria present in cow's milk such as is usually supplied to town customers has been found to be considerably reduced by treatment according to each of the methods investigated." However, he adds, "at none of the stages of preparation was the milk ever found completely sterile." The bacillus that resisted pasteurization was invariably found to be *Bacillus mesentericus*.

None of the researches in the foregoing summary will be of much assistance to the student of infant feeding. It seems to be evident from the work of Andrews (9) that in sweetened condensed milk the number of bacteria is not great enough to injure the health of adults. In these researches he found mainly staphylococci. But what is to be said of the case of infants? The opinions on this point do not quite hit the mark.

For example, after a report on epidemic diarrhea, Newsholme (10) says: "The fact that 6.6 per cent. of the total deaths from infantile diarrhea occur in breast fed infants shows that milk is not the only vehicle for the infection of this disease," and, "artificial feeding of infants is exceptional among the classes among whom diarrhea chiefly occurs." He says, indeed, that breast fed infants are less liable to diarrhea, but the cause appears to elude us.

A similar contrariety of opinion exists in the matter of sugar. Is cane sugar or milk sugar the more wholesome? Doctors are strangely fatuous on these points. At one time they advised a course of cane sugar, at another milk sugar, at still a third, malt sugar, and then apparently again a course of cane sugar. A multitude of experiments have been undertaken to determine whether cane sugar produces diarrhea or constipation. As cane sugar and milk sugar occur in considerable amount in condensed milk, it may be well to look into these opinions.

It seems to be clear that infants should not be deprived of sugar. It is known that acetonuria is very common among infants, whether breast fed or not; the cause is carbohydrate starvation. Frew has found that the cause is a temporary failure of carbohydrate digestion. As a remedy he considers two forms of sugar, lactose and cane sugar. He writes: We have found that the carbohydrate starvation necessary to produce the acetonuria is not caused by a deficiency of carbohydrates in the diet, nor is it due to a diminished power of absorption or assimilation, therefore it follows that it must result from an inability to digest the carbohydrates in the diet.

#### SUGARS OF CONDENSED MILK.

The effect of the different sugars is set forth in a report by Nobécourt and Schreiber, entitled, *Les sucres dans l'alimentation du nourrisson* (Sugars in the Diet of Nurlings), *Paris médical*, December 2, 1911, p. 23. This work is complete, but seems to be unknown. The writers say (translation):

Saccharose at the proper dose, has no special influence on the function of the intestine. Its prolonged administration in large doses may lead to constipation, according to Porcher and Pehu. Certain German pediatricists are of a

different opinion and assert that large quantities of cane sugar, especially in too concentrated a solution, may produce diarrhea (Cammerer, Pfandler). According to our experience, the opinion of the French authors appears the more exact.

Glucose is far less easily borne by the infant. Doses of twenty grams it is markedly purgative.

It is remarked by Kassowitz (*Praktische Kinderheilkunde*, 96, 1910) that

The comparative research on the use of different sugars has proved indisputably that in the intestine lactose is with much more difficulty converted into its simple components than cane sugar, that consequently, milk sugar passes unconverted into the urine, from which a lactosuria arises more easily, and that finally when it is given to dyspeptic children, though their dyspepsia be slight, the ratio of its assimilation appears to be greatly reduced.

Borrino, on the other hand, considers lactose as better adapted to infants. (*Riv. clin. di ped.*, 682, 1910.) Researches in dogs by Heim (*Monatsschrift f. Kinderheilk.*, x, 579, 1912) and by Sainmont (*ibid.*, 124, 1913) showed that lactose ferments

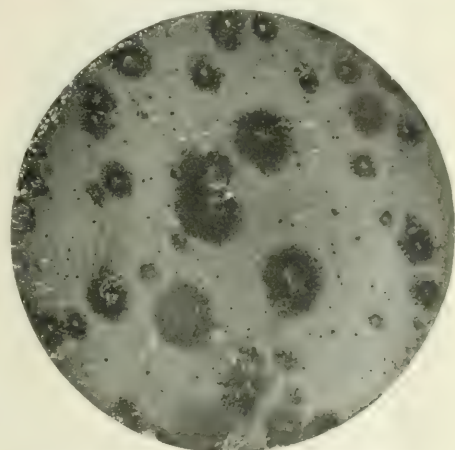


FIG. 3.—Colonies on Endo's medium. (Revised from 1910.)

more rapidly than cane sugar—a result supported in practice by Langstein and Gerstenberger (*Monatsschrift f. Kinderheilk.*, ix, 331), and by Usuki with respect to malt extract. (*Jahrb. f. Kinderheilk.*, xii, 18, 1910.) Russian writers have demonstrated that the administration of lactose greatly increases the growth of acidophile bacteria. (*Roussky Vrach*, 19.) So, too, Bjelussow (On the Etiology of So Called Acidophile Bacteria in the Intestine of Breast Fed Children, *Dissertation*, St. Petersburg, 1903.) On this subject, it seems rational to concur with Gismondi, "All authors are agreed as to the value of sugar in the dilution of milk for artificial feeding; the only point of difference is whether the preference should be given to lactose, saccharose or maltose." He concludes (with Bendix) that saccharose is the most generally useful. (*Pediatrics*, xxii, 252, 1914.) Other writers, however, would adopt maltose (Leopold). Absolute agreement on such a subject is hopeless, but it cannot be questioned that the impression in Europe is exactly opposite to the belief in maltose and lactose, which introduced by Soxhlet and later by Leopold, have been

regulation on this side of the Atlantic. It appears that some clear ground of scientific value or necessity should be shown before so simple, intelligible, and well established a usage as that of cane sugar should be interfered with.

#### MANUFACTURE OF CONDENSED MILKS.

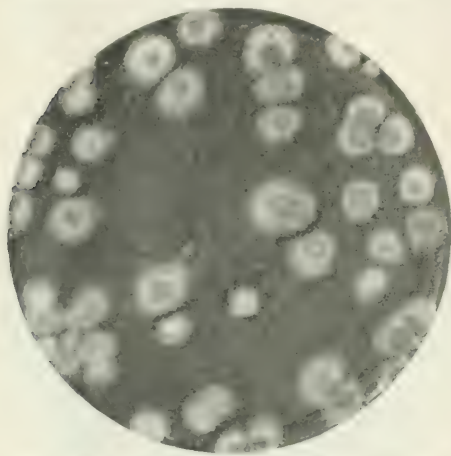
There are two sides to the question of manufacture. There is the purely commercial side, which shows clearly the measures taken to release the manufacturer from all that hampers him in the discharge of the universal custom of minding his own interest. There is also a mechanical and chemical side, which is difficult, little understood, and somewhat perplexing.

Let us take first the commercial side. At the factory of a highly respectable manufacturer, great pains were taken to produce a clean, wholesome con-

3. From these cylinders the milk is transferred through pipes to the sugar wells, where sugar is added, the syrupy liquid being violently stirred by means of a plunger and live steam.

4. This milk is then transferred back into the cylinders, where it is heated, and is again raised to the boiling point.

5. From these cylinders it is drawn through pipes into the vacuum pans. Sugar is at times added here. Here we come to a difficult stage in the manufacture. The temperature of the milk as it enters the vacuum pan should be below the boiling point, or at such a point that it boils as soon as it is in a vacuum. (Note: When the milk reaches the vacuum pan it contains about 12.3 per cent. milk solids and eighty-seven per cent. water.) In the description of the temperature of the milk when it reaches the vacuum



densed milk. So much was clearly set forth. Here modern niceties of hygiene and the processes of an adequate modern plant were being evolved in accordance with a strenuous system of sterilization. This side is displayed without ambiguity in the method of collecting and getting ready the milk for condensation. (See the remarks of Delépine.)

#### COLLECTING OF DAIRY MILK.

The dairies are regularly inspected by veterinarians. The milk is brought in large cans to the factory and discharged into the weighing tank. The cans, when opened, are examined roughly for odors, quality, and appearance. Samples are also taken for fat and bacteriological analysis. Subsequently the milk passes through the following operations:

1. The milk accumulates for the time being in the mixing vat. In this way its composition is equalized.

2. It is then poured into cylinders and boiled for ten minutes by means of live steam. During this process, it is stirred by means of a vertical plunger. This method appears to be exactly the pasteurization described by Coutts and Delépine.

pans mistakes are commonest among writers. Sidersky concisely described the phenomena. He writes: "The delicate part of the operation (of condensation) lies in the following circumstances; it is necessary that the sweetened milk, mechanically evaporated in the vacuum, should arrive at the condensing apparatus at a temperature sufficiently high to boil at once, and it is only when violent boiling agitates it in all its mass that steam can be introduced to heat it again and maintain boiling." Compare this with the account of Delépine: "In the vacuum pan a vacuum equal to sixty-five to seventy cm., indicated by the manometer connected with the exhaust pipe, is maintained, and the milk is heated by means of the steam jacket and steam coil to a temperature of 40° to 45° C., at which fluid passes into a state of ebullition. The evaporation is allowed to proceed until the milk is of the proper viscosity, which occurs when the fluid has been reduced to about one third of its original volume."

That milk, even in a vacuum, boils at 40° C., is half correct, half incorrect. It may be observed that with a vacuum of twenty-four inches, condensed

milk in the vacuum pan boiled at 147° F. As the condensation proceeds, the boiling point of the milk falls, the temperature at the end being 120° F. and the vacuum twenty-six inches. Some factories finish the milk with a high vacuum, and a consequently lower temperature, going as low as 110° F.

|      |       |     |      |       |     |
|------|-------|-----|------|-------|-----|
| 24.0 | ..... | 149 | 26.0 | ..... | 124 |
| 24.5 | ..... | 137 | 26.5 | ..... | 120 |
| 25.0 | ..... | 133 | 27.0 | ..... | 114 |
| 25.5 | ..... | 129 | 27.5 | ..... | 107 |

6. The capacity of the vacuum pans is 16,000 pounds.

7. Evaporation proceeds for two hours and a half, until the milk has been reduced to one fourth of its original volume.

8. From the vacuum pans the milk flows through pipes into cooling cylinders.

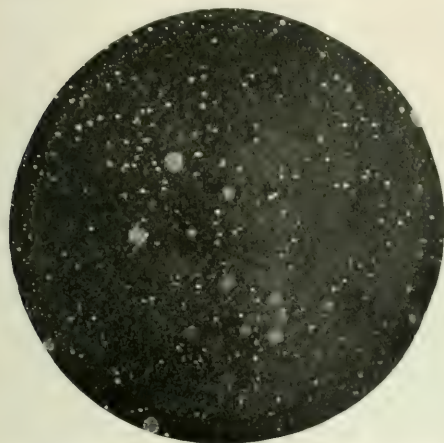


FIG. 6.—Agar cultures, showing many colonies. Research Laboratory.

Bacteria in the raw milk ranged from 1,000 to 58,000 per c. c. Samples 19, 21, 22, 23, 26, and 27 of the milk from the heating cylinders were sterile; samples 20, 23, 24 showed 2,000 bacteria per c. c. Samples from the sugar wells were sterile; samples from the testing cup of the vacuum pans manifested a few bacteria, 100 to 200 per c. c., but many of the cultivations of these samples were sterile.

#### EFFECTS OF AGE.

The finished cold milk manifested a numerous class of bacteria; *Staphylococcus aureus* was commonly found. Cultivations showed colonies running from 5,000 to 280,000 per c. c. On the other hand, samples kept for two months and cultivated showed a notable decline. This result agrees with that of Delépine and the Australian health board. In the

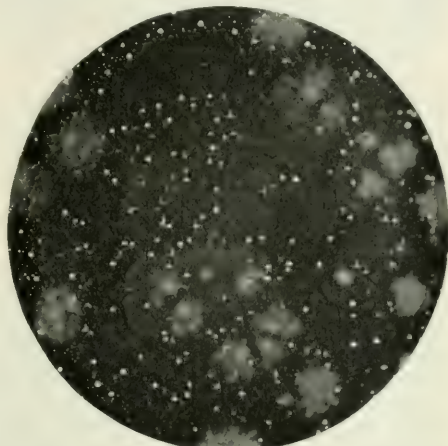


FIG. 7.—Agar cultures, showing many colonies. Research Laboratory.

9. From the cooling cylinders it is sucked through pipes until it reaches the filling machine.

10. The filling machine requires special notice. It is a straight pump; by means of the valve the stream of milk is discharged into the cans. The cans are sealed with caps.

11. The cans are carried on a line in constant motion to the finishing machines.

12. Each can is flamed for a few seconds at 640° F.

13. Unsound cans are tested mechanically and fall from the line.

Samples of the milk were taken at different stages of manufacture.

1. From the cans of raw milk.

2. From the milk in the heating cylinders at a temperature of 210°.

3. From the milk in the sugar wells.

4. From the testing cup of the vacuum pans.

5. From the finished cold milk.

6. Cans of the finished cold milk were tested after an interval of two months to observe the effect of age. Plate cultures on agar from these cans were made.

finished cold milk, when two months old, tyrosin crystals were sometimes found.

#### TESTS OF THE RAW MILK.

The test of acidity employed was titration of the milk against decinormal potassium hydroxide. The methylene blue test and the Wisconsin curd test appear to be less accurate. By means of the methylene blue test the acidity of the raw milk is determined, the rule being that milk for condensing should be rejected if the acidity is above 0.2 per cent., and ten c. c. of it should stand at least three hours without decolorizing one c. c. of a standard solution of methylene blue.

Good clean milk contains comparatively few organisms which produce gas and smell, and the curd formed by adding rennet to this milk should have only an occasional irregular hole; while milk produced under unsanitary conditions will evolve more or less gas, and the curds will be full of large irregular holes.

These tests show what attention should be paid to cleanliness in milking. And the use of tests shows what constant vigilance it requires to preserve the quality of the milk. It must be remembered, a fact



we would impress upon our readers, that, in the manufacture of great quantities of condensed milk, everything has to be made with quickness and on a corresponding scale of proportion. Now this, which seems at first so good a thing, is in reality a disadvantage. For the evil we see, we can guard against, or, at least, we know about it, but who, in a great

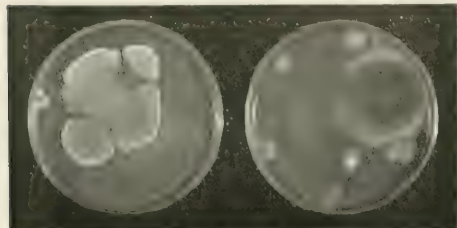


FIG. 8.—Large colony.

factory, knows the pitfalls, as it were, of disease which are in waiting for his finer tests, though not submitted to his eyesight? The danger from the accumulation of dust may be forgotten in the manufacturing necessities of men too busy to think of them, though perhaps versed in sanitary matters.

At the present time restrictions should be made that might gradually have the effect of removing all

whereas hygiene is a creature of modern times; and, considering the short period during which it has made a noise upon earth, it must be owned, we think, that more progress has been made by it than by anything else.

There is, however, a great desire among the best manufacturers for improvement. There are some who see what improvements might be made, and who desire that they should be made; they are not numerous, but then they are what might be called active improvers as distinguished from armchair improvers, who think without much effect. There is an immense deal of thinking without effect in the world, and consequently it is difficult for individuals to do what they see ought to be done, and what they ardently desire should be done. The active improvers go toward construction, or, at least to amendment, rather than to destruction, and, therefore, do not pass unhonored and unheeded by observant men.

#### THE DIFFICULTIES OF MANUFACTURE.

The manufacture of condensed milk is a difficult task; and we cannot say that it has had a complete success. The best manufacturers have a keen sense of the necessity for taking in hand systematically the problems of overcoming present difficulties. One problem is the absorbing and profoundly important question of sugar and fats. There are two schools

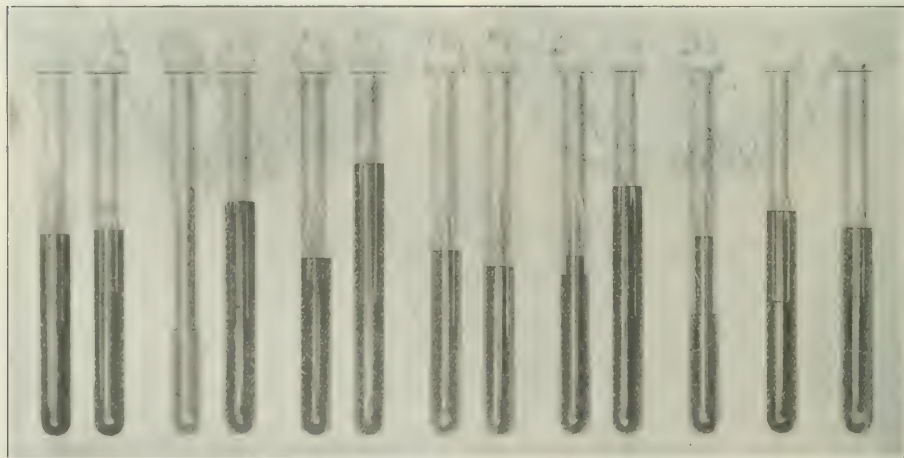


FIG. 9.—Sugar fermentation. Color changes not shown in halftone. Research Laboratory.

noxious substances from a dairy and its immediate vicinity. We know that this might be thought to militate against what are called sound notions of commercial economy, and he would perhaps be a bold man who ventured to declare upon what phase of the manufacturing of condensed milk the greater expense should be bestowed and regulated. We know the potent claims of economy in this respect—of the great claims also of business, of finance, of dividends; but then these have been perennial subjects,

of exaggeration about these foods today; one is usually not in immediate touch with mechanical reality and technic; the other is usually supersanguine as to the effect of fats. As a matter of practical detail, it is not easy to reduce the ratio of sugar. (Kotzine, *Moscow Laboratory Report on Condensed Milks*, 1905.)

The composition of the best condensed milk, produced at Moscow, is, according to Kotzine, as follows:

|               |       |                  |       |
|---------------|-------|------------------|-------|
| Water .....   | 20.27 | Cane sugar ..... | 30.47 |
| Albumin ..... | 10.00 | Lactose .....    | 14.26 |
| Butter .....  | 10.27 | Ash .....        | 2.67  |

The composition of this milk, whatever may be the method of manufacture, is too costly. The remark of Sidersky applies to a few American and European brands. He says: "A condensed milk of the first quality, made from very pure milk of high price, is an article too dear for the great public. But condensed milk of the first quality and well prepared may be given to infants." Kotzine gives in to this rule, but adding that the quantity of sugar should be diminished, if possible. Here we find the greatest difficulty of manufacture, and it is seriously met by only the best firms.

The high proportion of sugar introduces other difficulties. One of these is that crystallization of cane sugar causes "sandiness." (Mohan, *Journ. Soc. Chem. Med.*, 34, 109, 1913.) A decrease in concentration to prevent this is impossible, as the successful keeping of the product depends on its having less than thirty per cent. moisture; hence to avoid the effect of an excess of water, sugar must be added in a proportion to give about forty-one per cent. of cane sugar. Too great a concentration and the use of too much milk sugar increases the sandy condition.

When a can of condensed milk is opened, a layer of sugar is sometimes found on the bottom; the layer or deposit may be either lactose which has settled or cane sugar separated out owing to an excess having been added during the manufacture of the milk. The layer of sugar is not injurious to the product, except that the stratum of milk above may not have enough solids to preserve it as long as it should be kept.

Another defect of condensed milk is "buttons," or small lumps, varying in size from a pin head to a bean. These small lumps, like pin heads, are of yellowish or greenish color, and may be found attached to the side of the can. The cause of these particles, called buttons, is not easy to explain. Some believe that they are insoluble casein compounds formed by the action of the metals of the tin plate. The peculiar feature, however, is that they appear to grow.

The best brands do not show changes of color, putrid odor, or rancidity. When these changes are found, the milk usually contains too low a percentage of solids to prevent bacterial growth. These defects are not often marked.

#### MOULDS IN THE FINISHED MILK.

A few words may be said on the subject of moulds. In the plate cultures and in the films moulds were often found. They are not uncommon even in the best brands. Usually they are the ordinary species of *Penicillium* and *Aspergillus*; oidia and torula were also found, and spore bearing filaments. It is not easy to say how they get in the milk. The most probable way is by means of air, which enters the cans before they are sealed. It is therefore desirable to find a way of excluding the air from the cans which are shipped to the markets.

#### CONCLUSIONS.

1. The value of sweetened condensed milk depends upon the care and cleanliness used in manufacture.
2. There is a want of evidence that the bacteria or chemical constituents are capable of affecting the

health. Only the use of the best quality of sweetened condensed milk is to be commended in the feeding of infants.

3 Sweetened condensed milk, when carefully prepared from whole milk, has special indications as an infant food. They may be thus expressed: Many infants are unable to digest the fat of cow's milk, even when two or three volumes of water are added. In such cases the half digested curds of casein are vomited. The change in these circumstances to sweetened condensed milk allays the vomiting. These facts are well established clinically.

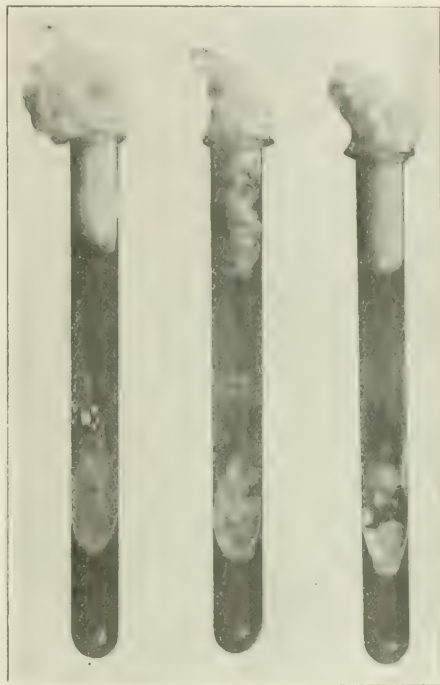


Fig. 1.—Growth of bacteria on Rosenthal double sugar medium, showing in original color changes. Research Laboratory.

4. Sweetened condensed milk has generally a constipating effect.
5. The opposite view that it produces diarrhea seems to be wanting in evidence.
6. Clinical evidence agrees with Finkelstein's observation that the intestinal irritation caused by milk is an effect of the action of the liquid portion, when freed of fat, sugar, and protein.
7. Sugar appears to have a food value superior to fat, as shown by Hellesen (*Nordiskt Medicinskt Arkiv*, 3, 1915).

#### REFERENCES.

1. COUTTS: Report to the Local Government Board, 1911.
2. CASSEHUBER: *Zeitschrift für Bakteriologie*, 1911.
3. GARRAT: *Journal of Pathology and Bacteriology*, 1911.
4. KLEIN: *Journal of Pathology and Bacteriology*, 1911.
5. THEM: *Journal of Pathology and Bacteriology*, 1911.
6. LUND: *Journal of Pathology and Bacteriology*, 1911.
7. ANDREWS: *Journal of Path. and Bacteriol.*, 1913-14.
8. NEWS-HOLME: *Journ. Hyg.*, vi, 144, 1906.

CLIMATIC INDUCEMENTS FOR THE OVER  
MATURE AND EARLY SENESCENT.

BY J. MADISON TAYLOR, A. B., M. D.,

Philadelphia,

Associate Professor, North University, Department of  
Medicine, Temple University.

An active man in the crescendo of vigor makes his own climate, that is, his aura. The atmosphere immediately enclosing him is an emanation of his own personality; the product of his own energizing. He creates, or at least elaborates this aura, and carries it wherever he may go. The quality of it is his own best asset. Hence it is preeminently worth his while so to regulate this aura or climate as to make sure of its physiological integrity.

When one begins to note waning powers, it is the part of wisdom to seek counsel as to how one can by choice create most favorable conditions for retarding decline and comfortably prolonging life. It then becomes more imperative to avoid the effects of excessive summer heat and to elude the irregular chillings of the erratic winters of our middle zone.

You may say only the rich can do this. Not at all; it is simply a question of whether one can come to realize the right value of continued efficiency, or is content to push the risks of strenuousity to, and a little beyond reasonable limits. Only a gambler's spirit takes such big chances or a timidity which hesitates to disarrange a long familiar routine.

A wise dictum of Benjamin Franklin is "Drive your business, don't let your business drive you." This presupposes, you may say, that a man must be head of, or a dominant influence in his business. Of course, most men are not. A long experience leads me confidently to assert that any man, if he so wills, can bring about adjustments to his own vast advantages as well as those of his closest interests. The wave of depreciation poured on men of mature years outgrowing from cruel misquotations in the newspapers of Osler's true statement that progressive thought and power of initiation (in members of college faculties) reside in younger men, has now subsided. A saner understanding has come about as to the value of mature judgment and specialized capacities possessed by the man of fifty or sixty years. These refined and precise aptitudes demand conservation and command appreciation.

Hence the question of climatic adaptabilities becomes momentous. Now whereas a man in his full vigor needs less rest and only a yearly summer vacation, the middle aged expert needs at least two breaks in the year's routine to keep him at his best—one also in winter.

During the height of maturity any climate will do for residence or for vacation. The vital point is to break away from the killing effects of continued effort, strained attention, deadly monotonous routine. This is obligatory in the day's work; breaks in continuity are needed by every one, to get away from the desk or bench by any means, to change the point of view, to move about, and if possible to get out into God's open, to lift the weight from off the spirit.

No one may safely neglect a sense of heavy weariness, especially if it is persistent; any one can and should then take a short daily rest, lying down. During the middle planes of life, phenomena of decline

are always present, origins of decadence invariably exist. To some they come earlier, to others later. Causes of this variance are both inherent and accidental. If one is wise enough to realize that one is not now 100 per cent., but only sixty or seventy per cent. full power, one will then shut down steam to that extent and readjust plans for work and play. That way lies efficiency and also competence for a large aggregate of work, spread a little thin in spots, but in the end the total output will be just as large as that of most others; certainly much larger for that individual, and equally satisfactory.

Climatic conditions, judiciously chosen, exert more potent influences on the totality of achievement than is commonly recognized. It is true, the Anglo-Saxon, the Teuton, the descendants of peoples from the northern zones of Europe, thrive best, at all times and under all conditions of health, in a climate as like as possible to that of their earlier evolution—cool, cloudy, windy, invigorating. When fatigue states obtrude, when normal vigor subsides, especially when previous overstrains, illnesses, or other depreciating influences make themselves definitely felt, then I say, it is well to select a southern, subtropical place for a winter vacation, coming back to the northern zones for the summer. Reasons for this choice are presented later.

An ideal plan for any one who can so arrange his work, or who can take it with him, is to live in the middle States, to visit the northern coast or mountains in the summer, and spend two or three months in Florida, in California, Bermuda, Barbados, or similar climes. Aiken, South Carolina, is an ideal winter resort, cool, bracing upland, 600 feet high, with a dry, sandy soil. The west coast of Florida is of equal value for many conditions, and is far more charming. The essential quality is occasional days and most nights of tonic coolness down to 60° or 68° F. Continuance of warmth above 75° F. spoils the reputation for invigoration in subtropical localities and saps the energies of the visitor.

I fully appreciate the desirability of invigorating northern climates during health and the best means of recovering impaired health. One factor must always be reckoned with, viz., when certain exhaustion states, especially in the declining years, exist along with a demand for continuance in professional effort, in occupation or livelihood. Hence conditions must be obtained most favorable for one's chosen pursuits. For example, many persons need a climate permitting more or less constant open air life near large communities where their abilities can be marketed. Merely because a man's body begins to fail in certain particulars is no ground for discontinuing or abandoning professional, scientific, literary, artistic, or even industrial proficiencies.

Such places are to be found in our southern States and on the Pacific coast, one of the best being the more tonic and accessible regions of Florida. Professional men or women, who wish to economize their working capacities, especially literary or scientific workers, do well to live during the cold months in Florida, where they can put forth their intellectual energies to the best advantage. Often such a change in methods of life repairs the ravages of time or disease effects, sets back the hands of the clock, brings



about a veritable rejuvenation, or often an amplification in quality and quantity of work.

The most prevalent diseases benefited by climatic conditions are tuberculosis and those of the heart, bloodvessels, and kidney group.

Tuberculosis occurs chiefly in adolescents and young adults; the distinguishing characteristics being insufficiency of that internal secretion which controls blood distribution (of the adrenal glands), whence the tissues of the lungs suffer denutrition. The objective point of treatment is employment of measures calculated to raise or develop the activity of this pair of glands. Among the most effective agencies is cold. The climate found best suited for tuberculous suspects is a cool, cloudy, more or less windy region, dry cold being best of all. Ideal conditions are found in the higher northern areas of the United States and Canada, especially beyond the line of frequent winter thaws. The best localities are those of make-up similar to that of the Scandinavian peninsula, the cradle of the Anglo-Saxon, the Teutonic, and Slavic races, from which most of the earlier settlers of America originally evolved. A tang from the Arctic will arouse a thrill in a nearly outworn son of the northland. The coast of Maine, of Canada, supplies the physical analogies; tides twice daily; inrush of cold water; sea fogs tempering the sun glare, the vertical and extraspectral rays which, in our relatively more southern latitudes, are so strong as to sting and burn the body surfaces, the eyes, and skin. Bear in mind that the town of Quebec is 200 miles south of London. Isothermal lines accomplish something, but do not change the verticality of the extraspectral rays.

Gouty people are analogous, since their form of tissue make-up rests upon chronic impairment of the power of converting food wastes into substances readily thrown out of the body. Here the circulatory tone is lowered, the fluids stagnate, largely because the governing secretion is also from the adrenal glands. This inability is either active, owing to lowered power of the adrenals, or passive, i. e., the organs being normal, are unable to start up and sustain the formation of self acting defensive agencies for breaking up the waste products and carrying them off. The whole multitudinous group of muscle pains, fibromyositis, so called "rheumatic" miseries, many neuralgias, neuritides, belong to this group.

Here is needed not so much continued cold as a mild yet stimulating climate in which one may exercise with comfort and satisfaction, and one which invites active energizing. Southern or subtropical regions are suitable, provided that there is enough coolness or invigorating quality to render outdoor activities agreeable.

Heating of the structures is of particular value, best obtained by muscular action to keep the adrenoxidase at a normal level; the trypsin also must be warmed up in order to do its perfect work in aiding oxidation. The worst climate for this group is one with a continued temperature above 75° F. along with moisture, "humidity"; the bodily aura becoming then a moist chamber, relaxing to the surface bloodvessels and weakening to the muscles.

A dry, mild, equable region is desirable for gouti-

ness where one may be comfortable out of doors and the whole day through, where activities can be pursued, especially of the gentler sort, gardening, tennis, golfing, horse back or bicycle riding, rowing, canoeing, and the like. The drier regions of Florida and California supply this need, also the uplands of Georgia, parts of Texas, and many places in the "arid belt," the mesas of Arizona and New Mexico.

In diseases of the heart, bloodvessels, and kidneys, the skin needs to be kept open and active. Elimination by this compensatory means must be continuously encouraged. Here, especially in arteriosclerosis, in its beginnings as well as when well advanced, the adrenal glands are overactive. The earlier phenomena of arterial degeneration begin in a general loss of vigor (adynamia), a functional torpor, or underactivity of either or all the organs in the adrenal system, in the adrenal centre, or thyroid. Causes acting may be a group of agencies bringing about premature senility, tissue starvation, or effects of acquired diseases, infections, syphilis, influenza, or alcohol and tobacco. Several of these devastating agents may be present and cooperate to devitalize.

Any or all causes which persistently deoxidize the blood thus depress the regulative triad (thyroid, pituitary, and adrenal). For victims of this group a mild sunny, equable climate is particularly suitable, indeed essential. Humidity is not so objectionable here as in certain other chronic diseases, hence the coasts of subtropical regions are found to afford great comfort and advantage. There is needed a warm, salubrious atmosphere with little wind and low elevation. Joint troubles of this causation need dryness; they are usually accompanied by leaking skin, loss of tone in the surface vessels, hence sufferers are more comfortable when it is dry, though it had better be warm in the winter. A sojourn for a subject of arteriosclerosis or Bright's disease of at least two years in a subtropical climate will often do wonders. The chief economic advantage is that their occupations shall continue; an outlet for ambition is thus supplied, and cherished plans for livelihood or career are achieved.

For the overtired group, the overworked, and overworried, also for those passing into senile decadence from exhaustion states, and especially for those suffering from badly handled convalescence in infections, mildness is best; their heat making power is depressed; they readily chill. For these, personal environment is of deeper significance than climate. Among them will be found many of the hyper-adrenal group and others of the hypoadrenal. For the former, as has been said, warmer airs are better, and for the latter the stimulation of cold. The effects of exhaustion are much the same in all.

After the middle periods of life the rebound toward vigor is slower than before. The phenomena of presenility are often present; the tone of bloodvessels is lowered; circulation in the brain being defective, gloom ensues; early waking, distressed reviews of errors in conduct, omissions to do the right thing, discouragement, leaks in vital force of psychic origin; a sense of gathering misfortunes assail in the small hours.

And yet mere effort at mind control, teachings in cheerfulness, in optimistic revisions of the facts

At least much more radical measures are usually required. Hence changes of scene, of circumstances, of methods of living are paramount. A suitable companion is of the first importance, the best being a qualified nurse or, in the case of some men, a young and vigorous medical attendant.

Regional conditions are of secondary significance (i. e., locality, weather, aerodynamics, etc.), though for the senescent invalid sunny skies should prevail over days or weeks of sad, showery weather or melting snows. The object is to be able to spend days on end outdoors from dawn to eve, and early to bed. While the doing of things is of importance, there should be invitation, not compulsion. Gentle activities are in order, partly active while normal impulse lasts, but mostly passive in some sort of conveyance, of which a boat or canoe far transcends a wheeled vehicle. As languor grows, it should be possible to yield then and there to the blessed impulse to drowse. A mild but not hot climate supplies suitable conditions best. Skin vessels relax in slumber and then exposure to cold may readily do harm.

Here again our charming subtropics in winter are best suited to outing convalescence from December to May. Always and ever the task for the adviser or attendant is to supply those inducements to laggard functions, which being latent, slow, or depressed, demand aid and comfort, help and urging.

1504 PINE STREET.

## MODERN INFANT FEEDING.\*

### *Some Personal Observations.*

By GEORGE DOW SCOTT, A. B., B. S., M. D.,  
New York,

Instructor and Assistant Attending Physician, New York Post-graduate Medical School, and Hospital, Infant and Children Service; Chief, Pediatric Clinic, St. Mark's Hospital; Etc.

Modern investigators and new found methods have added richly to our present day teachings on the subject of infant feeding. Certain it is that the newer findings have given life chance to many infants that, under older theories and methods, might have succumbed. Yet does it not occur to us at times that the old masters were just as proficient, perhaps clinically fully as much so in the art of milk modification, although they lacked our present-day laboratory and experimental facilities? The basis of adequate infant feeding has been, is now, and always will be founded upon a physiological and psychological understanding of the needs of our little patient. Improved laboratory methods, deeper insight into physiology have given us the cause of conditions which were formerly treated clinically, possibly just as well, without an exact reasoning hypothesis.

As scientists and investigators delve more deeply into the still obscure physiological conditions within the infant body, just so much more will the advance in infant feeding rest more and more upon a firmer foundation. It is very easy to criticize and some of the best critics I know understand least. Physiology is the bedrock of infant feeding. It

seems therefore to be fitting to enumerate many of the points in physiology which should at no time be forgotten. The saliva in the newborn is alkaline; immediately after food is taken or when bacteria enter the mouth, it is acid. This saliva is immediately secreted, or if not then during the first week or so. In a weak way it is able to convert starch into sugar. Ptyalin is also at this period present in both the parotid and submaxillary glands (Morse and Talbot). The diastase in the saliva, however, is able to digest starches only up to maltose and not into grape sugar. This saliva may aid in the coagulation of milk. Finizio induced infants to suck bits of cotton and then determined the amylolytic power of the saliva. He found it greatest about midday, and in different proportions in infants of the same age. With babies less than six months old, the proportion did not vary after nursing or when starch was added to the food, but in those over six months, there was found a noticeable increase in this amylolytic power immediately after a meal containing starchy foods, the increase being still noticeable an hour later. Beginning at about six months, there is a gradual development of the specialization of function of the salivary glands. This amylolytic power increases from birth up to six months, the saliva reaction after this time being rarely neutral or alkaline.

The anatomical position of the stomach must be taken into consideration, as its position and form mean much in the number and size of the feedings. The stomach in the fetus is nearly vertical, in the newborn it gradually assumes an oblique position, and at the end of infancy it almost reaches the transverse position. The growth of the fundus compared with that of the stomach as a whole is relatively rapid (Morse and Talbot). The stomach grows rapidly the first year, the greater curvature becoming longer, increasing from sixteen to twenty-four cm. in length. Pisk and LeWald find no characteristic normality in type. Stomach forms may be ovoid, tobacco pouch shape, retort shape, pear shape, etc. Its shape, however, is not dependent upon the character of the food ingested, but rather upon the quantity of gas which it contains or acquires. Strange to say, the infant can digest more than the anatomical size of the stomach would indicate. When the milk food is swallowed, the stomach immediately becomes active and a part of the meal passes into the small intestine, spurts in, moreover, undigested, as is proved by fluoroscopic examinations; this happens more fluently with human than with cow's milk.

A few words as to stomach digestion. Stomach digestion lasts in breast fed infants from one and a half to two hours; in the artificially fed often up to three hours—cow's milk therefore remaining longer than human milk. The infant's stomach shows less peristalsis than that of the adult. It is important to remember that carbohydrates leave the stomach rapidly, proteins less rapidly, and fat more slowly. Hedenius showed that there was less carbohydrate in the stools when simple cereals were given than more complicated mixtures and that the more carbohydrate there is in the stool the greater is the acidity. Keller, Talbot, and Hill have shown that carbohydrates make the digestion of proteins more complete. The carbohydrates most

commonly used are cane sugar or saccharose, dextrose, levulose, and maltose, which all aid in nitrogen retention. They are ingested by the gastric juices quickly and are passed on into the small intestine, and the proteins partially digested by the stomach juices are retained. The fat being retained for a long time in the stomach, there should not be a large accumulation of it in the intestines. Therefore the relative discharge of any modified food into the intestines depends upon the relative proportion of carbohydrates, proteins, and fat. Tobler and Bogen, according to Morse and Talbot, found that mixtures containing much cream pass more slowly through the pylorus than those without so much fat. Tobler considers a large amount of fat in the stomach to be pathogenetic of pyloric spasm. Fat delays the emptying of the stomach, and is passed out in the stools in the first days of life, decreasing as the infant grows older. Fat absorption—that is split fats, for unsplit fats are not absorbed—in breast and artificially fed infants, is very high, ranging from ninety-six per cent to 98.62 per cent, according to various authors. With this excess of fat at times we find a fat diarrhea with frequent acid yellow mushy stools, composed almost entirely of fat. Howland has shown, however, that infants can be fed at times upon large quantities of fat without symptoms of acidosis or indigestion.

Gastric motility depends also upon the dilution of the milk. Tobler was able in a boy with a gastric fistula to show that the coagulation of casein begins in two or three minutes, and is complete in ten minutes. This experiment is of great importance, since it has been found that the fluid portion containing the milk sugar in solution is rapidly expelled from the stomach, while curds containing casein with fat in their meshes remain behind for further digestion. Finkelstein considered fat, albumin, and intestinal bacteria harmless, while the sugars produced intoxication, hence his *Eiweiss milch*. Casein curds are important. There are two varieties, a large and tough curd and a small soft one—the first composed of beanlike protein, white to yellowish green, the second composed of fat, white flat flakes, yellow, sometimes green, in the form of fatty acids. When the milk curdles in the stomach it entangles a large amount of milk fat, and only the fat near the surface is affected by the gastric juices.

Experiment has shown that the cardiac end of the stomach has a very delicate mechanism of its own, by means of which it is at times closed, at other times open. It has been shown that the orifice is open when stomach food contents are alkaline, closed when they are acid; but, strange to say, the pyloric valve on the stomach side acts just in the reverse way, while on the duodenal side the reflex seems to simulate that of the cardia. Thus alkaline foods cause the pyloric opening reflex to be delayed. Solid particles of food may even be pushed against the valve without opening it. It is supposed, however, that casein curds may have considerable influence on opening and closing the pyloric valve, while fat, whey, and lactose have little or no action.

The growing body requires protein to build up the body tissues, muscles, etc., while carbohydrates and fats act as fuel and the osseous system requires salts. Human milk contains, with the exception of

iron, less of mineral salts than cow's milk, but more of them are in organic combination. In fact, Soldner found that the sodium, potassium, and chlorine content decreased as lactation progressed, while bone forming constituents, calcium, magnesium, and phosphorus, remained fairly constant.

As to the secretions in the stomach, pepsin often found in the fetus is always present in the stomach at term, both in health and disease. Breast fed infants secrete less than those artificially fed. Rennin is often found the first day of life—in fact, usually so. Some believe that pepsin and rennin are identical. Lactic acid is probably not present at birth. Free hydrochloric acid is not found in some breast fed infants, but is present in others and then usually after an ingested meal. If there is much casein in the stomach contents, hydrochloric acid will appear much later than when little or none is present. The stomach juices of the normal infant are capable of transforming the protein into peptone.

As to intestinal secretions, the pancreas after birth doubles in weight in from three to four months, increasing also in functioning powers. Of its three ferments, trypsin, amyllopsin, and steapsin, we find the first and last less than in the adult, while amyllopsin is found during the first week of life. The function of the liver gradually increases as the infant grows, creating more bile to change the carbohydrates, proteins, and fats into glycogen. Invertin, lactase, and maltase are the specific intestinal ferments—maltase splitting up malt sugar.

The effect of muscular exercise upon metabolism is great. The difference between quiet sleep and active struggling may, according to Holland, be between 17.6 and thirty-nine per cent. Other authors make the ratio still higher, especially after taking food.

*Cow's milk and human milk.* Cow's milk, if fresh, is a white, yellowish white, opaque fluid, cream forming the upper, skimmed milk the lower layer. Its specific gravity lies between 1.028 and 1.035 at 60° F. It easily becomes acid after remaining for a short while in the air. Fresh amphoteric milk does not coagulate upon boiling; as it ages, however, lactic acid forms. Human milk is longer amphoteric, and its digestibility for the infant is greater under normal conditions.

Common milk must be modified to resemble as much as possible human milk. The relationship between cow's and human milk, according to the latest statistics, is:

|               | Human          | Cow's          |
|---------------|----------------|----------------|
| Fat .....     | 4.00 per cent. | 4.00 per cent. |
| Sugar .....   | 7.00 per cent. | 4.75 per cent. |
| Protein ..... | 1.50 per cent. | 3.50 per cent. |
| Salts .....   | 0.20 per cent. | 0.70 per cent. |

A comparison of human and cow's milk shows us further conditions. The casein, for instance, of human milk is hard to precipitate and large quantities are needed for analysis. The fat in cow's milk is found not to be in as fine an emulsion as human fat—its globules are smaller and fewer in proportion. Cow's milk is also rich in volatile acids, containing about twenty-seven per cent.

We shall pass over sterilization as a means of protecting the milk, and pause a moment at pasteurization. Hippus believes that the heating of milk at



ing for thirty minutes causes no noteworthy changes in its chemical composition. The proteolytic ferment in cow's milk was found to be unchanged by heating one hour at 140° F., but was destroyed by boiling. The oxidizing ferment was unchanged by heating for several hours at from 140° to 149° F. We know that milk heated at 140° F. for twenty minutes will destroy the typhoid bacillus, the diphtheria bacillus, the dysentery bacillus, and cholera vibrio. But it is a question whether even boiling has any effect upon their toxic products. For instance *Bacillus coli communis* is unaffected by heating for fifteen minutes at 272° F. In Germany, however, all the milk is boiled, and Ibrahim and Brennermann believe that raw milk predisposes to indigestible curds, while boiled milk does not. Casein undoubtedly causes indigestion in a large number of cases. Finkelstein, however, dissents from this view. Choose as you see fit between raw and cooked milk. I lean strongly, after long experience, toward milk in the raw state, pure, raw, unpoisoned, its early preparation undefiled by dirt, carelessness, or improper handling. I refer to Grade A certified milk—it is *par excellence* the ideal food for the artificially fed infant. A short time ago I had the pleasure of seeing the details of a modern dairy in the Berkshires. The sight strengthened my feeling that the ideal food is raw, not cooked; in fact, a physiological food should as nearly as possible be used in the mode nature has created it. The bacterial count in this milk must be less than 10,000 bacteria to the c. c., the counts being made once a week. The fat standard is about four per cent., the protein about 3.5 per cent.

#### DIFFERENT FORMS OF INFANT FEEDING.

**Caloric feeding.** Many investigators have shown that the percentage composition of human milk may vary within wide limits. There is, therefore, marked fluctuation in caloric value. The artificially fed infant requires more calories than the breast fed, as the work of digestion is greater. Infants under weight require more calories than the normally developed. These calories are mainly obtained from the digestion of carbohydrates and fats.

It is to be remembered that a calorie is the amount of heat required to raise one kgm. of water from zero to 1° C. In general, infants require from 100 to 120 calories per kgm. of body weight. The number of calories needed varies with different ages and in different individuals.

I cannot simplify the process of arriving at the number of calories in a given food better than by quoting the following by G. Carroll Smith:

|                      |              |
|----------------------|--------------|
| 100 gms. human milk  | 100 calories |
| 100 gms. cow's milk  | 100 calories |
| 100 gms. infant food | 100 calories |

A caution as to caloric feeding must be given, that in the time to acquire a sufficient number of calories, an adequate protein content may not be overlooked.

Percentage feeding is useful as a basis for a proper modification of milk. In clever hands it has filled a great want. It has been abused, misunderstood, and used in an arbitrary manner. In a thorough knowledge of it there is freedom of action, although I have caught many a man making the infant suit the modi-

fication rather than the modification suit the infant. A too strict adherence to this method of feeding may also dwarf a man's ideas as to other perhaps more suitable methods.

**A word as to sugars.** Of the sugars milk sugar, say Morse and Talbot, is more completely absorbed than other sugars, and is more conducive to the development of the normal intestinal flora. Lactose has a slight laxative action, as has maltose, while cane sugar has a slight constipating effect. However, in excess milk sugar is liable to cause diarrhea. Maltose and various dextrins form the basis of many proprietary foods.

The splitting of the carbohydrates into their component parts is as follows:

Maltose splits into dextrose.  
Lactose splits into dextrose and galactose.  
Saccharose splits into dextrose and levulose.  
Starch splits into dextrose.

Cane sugar undergoes alcoholic fermentation, while milk sugar becomes lactic acid.

If the infant does not thrive, these sugars can be interchanged.

Another word as to the value of top milk: The upper layer of milk is cream, the lower skimmed milk, but the upper part of the lower layer contains also some fat. To give top milk is to give more fat and less protein than would be wise, for the protein is found at the bottom of the lower layer. To my mind nature wishes us to take the whole of milk whether cow's or human. This is a true physiological hypothesis; a right method when indicated, wrong when contraindicated and not applicable to each and every infant. The same might be said in relation to *Eweiss* milk and buttermilk. Buttermilk can at times be added to a weak modified milk with great benefit, as it is often well borne and it bridges conditions where stronger foods are not tolerated. It contains:

|            |                     |
|------------|---------------------|
| Fat        | 3.5 to 4.0 per cent |
| Milk sugar | 4.5 per cent        |
| Protein    | 3.8 per cent        |

Dried milk has been used in Norway with success, but, as Eric Pritchard points out, there are certain principles in milk called vitamins, which are destroyed by prolonged boiling or drying. They can be supplied, however, through the ingestion of orange or other fruit juice.

In artificial feeding the infant starts with food rich in fat and carbohydrates, and poor in protein. It must receive a sufficient number of calories proportionately to body weight, else it cannot gain. If, however, protein is sacrificed to calories, that is, to fats and carbohydrates, the infant loses or dies. Again, there is no such thing as a definite number of calories for an individual infant. Each is a law unto itself, and it is therefore very necessary to fit the food to the digestive capacity of the infant.

**Anaphylaxis.** Milk anaphylaxis is, in my experience, very uncommon. There is, however, a psychological intolerance for food. The lower nerve centres and their subconscious activities play an important part in suggestion—parents or guardians are usually to blame; infants respond to suggestion as older children do.

Depending, therefore, upon the foregoing physio-

logical knowledge, we base our modification upon it, each observer interpreting his findings according to his experience, training, and experimentation, and each depends upon the method with which he is most familiar and with which he has achieved the best results.

In many infants we find the digestive function of the pancreas and stomach for cow's milk undeveloped or not developed at all. Such a condition may last for days and weeks, depending upon the development of the glands. Just here is maternal or wet nursing of prime importance; if impossible, mixed feeding. If again impossible, there comes up the question of predigested food. Infants usually take it—in fact, at this age they will take almost anything offered. Is it not paradoxical to see often that milk improperly modified, boiled too long, diluted too much, agrees with the infants and they thrive upon it?

If the mother cannot nurse her infant; if also suitable wet nursing is impossible, a proper modification of cow's milk must be used. As I have before mentioned, it is best for the mother to give the infant as much of the breast milk as possible combined with bottle feeding or mixed feeding. To approximate human milk, the protein of cow's milk must be diluted, its sugar content increased. Cane sugar has given me satisfaction always. In my own modification, I use Grade A certified milk. The mother is instructed to place the bottle of milk immediately upon the ice, where it remains five hours. The cream is carefully poured off into a freshly rinsed out bottle, closed with absorbent cotton. The skimmed milk remains in the original bottle. Depending upon the age of the infant, the mother takes of the cream a certain amount, of the skimmed milk a certain amount, adds to the mixture a small amount of cane sugar, perhaps one half ounce, two ounces of lime water, three ounces of boiled water, and with the mixture at 90° F., the food is ready. Up to five or six months, the modification is made practically as above, increase in the milk being from week to week; after this time, whole milk is given, and gradually cereal gruels such as farina, oatmeal, and barley are added, beginning with small quantities and gradually giving more of them. The stools and the general condition of the infant must be closely watched. From the first, that is shortly after birth, warm raw slightly sweetened orange or pineapple juice can be added very advantageously to the diet. Apple sauce and prune juice, long cooked, sweetened, and strained, served warm, are excellent food adjuncts. These fruit juices are laxative, diuretic, and stimulate the liver, intestines, and stomach.

From six months on, the boiled water is gradually eliminated, the gruel waters gradually assuming their place. For the last two or three years the soups of long boiled and strained lima beans and peas have proved very satisfactory in my hands. They are used for their vegetable starches and proteins. Where cereal gruels are not tolerated, they seem to act well. In many cases the cereal gruels and the vegetable soups can be given together with the milk.

Sometimes the vegetable starch is better tolerated

than the cereal. Peas and lima beans have also a large protein content. For instance, the food content of dried lima beans is:

|                                     |                    |
|-------------------------------------|--------------------|
| Water                               | 8.6 per cent.      |
| Protein                             | 12.8 per cent.     |
| Fat                                 | 0.6 per cent.      |
| Total carbohydrates including fibre | 61.6 per cent.     |
| Ash                                 | 1.6 per cent.      |
| Fuel value per pound                | 1600 (Carrington). |

#### Of dried peas:

|                                     |                |
|-------------------------------------|----------------|
| Water                               | 6.6 per cent.  |
| Protein                             | 20.4 per cent. |
| Fat                                 | 0.8 per cent.  |
| Total carbohydrates including fibre | 58.0 per cent. |
| Ash                                 | 2.2 per cent.  |
| Fuel value per pound                | 1570           |

Freedom of thought creates freedom of action. No one man should warp his mental faculties by the restricted use of one modified milk method. What nature furnishes us is made for use. As time goes on, fossilized opinion will give way to broadness of outlook. The question of feeding infants from the bottle will not be answered in our time nor in many moons to come.

#### THE WEST SEVENTY-SEVENTH STREET

### ENLARGEMENT OF THE THYMUS.

#### *Report of a Case,*

By JACOB GROSSMAN, M. D.,

New York.

Enlargement of the thymus is the most frequently observed pathological condition of this gland. It was recognized very early that the enlargement of the thymus might be the direct etiological factor in infantile stridor and asthma. Numerous arguments have been advanced for and against these views. Previously the thymic condition had been discovered only at the autopsy and it had been a difficult matter to make a differential diagnosis during life. In recent years these cases have been studied during life and the possibility of an ante mortem diagnosis has been demonstrated beyond a doubt.

The chief symptoms of thymic enlargement are those of tracheal stenosis. A number of writers deny that enlargement of the gland could exert such a pressure upon the respiratory tract. Numerous cases in the literature of the past few years have proved that such a compression of thymic enlargement does occur. Percussion, radiography, intubation, and operation on the living subject have established the clinical entity of this affection, while certain modifications in autopsy technic have increased the amount of post mortem evidence to support it.

Autopsies have disclosed local anemia, flattening, partial obliteration, atrophy of the tracheal wall, which have been proved to be due to compression by an enlarged thymus. Cases have been reported in which there had been pressure symptoms during life and the autopsy showed an apparently normal thymus. Such cases may be explained as due to transitory edema or congestion which disappeared after death.

As the weight of the thymus varies, and since

there are so many conditions influencing its weight, it is more expedient to base the diagnosis of thymic enlargement upon the dimensions of the organ, rather than upon its weight. Of these dimensions the increase in thickness is of greatest importance, as shown by Grawitz, Pott, and others.

#### PATHOLOGY.

*a. Gross pathology.* The gross appearance of the hyperplastic thymus varies. As a rule, the main portion lies behind the upper part of the sternum, often extending more to the left of the median line than to the right and downward over the upper third of the pericardium. The lower prolongations of the lobes may extend over the pericardium to the apex of the heart. The cervical prolongations of the lobes may also be hyperplastic.

The form of the hyperplastic thymus varies greatly. The anterior surface corresponds to the underside of the sternum and is convex; the posterior surface shows grooves and markings corre-

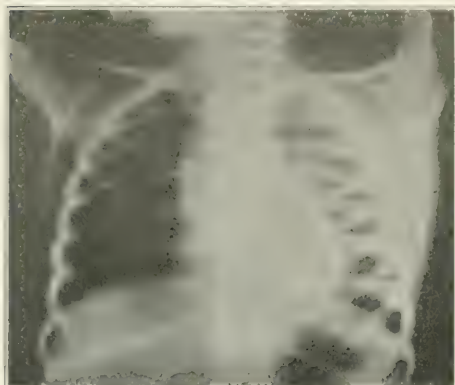


Fig. 1. Large, posterior right lobe of the thymus.

sponding to the structures lying beneath. The hyperplastic lobe may be nodular or tortuous. The color is usually pink or brownish red, the enlarged organ being paler than the normal thymus. The consistence of the hyperplastic organ is very often less than that of the normal thymus.

*b. Microscopical pathology.* Microscopical examination of the enlarged thymus in the majority of cases shows a lymphoid hyperplasia with or without congestion and edema. The general structure resembles the normal. The corpuscles of Hassall may appear more numerous and larger than in the normal gland. Hemorrhages may be present. The eosinophiles and mononuclear eosinophiles may be present in large numbers.

#### SYMPTOMS.

The essential symptom of thymic enlargement is respiratory disturbance resulting from the elimination of space in the superior thoracic strait. \*This respiratory difficulty may manifest itself in all possible grades, from a mild stridor to a severe dyspnea.

*Physical signs.* The general appearance of the

patient is usually that of perfect health. Some patients have adenoid facies.

The throat, as a rule, is negative, although occasional enlargement of the tonsils may be present.

The enlarged thymus may be felt just above the sternal notch, especially during or immediately after a spasm of coughing. An enlarged spleen and enlarged lymph nodes may be associated phenomena.

An area of thymic dullness may occasionally be mapped out. This area is usually triangular in shape with unequal sides, the base being at a level of the sternoclavicular articulation, the blunt apex above and behind the level of the third rib. The lateral boundaries extend somewhat beyond the sternal lines, usually more to the left, but in this case it extended more to the right. As a rule there is very little dullness to the right. If the dullness extends more than one cm. beyond the sternal line it usually denotes enlargement. Hochsinger has percussed an enlarged thymus in twenty-six children and his diagnoses were subsequently corroborated by the Röntgen ray.

Auscultation may disclose stridor, otherwise it is negative.

The blood usually shows anemia and lymphocytosis.

#### TREATMENT.

*Preventive measures.* Any condition which may precipitate an attack of thymic symptoms should be avoided; for instance, throwing the head far backward, high position of the head, excitement, crying, screaming, running, jumping, very warm or very cold baths, swimming. Where operations are necessary, local and not general anesthetics should be employed.

The general hygienic conditions should be improved. A good, well regulated diet, quiet life out of doors, and equable climate should be recommended. Acute infections of the upper respiratory tract should be treated without delay.

*Curative measures.* Many operations have been advised and tried. Complete removal of the thymus has always been followed by disastrous results, hence it is no longer recommended. König and many others advise against complete removal of the thymus. He recommends either stitching to the sternum or a resection.

Röntgen irradiation has been employed with favorable results in a number of cases. Flüggé (1), Waters (2), Rudberg (3), Aubertin and Bordet (4), Sinozsky (5), Myers (6), Lange (7), have demonstrated that thymic asthma and marked atrophy of the gland followed röntgenization, together with improvement in the symptoms. Involution begins in from one or two hours after exposure and continues for a variable length of time according to the intensity of irradiation, regenerative changes gradually taking place after treatment had been discontinued.

Irradiation must be employed with caution, as it may inhibit further growth in the tissues (proved by experiments on young animals) and also produce intoxication from the products of lymphoid disintegration.

Thymus feeding has been tried, but without apparent effect upon the affected gland. It seems to have a general tonic action, however. Sabatini re-



views some recent researches by Fiore and Franchetti, in which they have apparently demonstrated that it is possible to accelerate the involution of the thymus by injecting serum from adults of the same species. This has been confirmed by their experiments in laboratory animals.

CASE. A. J., aged four and one half years, male, born in United States. Family history: Mother and father alive and well. No other children. No miscarriages. Past history: Normal delivery, breast fed for eight months, sat up at six months, first tooth at the same time. Began to walk at fifteen months. Coughed intermittently ever since birth. "Tooth cough," "stomach cough," "nervous cough," were the various diagnoses made. Adenoids removed at the age of four years. Whooping cough immediately after operation. Past history otherwise negative.

Present history: Six months ago, after the removal of adenoids, the patient began to cough more than ever. This cough was attributed to an attack of pertussis which subsequently developed. The duration of this attack was about ten weeks. For four weeks after the pertussis subsided, the patient was practically free from cough. Then he gradually began to cough again. The cough at this time was a short dry one during the day and at times worse at night. There were no spasms or vomiting.

The cough became progressively worse, both night and day. It had now become spasmodic in character, unproductive, and lasted from five to ten minutes. During the attack, the patient became red and usually vomited toward the end. There was no stridor, but the mother said that he made some sound during sleep, especially if his nose was "clogged up." These attacks were precipitated by fits of crying or excitement. At one occasion a warm bath brought on an attack after he had been free from cough for the preceding twenty-four hours.

Appetite was good, the child had not lost weight; he now weighed forty-two pounds. Temperature was normal throughout day and night. There were occasional night sweats. Von Pirquet reaction was negative after twenty-four, forty-eight, and seventy-two hours.

Physical examination: Well nourished child, extremely nervous; had adenoid facies; head, eyes, ears, and throat were negative. Heart and lungs normal. Some dullness at the sternoclavicular articulation, extending about two cm. to the right of the sternal line. The lower boundary of thymic dullness could not be made out definitely, as that part of the gland was covered by the lungs. The spleen and lymph nodes were not palpable. The blood showed a lymphocyte count of seventy-five per cent., polynuclear twenty-two per cent., eosinophiles, three per cent., and a secondary anemia.

Röntgen ray picture by Dr. I. J. Landsman showed that the pulmonic fields were even in size and evenly illuminated. There were no evidences of infiltration or consolidation of either lung. There was no evidence of enlarged bronchial lymph nodes. There was, however, a very large persistent right lobe of the thymus gland, extending from the right border of the heart to the apex of the lung.

#### CONCLUSIONS.

1. In the absence of any other definite cause for this cough, I feel that we are justified in saying that this enlargement of the right lobe of the thymus is the underlying factor.

2. Whether the cough is produced by mechanical pressure of the gland upon any part of the respiratory tract, or whether it is produced by irritation of the recurrent laryngeal or vagus nerves, is a very difficult matter to decide.

#### REFERENCES.

- FLUGGE: Report of seven cases. 2. CHARLES A. WATERS: Röntgen Therapy of Thymus, *Journal A. M. A.*, April 24, 1915.  
3. RÖDBERG: *Arch. f. Anat. u. Entwickelungsgeogr.*, Suppl. 123, 1907.  
4. AUBERTIN and BORDET: *Arch. d. Mal. du Cœur*, 11, 321, 1909.  
5. SINOZERSKY: *Russk. Vrach.*, June 29, 1914.  
6. MYERS: *Arch. Pediatric*, N.Y., 607, 1908.  
7. LANGE: *Amer. Jour. Röntgenol.*, 1913.

1051 BOSTON ROAD.

## ATROPHIC RHINITIS.

### *A Plea for Operative Treatment.*

BY WILLIAM FERGUSON, M. D., C. M.,  
New York.

Atrophic rhinitis, the dreaded catarrh which the laity are more anxious to conceal than have treated, is a chronic disease, exhibiting in its late stages atrophic changes in the nasal mucosa and the turbinate bones, accompanied by a fetid discharge which, draining into the nasopharynx, excites similar changes in the pharynx, larynx, and middle ear.

No well established theory has been accepted as to the etiology of the disease. Some hold that it is a sclerotic atrophy due to preexisting inflammation of the sinuses, the excessive connective tissue proliferation becoming fibrous, gradually cutting off the blood supply, choking the glandular and vascular structures of the mucosa, and impairing or destroying its functional activity. Others contend that it is a simple atrophic process independent of other local diseases of the mucous membrane, while still others hold that the unfortunate patients suffer from a congenital defect, the nasal spaces being lined with pavement instead of columnar ciliated epithelium.

It is my intention in this paper to demonstrate that, primarily, septal spurs and deflections are very strong predisposing factors in the etiology. Septal spurs and deflections are not only the precursors of sinus inflammation, but by keeping up a more or less constant turgescence of the mucosa in the lower nasal levels in early childhood, they overexcite both the cells of the mucosa and the neurons of the trophic nerves supplying these parts, which may easily result in atrophy from excessive function. We have examples of this in the neuromuscular system. First, there is hypertrophy, then atrophy as a result of exhaustion of the neurons and muscle cells from excessive function; for instance, atrophy of the muscles of the upper arm in blacksmiths and of the muscles controlling the finger movements in piano players. Why may not this established pathological finding be applied to the nasal mucosa? In many cases I believe this to be the cause; others successfully pass this stage, but the sinus involvement resulting from these deformities produces atrophy. We must recognize the fact, however, that many cases with spurs and deflections never exhibit atrophic changes. This is difficult to explain in view of the demonstration that in the early stage of atrophic rhinitis removal of these deformities has resulted in most marked improvement if not cure.

Pathological investigation shows atrophy of the glandular and vascular structures of the nasal mucosa, replacement of columnar ciliated by pavement epithelium, narrowing of the Haversian canals of the turbinates and, consequently, constriction of the nutrient arteries of the bones with atrophy of the latter.

The symptomatology of the disease varies greatly according to the stage of involvement. Some patients complain of stuffiness with slight catarrhal symptoms of the nose and throat, accompanied with pus discharge of repulsive odor. Generally, it is the odor these patients, or rather their friends, wish to have relieved. From this simple array of symptoms there are all grades up to those of the unfortunates

who complain, not only of fetid odor, but trouble—some crusts in the nose, nasopharynx, and larynx, persistent dry throat, husky voice, and impairment of hearing. Hence, on examination we find great diversity in appearance of the nasal cavities. In some the lower turbinates are found to be atrophied, while the middle turbinates are cystic and covered with pus, indicating a preexisting inflammation of the ethmoid or frontal sinuses. Again, both nasal cavities are found filled with fetid pus and soft crusts, and no atrophy is present; for freely flowing pus does not produce atrophy of the mucosa, but more frequently hypertrophy. Where the pus dries into hard crusts at the lower level, atrophy takes place, probably as a result, partly of pressure, partly of interference with nutrition, which must result from the close, continuous contact of such decomposing masses with the delicate mucous membrane. It is evident that atrophic rhinitis without preexisting sinus inflammation is an ascending disease, and it is found that the lower turbinates are atrophied, while the middle turbinates are but slightly affected.

Of late I have been able to divide all cases of atrophic rhinitis into two distinct groups: First, those which react to operative procedure; second, those hopeless chronic cases in which it would be impolitic to attempt anything but local and constitutional treatment. The first group of operative cases presents the following appearances: Septum deflected, with spurs upon one or both sides; walls of the middle and inferior meatus covered with foul smelling pus; soft, heavy crusts over the inferior turbinate, septal spurs, and anterior border of the middle turbinate; inferior turbinate slightly atrophied, its mucosa injected. On cleansing the nasal cavities and causing the patient to incline his head in various directions, no pus can be seen coming from the sinuses or antrum; the postpharyngeal wall shows plainly through the anterior nares. On examination through the mouth, this surface exhibits congestion with hypertrophied pharyngeal glands dotting the surface and a layer of greenish yellow, tenacious pus adhering to the whole posterior wall; the ventricles of the larynx are congested, the membrana tympani is retracted. These appearances vary at times; the pus is not so profuse, the crusts in the nose are more firmly adherent, and the postpharyngeal wall looks dry and glazed. Again, the lower turbinate bone upon one side may be hypertrophied and the corresponding bone atrophied, a small dry crust adhering to the anterior border of the middle turbinate of that side. On one side the postpharyngeal wall may distinctly be seen, on the other side not. These unilateral cases usually are specific in nature.

The second group, on examination through the anterior nares, exhibits marked atrophy of both inferior and middle turbinate bones: firm brown crusts adhere to these surfaces and a thin, fetid pus bathes the meatal walls; the postpharyngeal wall is seen very plainly. Spur and deflections may be present, but apparently they do not cause active trouble at this stage by obstructing drainage. By the mouth, the postpharyngeal wall has a dry, glazed appearance; the mucosa of the larynx looks thin and shiny. A thin crust or drop of pus may be seen

upon the cords. The membrana tympani is markedly retracted. The x ray has shown cloudiness of the sinuses in most of the second group and in quite a number of the first group; but on reviewing cases in the latter group some time after operation I have been unable to detect any clinical evidence of sinus involvement. They were not x rayed a second time, so I am unprepared to state whether the cloudiness of the frontal and ethmoids has cleared.

#### PROGNOSIS.

In the first group of patients I have obtained most satisfactory results by operative treatment followed for one month with local treatment and judicious use of tonics. In the second group the prognosis is virtually hopeless. By local and constitutional treatment some comfort may be secured for these unfortunates. In them it is too late for the operative procedure I recommend for the first group. Some surgeons, however, have obtained results by the employment of more radical measures, such as complete excision of the ethmoid cells.

#### TREATMENT.

The main plea of this paper is for the performance of submucous resection in selected cases of atrophic rhinitis. At the outset, the very just criticism may be made that I have advanced no unsailable theory as to the causation of this disease nor any scientific basis for the operation. Be this as it may, I have obtained most marked improvement, if not cure, in these cases, and that suffices to commend the procedure to me. The results obtained by the use of Beck's bismuth paste in tuberculous sinuses were accidental. Can we deny the results, or do we refuse to employ it because its curative action lacks elucidation by the pathologist?

Let us consider a few facts. A healthy nasal cavity is practically free from visible secretion; the mucosa is smooth, mostly deep red in color, and moistened with a thin layer of translucent, clear mucus. Implant in this cavity spurs and deflections of the septum and what occurs? Turgescence of the mucosa and susceptibility to recurrent acute rhinitis. These deformities interfere with proper drainage: stagnation of secretions occurs, followed by the onset of a purulent flow which causes hypertrophy of the parts; this further obstructs drainage, and in certain localities tension develops, resulting in negative pressure in the frontal and ethmoid sinuses and a low grade inflammation in the mucous linings. Does not this afford an excellent soil for the influenza, pneumonia, and sepsis germs and the establishment of frontal sinusitis and chronic ethmoiditis, which, by many rhinologists, are regarded as pre-existing conditions essential to the production of atrophic rhinitis? Again, implant in the healthy nose septal spurs, and a greater or lesser degree of turgescence of the mucosa of the lower levels develops, tending to overstimulate the cells of the mucosa and the neurons of the trophic nerves. This, in a person of poor development and low state of nutrition, living in unhygienic surroundings, soon produces hypertrophy, followed by atrophy, owing to exhaustion and gradual degeneration of the cells, an atrophy independent of any local disease.

We have thus traced both theories of atrophic rhinitis from the standpoint of septal spurs and de-

deflections. There are cases, however, that do not develop until adult life, which may be accounted for by stronger constitutional resistance. There are also cases in which spurs and deflections are found, but no active evidence of atrophic rhinitis so far as crusts, marked atrophy, or odor are perceptible; yet, in all cases of deformity, if the existing rhinitis is relieved, the postpharyngeal wall upon one side can be demonstrated; so, evidently, there is some atrophy. Here the high individual resistance aids the trophic nerves and retards or checks atrophy. Some surgeons believe that without sinus involvement, a desiccative element in the pus is essential for the production of crusts and atrophy. I cannot accept this view. Freely flowing pus does not produce crusts; stagnation is necessary; and do not spurs supply the obstruction? Is it not possible that pus stagnating upon these obstructions loses to the air currents sufficient water to become inspissated and thus to form dry, hard crusts?

If the foregoing deductions are admitted, are we not justified in removing these deflections and septal spurs to improve drainage, relieve postnasal catarrh, and establish new septal circulation, thereby so invigorating the whole nasal cavity that the mucosa and trophic nerves take on new life? This I believe to occur, for, as a result of submucous resection, I have seen in such cases invigoration of the entire nasal mucosa, cessation of pus and odor, and relief from postpharyngeal and laryngeal symptoms. If I can demonstrate such results, must we await the dictum of the pathologist? Time alone will tell whether the relief obtained is permanent. Cases operated in over three years ago show no recurrence. As to tinnitus, deafness, and retracted membrana tympani, sufficient attention has not as yet been given to these conditions to warrant decisive statements. Inflation certainly should form part of the aftertreatment. The operation in atrophic cases is by no means easy in the beginning, since the tissues are friable and tear easily, but with patience and a steady hand, the work can be done successfully.

In the aftertreatment I use blood and nerve tonics. Recently I have satisfactorily employed locally two per cent. ointment of scarlet red. Of the second class of cases, little that is new can be said as to treatment. The parts should be kept clean and stimulated with two per cent. scarlet red ointment combined with constitutional treatment when indicated. I am unprepared to express any personal opinion as to the advantage or contraindications of excision of the ethmoid cells in old cases.

Although this paper is based upon anatomical deformities of the nasal septum and not upon pathological findings, I feel that the results obtained in both hospital and private practice warrant recommendation of this procedure in selected cases.

40 EAST FORTY-FIRST STREET.

**Treatment of Phthiriasis.**—H. Faniel, in *Presse médicale* for July 22, 1915, highly recommends the following combination for pediculosis:

R. Xylolis, . . . . .  
Etheris, . . . . .  
Alcoholis, . . . . .

In uncomplicated cases of pediculosis, washing the hair with this preparation is effective.

## HÆMATURIA IN RENAL NEOPLASM.\*

*A Statistical Study Based on 409 Case Reports of Tumors of the Kidney.*

By CHARLES DENEGREY, M.D.,  
Palau, France.

In this short study we shall examine 409 case reports of renal neoplasm in children and adults from the standpoint of the occurrence of hematuria. Hematuria occurred 146 times, which gives a general proportion of 35.7 per cent. In children, that is to say subjects under ten years of age, I have gone over the records of 132 cases, thirty-seven of which presented hematuria, making a proportion of 38.94 per cent. In the adult, hematuria was present in 109 times out of a total of 168 cases of renal neoplasm, a proportion of 64.88 per cent.

The percentages found by us differ from those of other writers. For example, Debove and Achard found that hematuria was present in seventy-five per cent. of cases of renal carcinoma, in fifty per cent. of sarcoma of the kidney, thus giving a general proportion of 62.5 per cent. Guillet gives the following proportions: In children, 28.57 per cent., and 58.46 per cent. in adults. For Roberts the proportion in adults is fifty-two per cent., for Ebstein forty-eight per cent., while Dickinson puts it at only thirty-one per cent.

Let us first consider hematuria in renal growths in children. From the standpoint of sex I find eighteen boys and sixteen girls; in three reports the sex is not stated. Thirteen times the tumor was on the right side and twenty-one times it was on the left, while in three other case reports the site is not mentioned.

The age of the subjects of hematuria, I have found more convenient to present in tabulated form as follows:

TABLE I. HÆMATURIA IN CHILDREN WITH RENAL NEOPLASMS.

|                               |   |
|-------------------------------|---|
| From 0 to 1 year of age.....  | 4 |
| From 1 to 2 years of age..... | 4 |
| From 2 to 3 years of age..... | 8 |
| From 3 to 4 years of age..... | 5 |
| From 4 to 5 years of age..... | 6 |
| From 5 to 6 years of age..... | 1 |
| From 6 to 7 years of age..... | 4 |
| From 7 to 8 years of age..... | 3 |
| From 8 to 9 years of age..... | 1 |

NOTES.—In one case the age is not recorded. In eight cases, five of which were malignant, the hematuria occurred before the appearance of the tumor, and only once was it preceded by oppression and pain which disappeared after the loss of blood. This phenomenon is noted in three cases in which the hematuria occurred after the tumor was palpable. As extreme limits, we have the hematuria appearing two months before the tumor could be detected, and three months afterward.

In ten cases the blood was present in the urine only during the early stage of the affection; in three instances it occurred only once during the entire course of the malady, while in one case the hemorrhage was present throughout. The hematuria was always intermittent in character; only once did the attack last fourteen days and this was in a case of nonmalignant growth.

In four cases the quantity of blood was considerable, and in only one was it passed in microscopical amounts.

As to the sex, I find seventy-four men and twenty-six women; in nine other cases the sex is not indicated. The neoplasm was in the right kidney in forty-four cases, in the left renal gland in forty-two, in both kidneys in three. The indication of the side is wanting in twenty cases.

\*Written expressly for the New York Medical Journal.



strangely, one. I find no patient whose age was from ten to eighteen years. The others in which hematuria was present have their ages given in the following table:

| TABLE II.—HEMATURIA IN ADULTS WITH RENAL NEOPLASMS.  |    |
|--|----|
| From 18 to 20 years of age.....                      | 1  |
| From 20 to 30 years of age.....                      | 6  |
| From 30 to 40 years of age.....                      | 12 |
| From 40 to 50 years of age.....                      | 21 |
| From 50 to 60 years of age.....                      | 25 |
| From 60 to 70 years of age.....                      | 25 |
| From 70 and over.....                                | 4  |
| Other adult cases in which the age is not given..... | 15 |

The hematuria occurred early in the disease in forty-six cases and there were six others where blood was found in the urine after traumatism. Once the hematuria took place fifteen years before the advent of the neoplasm, and in another seven years before. In thirty-one cases the tumor was malignant. In six cases the tumor was discovered at the same time as the hemorrhage. In twenty-three cases the hematuria was unaccompanied by any other symptom and nine of these cases were nonmalignant growths.

Lumbar pain, without well defined character, coincided with the hematuria in fifteen cases. In six cases the pain resembled that of nephritic colic and only once did the hematuria appear along with symptoms of nephritis. In five cases in which hematuria occurred it was preceded by retention of urine. Lumbar pain and even nephritic colic were relieved by the occurrence of the hematuria in seven cases. Loss of weight accompanying early hematuria was noted in only five cases.

The renal neoplasm could not be detected in six instances. The hematuria was the only symptom during the evolution of the neoplasm in four cases. Once the hematuria was accompanied by pain having nothing characteristic, and in another case the pain was similar to that of nephritic colic. Movement or rest had no influence on the hematuria in 107 cases out of a total of 109. In all these the hematuria appeared spontaneously without known cause and disappeared likewise, no matter what kind of life the patients led.

I find only seven cases in which the hematuria was continuous; in most instances it was intermittent, although the intervals between the attacks varied in length of time. These intervals, during which the urine was clear, were of short duration in five cases, while, on the contrary, in three other instances the duration was very prolonged.

In ten patients having hematuria with regular frequency at the onset of the disease, the interval between the attacks diminished in length more and more as the evolution of the neoplasm progressed. On the other hand, nine patients who had in the beginning frequent attacks of hematuria, noted that the hemorrhage diminished little by little and at length ceased altogether.

In twenty-three cases the amount of blood voided in the urine was abundant during the entire evolution of the affection, while three patients voided much blood at the beginning and later on very little. On the other hand, seven patients passed very small amounts of blood, and in one of them the quantity was microscopic. The blood was present during the entire act of micturition in every case, with the exception of one, in which it appeared only at the be-

ginning of the act. Elongated, vermiform clots were met with in eight cases and, as is well known, these are rarely present in hematuria of vesical origin.

I found in children forty-six cases of malignant neoplasm and thirty-three nonmalignant tumors in which hematuria was absent, while in nineteen cases of malignant growth and ten of nonmalignant tumor hematuria occurred. In the other cases the nature of the growth is not given. The proportion of the hematuria is, consequently, 41.3 per cent. for the former and 30.3 per cent. for the latter.

In adults, ninety cases of malignant growths and forty-three cases of nonmalignant tumors underwent evolution without hematuria. This symptom was present in sixty-eight cases of malignant neoplasm or 75.55 per cent., and in twenty-four instances of nonmalignant growth, or 55.81 per cent. Such are the results obtained. Let us now see what conclusions we may formulate.

The first question that presents itself is this: This surgeon has a case of hematuria that he supposes to be of renal origin\* and on account of the blood cystoscopic examination is useless. Is it possible to make a diagnosis of neoplasm of the kidney? For the discussion of the diagnosis we will divide the cases into four groups:

1. The hematuria arises in subjects appearing to enjoy good health up to the time of the loss of blood.

a. *Without pain preceding the hematuria.* We may distinguish: Hematuria in renal calculus. This affection rarely gives rise to hematuria and pain is rarely absent, either spontaneous or produced by pressure over the renal region, while a careful examination of the urine and the progress of the hematuria along with the x rays make the diagnosis easy in most cases. Hemorrhage coming from a kidney the seat of tuberculosis: In children, according to Roberts and others, this disease is less frequent than malignant growths of the kidney. Then, too, when renal tuberculosis exists there are other general phenomena which lead to a probable diagnosis, while inoculation of the guinea pig will settle the matter.

b. *Hemorrhage accompanied by pain.* If hematuria occurs during or after more or less severe pain in the renal region, one is naturally led to suspect renal lithiasis. Were it not for the x ray the differential diagnosis would be difficult, and should this diagnostic aid not be at hand, the most important point is the progress of the hematuria. In malignant disease the blood is usually profuse and pure, without the admixture of mucus, pus, or epithelial cells.

The pain in renal neoplasms is quite slight, and severe paroxysms or convulsions, such as are observed in nephritic colic, are never encountered.

The nature of the pain in relation to the hemorrhage is different. In nearly all cases of painful hematuria in renal neoplasms, the pain ceases with the appearance of the hemorrhage. The amount of blood is very small at the beginning. It appears that the hemorrhage forms during the night while the patient is in the recumbent position, which favors the coagulation of blood in the renal pelvis and ureter. The latter becoming obstructed and the

pelvis dilated, reflex pain and mild colic result, caused by the pressure on the ureteral walls by the accumulated urine. When the clots are pushed into the bladder, the way is clear for a more marked passage of blood and the pain stops. In renal calculus, the amount of blood voided diminishes at the same time as the pain.

2. Cases in which a loss of flesh has existed for some time without a known cause up to the time that the hematuria appeared. This condition of affairs is uncommon. Usually the emaciation occurs when the growth has already attained appreciable size. Hematuria arising under these circumstances is of greater importance than when it occurs in health.

3. Hemorrhage coming from a kidney the seat of cancerous degeneration may occur during or following some acute febrile process of the renal gland. In an acute parenchymatous renal inflammation hemorrhage may take place although the tissue was previously normal. This hemorrhage may be considerable in amount, but the urine is small in quantity and the sanguineous color disappears along with the other inflammatory symptoms. Things take place differently when the blood comes from a structure undergoing cancerous transformation and at the same time the kidney undergoes an acute inflammation. The congestion is very great in both organs. If the hemorrhage occurs in a kidney which is the seat of cancer before the advent of the acute nephritis, it naturally will be more considerable when the inflammatory process increases. By the loss of blood the pressure diminishes, a certain amount of urine is secreted so that the congestive phenomena become very mild.

4. Cases in which hemorrhage occurs during a chronic inflammatory process.

a. In Bright's disease, if hematuria arises without recent inflammatory symptoms and if renal lithiasis can be excluded, it is almost certain that a renal neoplasm exists.

b. Hematuria from a tuberculous kidney is small. The general state of health is poor, while in nearly all cases of initial hematuria from a neoplasm, the health is unaltered.

The hematuria is generally intermittent. Rarely it does occur more than once and it is more apt to be often repeated with greater or less intervals, until death from exhaustion, not from loss of blood, results. The hematuria hardly ever appears late in the disease, just before death.

If we now consider the results furnished by the case reports, the following conclusions may very properly be arrived at, namely, that hematuria occurs frequently in renal neoplasms, both in children and adults, and is more frequent in malignant than in nonmalignant growths.

The hematuria is early in appearance in a large number of cases, often being the only symptom. This is more common in adults than in children. The loss of blood gives no indication as to the seat of the tumor nor the length of time that the process has been developing.

In the majority of cases of renal neoplasm blood is present in the urine during the entire duration of the process, and usually in quite considerable amount.

An early hematuria, even though not followed by other symptoms, and presenting the characteristics referred to in this paper, should cause us to suspect that the case is very probably one of neoplasm of the kidney of malignant type.

## THE NONSURGICAL TREATMENT OF EXOPHTHALMIC GOITRE.

BY ISRAEL BRAM, M. D.,  
Philadelphia,

Instructor in Physical Diagnosis, University of Pennsylvania.

The opinion of many men, chiefly surgeons, that all cases of Graves's disease are to be operated in, and that surgical measures constitute the only recourse open to sufferers from this disease, is fallacious. "The surgeon is apt to do too much, and the physician too little," says Musser (*Amer. Journ. Med. Sci.*, June, 1912). My experience in twenty-four cases proves that almost every case of exophthalmic goitre diagnosed early is amenable to proper nonsurgical treatment, and that at least seventy-five per cent. of all other cases may be cured without operation. This statement is substantiated by the broad experience of Hall, White, MacKenzie, and Musser. Reviewing the subject of operative treatment of Graves's disease, we cannot help questioning the advisability of this mode of treatment. Though surgical removal of the simple types of goitre is practical and successful, such is not the case in the exophthalmic type, for the following reasons:

1. The contention that the surgical mortality is less than five per cent. does not mean recovery from Graves's disease, as any fair minded surgeon will admit.

2. The possibility of postoperative myxedema and tetany.

3. The fact that some cases end in spontaneous recovery.

4. The fact that the large majority of cases are curable by nonsurgical procedures.

The only conditions under which one is unnecessarily justified in adopting the surgical plan are:

a. When the goitre causes extreme pressure symptoms.

b. If there exist evidences of malignant changes.

All other cases should be given competent nonsurgical treatment for at least six months, if we are properly to value the deductions drawn from the living results of the hosts of reliable authorities in this country and abroad.

### ETIOLOGICAL FACTORS.

A few etiological considerations would, I believe, be serviceable in this discussion. In a disease the mechanism of which is still largely shrouded in mystery, the cause or causes are not to be spoken of in definite terms. Observation, however, yields a few well recognized factors which seem, directly or indirectly, to have some etiological bearing on the occurrence of hyperthyroidism.

Heredity in some instances seems to play a role. Rosenberg reports a family in which a grandfather, father, two aunts, and two sisters were all afflicted

with Graves' disease. Osterreicher reports eight of a family of ten suffering from the disease. Bunnell reports a family in which four sisters suffer with Graves's disease of varying degree.

Acute infectious diseases—typhus, typhoid, influenza, rheumatism, quinsy, diphtheria, and tuberculosis are said by some clinicians to predispose to exophthalmic goitre. Syphilis is also recognized as a cause.

Emotional excitement—fright, anger, grief, and other emotions—have been the starting point from which Graves's disease developed. In three cases of my own, the disease developed within a few days of extreme fright. There were no other discernible etiological factors. I have observed the same cause in two cases of arthritis deformans.

The most important advance made in the etiology of Graves's disease, is the discovery of a certain relationship which seems to exist between abnormal function of the thyroid gland and the condition of other ductless glands. The question, Is Graves's disease a condition *originating* in the thyroid gland itself, or is it caused by the relation and interaction of other organs or glands? has been largely answered. That the thymus, adrenals, parathyroid, pituitary, and other glands influence and alter the quality and quantity of thyroid secretion has been proved by many competent investigators. Tyson thus sums up this question:

The more one studies hyperthyroidism, the more one realizes that it is the algebraic sum of many morbid processes—some of these arising in the thyroid gland, others in the parathyroid, others in the pancreas or adrenals, or in the general metabolism of the liver itself; and there are evidences that the pituitary body and the ovarian secretion are not unimportant in the interrelationship among those many glands, and not without their influence in the varying expressions of the general metabolism of the body. Hyperthyroidism is not an entity; it is not the expression of a single influence. It is the manifestation of a lack of equilibrium in the relationship of many glands of the body, and this equilibrium may be influenced by an increased or diminished function of any of these related ductless glands. We must, therefore, realize that when we consider the atypical forms of Graves's disease, the thyroid may be the last at fault, and furthermore, we must realize clinically that where tachycardia is present, we should think of some disturbance of internal secretion, and not attribute it to mere nervousness, thus dodging the responsibility of a more accurate diagnosis. When nervous irritability and change of disposition occur—when formerly reasonable patients present a veritable chorea of intellectual functions, we should not attribute it to neurasthenia, but realize that they are suffering from internal poisoning which we have been accustomed to consider as part of the symptoms of Graves's disease, and which we would readily recognize if the full picture were present with exophthalmos, goitre, and tachycardia combined. As long as the goitre or the exophthalmos is present, or the tremor with the tachycardia, there is no question that the patient will soon be placed with the proper clinical group, but it is in these cases in which the symptoms which we formerly considered to be cardinal are absent, or where they are present only in slight degree, that we usually fail to recognize the chief disturbance as one of upset equilibrium among the ductless glands.

This fact is indisputable in Graves's disease, namely, that the symptoms are the result of an *excessive amount of thyroid secretion circulating in the blood*.

In many instances the diagnosis of exophthalmic goitre was made late, because in its incipency it resembled a host of other more common conditions.

Though the cardinal symptoms are not all present, or exist only in a slight degree, the proper diagnosis is vital to the patient, as early treatment means in the great majority of cases, complete cure. Though this may not be visible at first, the thyroid gland is almost always enlarged (Kocher, in 800 consecutive cases). The exophthalmos is usually the last to appear and the last to leave under successful treatment; indeed, it is often absent in an advanced case of Graves's disease. Cardiovascular symptoms (tachycardia, palpitation, arterial throbbing, etc.) occur early, and may exist for months before the disease is recognized. The tremor of the outstretched fingers is usually an early symptom, and is accompanied by other evidences of nervous instability.

Pulmonary tuberculosis is often the mistaken diagnosis of Graves's disease, the conclusion being based on the marked emaciation, persistent night sweats, dyspnea, rapid pulse, and occasional rise in temperature. It is often a very difficult matter to rule out phthisis, as in a number of instances this condition and Graves's disease have been observed to coexist.

Hysteria and neurasthenia are often with difficulty differentiated from early hyperthyroidism, on account of the marked and manifold nervous symptoms occurring in the latter conditions. The tremor, restlessness, mental irritability, insomnia, palpitation, tachycardia, polyuria, vomiting, and other symptoms often resemble a nervous disease of functional type.

Diabetes is another diagnosis often made in the presence of the glycosuria, polyuria, and rapid wasting of the patient. These three symptoms are very common in Graves's disease, and unless the patient is carefully observed for several weeks, the proper diagnosis will never be made. Frequent, persistent polyuria may be a forerunner of a typical case of exophthalmic goitre for months, and the symptoms must be properly interpreted. The glycosuria may be temporary or slight, accompanying the usual Graves's syndrome, or it may become a well established glycosuria, assuming a typical picture of diabetes mellitus. Paul Sainton and Paul Gastand report three out of ninety cases in which diabetes mellitus coexisted with Graves's disease (*Medical Bulletin*, Oct., 1914). Diabetes may gain the upper hand and the patient die of diabetic coma.

The nonsurgical treatment of exophthalmic goitre must be extremely broad in scope, embracing prophylactic, hygienic, dietetic, medicinal, hydrotherapeutic, mechanical, and electrical measures.

#### PROPHYLACTIC AND HYGIENIC MEASURES.

During puberty in girls, the thyroid gland swells somewhat before and during each menstrual period, to return to normal size after the period is over. The swelling of the gland may be of simple nature, or it may be accompanied by an increase in the thyroid secretion. In many instances at every returning menstrual period the thyroid may become larger than before, until an increase in size becomes permanent, and sooner or later tachycardia, tremor, exophthalmos, and other well defined evidences of Graves's disease develop. This class of cases may be benefited by anticipatory measures. When the



nervous symptoms are first noticed, we must insist on absolute mental and physical rest during menstrual periods.

Persons of easily excitable temperament, or in whose family history there are evidences of hyperthyroidism, should be warned against undue physical or mental exertion. All unnatural swellings of the neck should be carefully investigated, even in the absence of evidences of hyperthyroidism. Patients presenting evidences of hysteria or neurasthenia, or those suffering with palpitation, dyspnea, polyuria, glycosuria, or night sweats, should be most carefully examined with a view of excluding the possibility of Graves's disease; and if the condition points strongly to hyperthyroidism, early treatment will usually mean the prevention of the complete syndrome.

The primary indication in treatment is the reduction of the thyroid secretion by reducing exercise to a minimum. Rest in bed is advisable in some cases, often resulting in prompt improvement. But complete rest in bed is open to the objection that it is incompatible with a good appetite, causing sluggishness of the digestive functions. A preferable alternative is to have the patient retire at nine p. m. and remain in bed until nine a. m., and during the waking hours, as soon as improvement occurs, to perform the lighter duties of daily domestic routine. Rest in bed a few weeks at a time, however, may be indicated in advanced cases.

The environment should be made as favorable as possible, and all mental strain, such as worry, anxiety, anger, and other emotions should be warned against. A change of climate to a place moderately elevated and equable, though not essential, may hasten improvement.

Living and sleeping apartments should always be well ventilated. If the case is not far advanced, moderate calisthenic exercises, under supervision, may be taken with advantage, and deep breathing exercises should be encouraged in an effort to overcome the shallow respiratory expansion characteristic of the disease. The reading of light literature of a cheerful vein may be permitted for an hour or two daily. The functions of the skin, bowels, and kidneys must be carefully observed and deficiencies corrected by appropriate measures.

#### DIETETIC MEASURES.

The diet of a sufferer from exophthalmic goitre should be as liberal as can be assimilated, as these patients are usually much below weight. A judicious attempt at forced feeding should be made, bearing in mind the importance of keeping the digestive apparatus in good functional condition. It is my practice to advise six partial rather than three full meals daily, to avoid the cardiac and respiratory discomfort secondary to gastric distention.

Such substances as tea, coffee, and alcoholic beverages, as well as ice water and soda water, should be prohibited. The chief articles of diet should be milk, buttermilk, cream, eggs, and plenty of bread and butter, as well as green vegetables, farinaceous foods, and moderate quantities of fish. Fruit in season is advised, but bananas, watermelon, and berries should be interdicted. In cases

of marked anemia excellent results are sometimes obtained by the administration of liberal quantities of raw or underdone broiled or roast meat two or three times daily. Patients should be cautioned to eat slowly. If there are distinct evidences of glycosuria, sugars and starchy foods must be restricted or even prohibited for a time.

#### MEDICINAL MEASURES.

Quinine hydrobromide has probably yielded better results in the treatment of this disease than any other drug in the materia medica. Says Forchheimer: "The good effects of this treatment usually follow in the same sequence; first, the tachycardia improves, the pulse frequently coming down from 130 or 140 to 80 or 90 in forty-eight hours; secondly, the thyroid gland diminishes in size by measurement; thirdly, the tremor and exophthalmos are the last symptoms to leave." In this disease there seems to be an extraordinary tolerance for quinine, and the hydrobromide may be given in ten grain doses three or four times daily without producing more than a slight buzzing in the ears. It may be given months or even years without deleterious results. The usual dose is five grains three or four times a day. Quinine counteracts the iodine content of the blood, stimulates the sympathetic, causes vasoconstriction, influences reflex sensibility, enhances the elimination and restricts the formation of urea. More cases of cure of exophthalmic goitre have resulted with prolonged use of quinine hydrobromide than with any other single drug. My favorite formula are the following:

##### I.

R Quinine hydrobromidis, . . . . . gr. vi  
Ext. glandulae suprarenalis, . . . . . gr. ii;  
Ferri arseniatis, . . . . . gr. ¼.  
M. et ft. cap. No. i.

Sig.: One capsule three or four times a day.

##### II.

R Quinine hydrobromidis, . . . . . gr. v  
Ichthyolis, . . . . . gr. ii.

Sig.: In capsule three or four times a day.

The ichthyol seems to have a very favorable effect on the appetite and nutrition.

Lecithin has been successfully employed by H. J. Berkeley in four cases of Graves's disease, resulting in cure. He states that this substance is probably an antithyroid hormone. It stimulates the resistant powers of the tissues through the agency of the leucocytes, which are increased to 12,000 or more. The erythrocytes are also increased. Lecithin is especially indicated where nervous symptoms are prominent, controlling the tremor and general excitability even more effectually than bromides. It must always be supplemented with a liberal diet in order to accomplish prompt results. Lecithin is contraindicated in the presence of disturbed digestive functions. It is best administered in the alcoholic extract, each dram containing one grain of lecithin, representing one twenty-fifth of a grain of organic phosphorus. I administer lecithin in solid form as follows:

R Lecithinis, . . . . . gr. ii  
Quinine hydrobromidis, . . . . . gr. v

Mitte in capsula; take one such after meals.

Vetlesen reports a series of forty cases treated with sodium phosphate, all being benefited in varying degree. This substance is said by some authorities to possess properties antagonistic to the toxemia of Graves's disease. Whether this is true or not, its administration in doses of one dram in a tumblerful of hot water every morning enhances the possibilities of recovery by its favorable influence on the liver and bowels, stimulating the emunctories to full physiological function.

Sodium salicylate in ten grain doses four times a day has resulted in benefit in the hands of a few observers. Dr. J. M. Anders reports a few cases in which there was almost total relief by the use of sodium salicylate. Sodium glycerophosphate was found to reduce the size of enlarged thyroid glands by Trachewsky in Kocher's clinic. Starr also has found this remedy of great service in several cases.

Calcium salts, especially the lactate, are to be tried in cases not responding to quinine. Blair Bell, Sir James Barr, and others have shown that the calcium salts exert a powerful influence on thyroid metabolism.

Iodine is dangerous in most cases of Graves's disease, excepting in goitres of syphilitic origin, or which are undergoing degenerative changes, in which instances it often leads to rapid improvement. Indeed, iodine occasionally seems of decided benefit in the average or usual form of exophthalmic goitre. That iodine is capable of aggravating the symptoms of the disease cannot be denied; on the other hand, the numerous exceptions to this rule afford food for thought. I was bold enough to administer gradually increasing doses of potassium iodide in a very severe case of Graves's disease about three years ago, and the patient is alive and cured today. The dose was five grains three times a day, increasing the dose by one grain daily. There being a tolerance to the drug and manifest improvement, it was continued until the patient was taking one dram of iodide three times daily. Catarrh of the larynx caused me to discontinue the drug for two weeks, when I again prescribed five grains thrice daily, increasing the dose as before to one dram. The goitre gradually disappeared, and the exophthalmos, tachycardia, tremor, and other symptoms were greatly ameliorated in a few weeks. Within six months he gained twenty pounds, and within fourteen months he was discharged cured. There were no evidences of syphilis. In addition to this treatment, local iodine medication, with the usual dietetic and hygienic measures was adopted.

Iodine locally must be cautiously employed, and with the same reservations as the iodides. The red iodide of mercury ointment, originally used in India, has been successfully employed in America. It is painful if carelessly applied. I prescribe the following as a supplement to other appropriate measures:

I.

R Ungt. hydrarg. iodiidi rub. 1  
Ungt. belladonnae, ..... 3iij;  
Acaps. lin. q. s. ad. .... 3ij.  
M. fiat unguentum.

Use a small quantity the size of a hazel nut to be rubbed gently into the goitre once or twice daily.

## II.

R Camphor-menthol. ....gtt. xx;  
Tr. iodini, .....3i;  
M. fiat lotio.

Sig.: Apply a thin coating over entire thyroid area once in twenty-four or forty-eight hours.

Cardiac or vascular stimulants are to be used in the presence of circulatory weakness only, otherwise they are contraindicated. Ergot and digitalis are useful in overcoming the relaxed condition of the heart and bloodvessels characteristic of the disease. When there is gastric irritability, strophanthus should be the selection. Belladonna has also its field of usefulness, especially where relief of the profuse perspiration is sought. It must be used with care, however, lest elimination be retarded. Where there are vascular dilatation and distressing sweats, I prescribe the following:

R Quinine hydrobromidi, .....gr. v;  
Ext. digitalis, .....gr. ¼;  
Ext. belladonnae, .....gr. ⅓.

M. et ft. caps. No. i.

Sig.: One capsule four times a day.

Physostigma often controls the tachycardia when other measures fail, and appears to be of general benefit to some patients.

Nerve sedatives certainly occupy an important position in the treatment of a condition so marked by nervous manifestations as Graves's disease. The bromides are the most important of this class of remedies, the favorites being the sodium and strontium salts. The tremor, tachycardia, and insomnia are benefited, and the patient soon evinces a feeling of well being under careful bromide therapy. Veronal has its advantages, in that the bromide rash is avoided, and is in most respects equal to the latter drug in therapeutic effects. Two or three grains of veronal thrice daily is the dose equivalent to approximately fifteen grains of sodium bromide three times a day. Sulphonal and trional have their advocates. Hyoscine hydrobromide in 1/250 grain doses twice daily, has been used successfully in efforts to control the nervous symptoms of exophthalmic goitre. Where insomnia and nocturnal polyuria are troublesome, this drug is quite valuable.

Organotherapy promises to become the source from which the real specific in the treatment of hyperthyroidism will issue. So rapid and encouraging have organotherapeutic advances been during the past few years that the optimistic internist is looking forward to the day when the treatment of this disease will be no more the field of the surgeon than are such strictly medical conditions as typhoid fever, scarlatina, or malaria. Let us consider briefly the most important substances to be included under this head:

Thyroid extract has been used by some men on the supposition that Graves's disease, being due to altered thyroid secretion, the administration of healthy thyroid is practicable. It was soon found to aggravate the symptoms, and it is now conceded that in this condition in which the system is already poisoned by an overproduction of thyroid elements, thyroid extract is contraindicated.

Parathyroid has been found valuable at times, es-

pecially where there are suspicions of tetany. It is advantageously combined with calcium lactate.

Suprarenal gland, especially if combined with thymus extract, is of decided value in the presence of low blood pressure. Sir James Barr has obtained good results with adrenaline in combination with calcium lactate. There is strong reason to believe that the suprarenal substance is a powerful check to the overproduction of thyroid elements, as it has yielded some surprisingly good results in scattered cases. I have obtained excellent results with the extract of suprarenal gland combined with quinine hydrobromide (*vide supra*).

Pituitary extract should be used when the blood pressure is low, and where there is reason to believe that the suprarenal glands are inactive, according to Sir James Barr. In these conditions, best results are obtained when pituitrin is combined with thymus extract. It seems to control both thyroid and adrenal activity, and in small doses favorably influences the sympathetic. It is usually administered in five drop doses intramuscularly, increasing to twenty or thirty drops once or twice daily at first. Occasionally the results are prompt and startling. Pal (*Semaine médicale*, Jan. 28, 1914) reports the case of a man who had lost thirty kilograms of weight in a year's time. Upon admission he showed a tremor of the hands and feet, and was suffering from insomnia, vomiting, diarrhea, dyspnea, and exhibited von Graefe's sign, a pulsating goitre, and a rather pronounced tachycardia. He was placed upon a vegetarian diet and given subcutaneous injections of pituitary extract for three months, receiving altogether seventy injections of two thirds of a grain each. Under this treatment the patient's weight rose from forty-six to sixty-three kilos, the heart rate fell from 140 to 92 or 100, the tremor lessened considerably, sleep returned, and the breathing became easier.

Ovarian extract, except occasionally in patients at the menopause, has proved unreliable. Corpus luteum has seemed of decided value in early and mild cases in virgins in the beginning of treatment, and is said to be an antidote to thyroid intoxication (Berkeley).

Thymus extract has been employed by Owen, Mikulicz, and many other observers with varying degrees of success. It is administered in doses of from three to fifteen grains three times a day for months. Thymus is said to counteract thyroid overaction. Indeed, judging from recent reports, this substance is highly valuable in hyperthyroidism, there being recent reports of cures in several instances.

Antithyroidin (Mobius) has proved highly successful in some cases of Graves's disease. It is the serum of sheep deprived of the thyroid glands six weeks before the first serum is taken. Mobius, Shultes, and many others have obtained very favorable results with this serum. It may be given by mouth, intramuscularly, or subcutaneously, and should be tried out for several months before arriving at a conclusion regarding its usefulness in a given case. Where glycosuria is marked, antithyroidin is well combined with pancreatin.

Rodagen, introduced by O. Lanz, the dried milk of thyroidectomized goats, and also the Beebe serum have yielded results in selected cases. These sub-

stances are undoubtedly valuable, but at this time definite statements regarding their virtues cannot be made.

#### HYDROTHERAPY.

Lukewarm baths are very valuable in Graves's disease. Taken at bedtime, they enhance sound sleep by their sedative effect on the nervous system. Lukewarm baths also promote the action of the skin and lower the blood pressure. Salt water baths are more stimulating and tonic in effect. Hot or lukewarm salt water tub baths promote the functions of the skin, lower blood pressure, and calm the overexcited nervous system. Spinal douches, i.e., alternating hot and cold sprays along the back, may be employed on arising in the morning, provided that there is no serious cardiac lesion. Hot and cold water applications along the spine are useful for their tonic effect, but are contraindicated in the presence of cardiac lesions. Cold packs at bedtime are serviceable in the presence of a daily rise in temperature, and where hyperidrosis is a troublesome symptom. Ocean baths are generally contraindicated.

The application of an ice bag to the thyroid gland for an hour or two daily may be found very useful, especially if there is undue throbbing or pressure symptoms. It seems to have a direct and reflex astringent effect upon the tumor, resulting in a sense of relief to the patient.

An ice bag to the precordium should be applied in severe tachycardia and the anginoid pains of palpitation. Under these conditions the patient usually fares better if placed in bed at complete rest for a few weeks.

#### LOCAL MECHANICAL MEASURES.

Sand or salt bags, weighing about two pounds, placed over the goitre while the patient is in the recumbent position, have been tried by Mingus with asserted success. This observer reports three cases in which this measure proved highly valuable. In one case the gland was so reduced in size that in two weeks it was hardly noticeable, the heart quieted down, and the tremor disappeared. I find that patients do not readily cooperate with this treatment, stating that when they fall asleep the salt bag falls off the neck, or if it is fastened on, a change in position during sleep changes the centre of gravity of the weight and the pressure is removed.

Plaster applied about the neck (zinc, belladonna, or adhesive), seems a reasonable procedure. Mild persistent pressure by this means (unless pressure symptoms already exist), can do no harm, and may assist other measures in lessening the size of the goitre more quickly in a given length of time. Patients do not rebel against this treatment if the plaster material is properly applied.

Flexible collodion has also been employed for the same purpose as plaster, but has no advantages over the latter. In most instances it will be found that plaster is more agreeable to the patient.

#### ELECTRICITY.

X ray treatments have resulted in cures in many instances, but the administration is usually supplementary to other measures. Seilman has given twenty-one patients systematic Röntgen treatments,



and only one patient failed to show improvement. The total duration of treatment was from six weeks to six months, and he never allowed the exposures to reach the point of causing dermatitis. One man who was suffering with palpitation for eight years, developing into a typical case of Basedow's disease, was remarkably improved by four exposures, and by the end of three months, interspersed with three week pauses, he was practically cured. F. A. Stoncy regards it as the treatment of the future; only one of her forty-one cases failed to improve, and fourteen were entirely cured. A number of observers have reported benefits from the x rays after failure of all other measures. Subsidence of every symptom is rare, however, only eight writers having reported cases of complete cure. I have seen very decided improvement in five cases of x ray treatment in which other measures alone appeared useless. The duration of the treatment depends largely on the duration of the affection; a case of two or three months' duration usually requires eight or ten weeks' treatment; one of a year's duration may require many months. The older the case, the less likely is improvement to result. The exposures should last from five to eight minutes, exposing the goitre every other day until a slight reaction of the skin occurs; then the treatment is discontinued for a week, to allow the skin to resume its normal appearance; then the treatment is again begun as before. After improvement is manifest, expose once a week until moderate reactive symptoms are present. During this treatment the use of substances irritating to the skin should be discontinued. It is a useless waste of time to undertake x ray treatments unless they can be persisted in for at least three or four months before giving up, although in favorable cases relief is to be expected much sooner. Mannaberg reports favorable results in x ray exposures of the ovaries in ten cases of exophthalmic goitre. Though no complete cure was effected, the author concludes that this treatment should be tried when other measures have failed.

Galvanism, according to Osler, should be given a thorough trial for three or four months in every case of exophthalmic goitre. Rockwell and James Hendrie Lloyd report good results from this mode of treatment. The latter observer reports a patient entirely cured by fourteen applications.

The high frequency current by means of the violet rays or vacuum electrodes, has yielded very good results in my hands as a supplement to the dietetic, hygienic, and medicinal measures outlined. Application is made over the thyroid area for twenty minutes, at first daily, then every other day. This current seems to possess to some extent the property of causing the disappearance of pathological glandular tissue, an effect usually attributed to the x rays. In addition, the current possesses a beneficial systemic effect, lowering an abnormally high blood pressure, and improving the nervous symptoms. This current, applied by a special electrode over the eyes (the strength of the current being carefully regulated), has in a few cases of mine been very successful in overcoming the exophthalmos. The administration of this current thrice weekly has reduced the exophthalmos in two cases of mine in a surprisingly short time.

## CONCLUSIONS.

My experience of twenty-four cured cases of exophthalmic goitre has convinced me of the following:

1. Exophthalmic goitre is primarily and essentially a nonsurgical disease; at least seventy-five per cent. of cases being curable by nonsurgical measures.
2. The only conditions justifying surgical interference are:
  - (a) Dangerous pressure symptoms.
  - (b) Evidences of malignant changes in the goitre.
3. All cases do not respond to the same treatment, though some measures are applicable in all cases.
4. The most important drugs in the treatment of exophthalmic goitre are quinine hydrobromide, suprarenal gland, iron, arsenic, phosphorus (preferably in the form of lecithin, and ichthyol).
5. Rest, hyperalimentation, and electricity (preferably the Röntgen or the violet rays) are essential adjuvants to a successful outcome.
6. A large majority of these cases are well on the way to recovery within six months' conscientious nonsurgical treatment as herein outlined.

1714 NORTH SEVENTH STREET.

## CHRONIC CONSTIPATION IN INFANTS.

### *Its Treatment,*

By J. EPSTEIN, M. D.,  
New York.

The advice of the physician is frequently sought for the cure of chronic constipation in infants. The usual therapeutic measures are milk of magnesia, aromatic syrup of rhubarb, castor oil, calomel, glycerin suppositories, and enemas. While they give temporary relief, they have no effect on the underlying chronic pathological condition. Unless the real cause of the trouble is corrected, which in the majority of cases is faulty food or faulty feeding, the ordinary drug treatment is usually disappointing.

The following are some of the etiological factors of chronic constipation in infants:

1. Congenital malformations.
2. Gastrointestinal diseases.
3. Constitutional diseases.
4. Poor food and improper feeding.

The congenital malformations, such as atresia of the rectum or anus, congenitally large colon, or congenital dilatation and hypertrophy of the colon. Hirschsprung's disease, are not of frequent occurrence and require surgical treatment. Gastrointestinal diseases, which may be due to a deficiency in some of the gastrointestinal digestive secretions, and anal ulcers and fissures require appropriate treatment. The ability of the infant to digest the different constituent elements of the milk should be studied and the food made to fit the baby. Anal ulcers and fissures usually need local treatment. Constitutional diseases, such as anemia, chronic wasting, rickets, and cretinism give rise to gastrointestinal atony and chronic constipation. Mild cases of rickets and cretinism are frequently not diagnosed and are treated for the constipation by all sorts of

remedies. Treatment, of course, should be directed to the primary disease and the constipation will take care of itself. In the majority of cases of chronic constipation in infancy, the trouble is due to wrong food or wrong feeding or to the use of boiled milk, and the remedy naturally lies in the correction of the dietetic error and not in the continuous administration of milk of magnesia or the giving of enemas. Whether the infant is breast fed or bottle fed there must be some trouble with the food or feeding, otherwise there is no reason why a healthy infant should not have a regular bowel movement once or twice a day. Many of the factors which tend to cause chronic constipation in the adult are not present in the infant. The infant does not know of the stress and strain of busy modern life. All that the infant wants is good food suitable to its age and condition, right feeding methods, and proper hygiene, and it will live in continuous bliss.

Chronic constipation in infancy is usually the result of either insufficient milk or a milk poor in fat which is so thoroughly absorbed that there may be no residue left to stimulate peristalsis. The treatment in breast fed infants should begin with the mother. She must have a nutritious diet, plenty of outdoor exercise, and sufficient sleep. The infant is put on a complementary feeding, giving two or three bottles a day of a suitable milk mixture high in fat and dextrimaltose. The breast and bottle feedings are given either alternately or to suit the convenience of the mother. The result is that the mother has enough rest between nursings and there is an abundant accumulation of milk in her breasts at the next feeding, while the infant is helped along without laxatives by a better mother's milk and two or three bottles of good modified cow's milk.

In bottle fed infants the problem of feeding in chronic constipation is much simpler, for one can easily regulate the quantity and strength of the food, though of course breast milk is much better than cow's milk as a food for an infant. I put the baby on raw certified milk, modified to suit its age, weight, and general condition, high in fat and dextrimaltose, given at regular hours. The chronic constipation, which is due either to a lack of food or a milk mixture low in fat, is thereby relieved without drugs.

At the age of about six months I add to the infant's diet, orange juice and a well cooked cereal, preferably oatmeal. In addition to dietetic treatment the infant should be allowed as much exercise as possible by removing occasionally all restraints of the diaper and other clothes so that it will have free play of its limbs and be able to set every muscle in motion. Abdominal massage and regular habits in bowel movement aid in overcoming chronic constipation.

I have treated with success many infants with chronic constipation without medicine by simply giving them the proper amount of raw certified milk with sufficient fat and sugar, either lactose or, in the majority of cases, dextrimaltose and at a later age orange juice and a well cooked cereal. When anemia or a chronic wasting disease is the cause of constipation, the underlying disease should be diagnosed and treated. A small dose of thyroid extract once or twice a day, together with a proper diet, will do much good in a case of chronic constipation

in a rickets infant, and raw, then milk, phosphorus, and codliver oil, with plenty of sunshine, will cure chronic constipation in a rachitic infant.

175 HEWES STREET, BOSTON, MASS.

## Therapeutic Notes.

**Treatment of Idiopathic Alopecia.**—A writer in a recent issue of *Paris médical* states that the following lotion is used at the Hôpital Saint Louis in the treatment of alopecia:

|   |  |                  |
|---|--|------------------|
| R | Aque ammoniacæ, . . . . .                | ℥ss (16 gram.)   |
|   | Olei terebinthinæ rectificati, . . . . . | 3vi (25 grams)   |
|   | Alcoholis, . . . . .                     | ℥ss (20 grams)   |
|   | Camphoræ, . . . . .                      | ℥iiss (10 grams) |

Fiat lotio.

Gaucher is credited with the following lotion for the same disorder:

|   |  |                    |
|---|--|--------------------|
| R | Hydrargyri chloridi corrosivi, . . . . . | gr. iii (0.2 gram) |
|   | Acidi aceticæ glacialis, . . . . .       | ℥xv (1 gram)       |
|   | Resorcinolis, . . . . .                  | ℥ss (2 grams)      |
|   | Chlorali hydrati, . . . . .              | ℥i (4 grams)       |
|   | Olei ricini, . . . . .                   | ℥iiss (4 grams)    |
|   | Alcoholis, . . . . .                     | ℥viii (200 grams)  |

Fiat lotio.

**Treatment of Bubonic Plague.**—G. M. Guiteras, in the *Journal of Tropical Medicine and Hygiene* for February 15, 1915, is stated to have obtained excellent results in a series of cases of plague by the intravenous administration of massive doses of Yersin's serum. This serum was given in doses of two and two thirds ounces (80 c. c.) twice daily during the first three or four days of the disease, or as long as the temperature remained above 102.2° F. (39° C.). The doses were then diminished gradually as the temperature fell. In one patient over sixteen ounces (500 c. c.) of the serum were given, in divided doses. After suppuration occurred the temperature could no longer serve as guide for the quantity and frequency of serum administration, and it proved best, in fact, to discontinue the serum altogether at that time. The ill effects of the serum were counteracted by giving fifteen or thirty grains (one or 2 grams) of calcium chloride daily. In addition, depression was counteracted by stimulants, principally strychnine; irritability and other cerebral symptoms, by anodynes, especially tincture of opium in drop doses, and diminished renal activity by hexamethylenamine. Warm, moist applications were made to the bubo, which was incised as soon as suppuration appeared. The mortality in the cases treated with Yersin's serum was but 22.2 per cent.

**Treatment of Scabies.**—J. W. Miller, in the *Therapeutic Gazette* for August, 1914, states that Wilkinson's ointment (unguentum sulphuris compositum, N. F.), a preparation containing sulphur, tar, and green soap, may be used with great benefit in scabies. It is, however, uncleanly and often causes irritation, and the author now prefers to use the following combination:

|   |                                |                |
|---|--------------------------------|----------------|
| R | Balsam capivi, . . . . .       | ℥ss (16 gram.) |
|   | Sulphuris compositi, . . . . . | ℥ss (10 gram.) |
|   | Petrolati, . . . . .           | ℥i (100 grams) |

M. et ft. unguentum.

One or the other of these remedies will yield a cure in all cases.

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CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.

CLAUDE L. WHEELER, A.B., M.D.

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THE BACTERIOLOGICAL EXAMINATION  
OF MILK.

When we consider the vast amount of milk that is consumed daily in a large city, it becomes evident that little is more important than proper control of the supply. Such control is fraught with difficulties from the time the milk is procured till it reaches the consumer. Many of the difficulties are purely mechanical in that they deal with transportation and keep, but others much more troublesome to deal with have to be considered. It is desirable to have standards by which the purity of the milk may be judged. To estimate the amount of fat or the amount of water is comparatively easy, but when we attempt to formulate a bacteriological standard then comes trouble. We know that many bacteria are harmless, while others are actively pathogenic, yet, without animal experimentation, the two cannot be easily classified.

For routine purposes it has seemed sufficient to state arbitrarily that the milk must not have over a certain number of bacteria to the c. c. according to its grade. It may appear a simple matter to dilute a specimen of milk, mix it with culture media, pour plates, incubate, and count the colonies that appear after a definite number of hours. Unfortunately

it is not so simple. Conn (*Public Health Reports*, August 13, 1915) makes the statement "that the discrepancies reported are extremely wide, so wide, indeed, as to result in the grading of milk samples from the same bottle into different grades according to the laboratory at which the bacteriological analysis is made." In order to obtain accurate information, 20,000 separate analyses by a variety of methods were made by four well known laboratories. The findings were interesting and important. Although much emphasis is laid on the exact composition and reaction of the culture media, the results showed that differences in the media play a very small part. Variations in the acidity between 0.3 and 1.5 make practically no differences in result. The discrepancies appeared to be due to variations in technic in the different laboratories, and after a uniform method had been devised, the counts from the four laboratories were in much closer accord.

In order, therefore, that the bacteriological count of milk may be more trustworthy, it is evident that modifications must be made in the so called standard methods of milk analysis that will insure a greater uniformity of technic. It is along these lines, and not in the nature of the media, that greater care is needed.

## ACADEMIC FREEDOM.

In his annual report to the trustees of Columbia University, President Nicholas Murray Butler tells of numerous criticisms of public utterances of members of the faculty which have reached him from outside the university. These criticisms are, as a rule, based on incorrect or garbled reports of what the professor really said, or indicate a desire on the part of the critic to use the university as a medium for some particular propaganda. The critic usually demands the instant removal of the offending faculty member from the roll of the university.

In commenting on this regrettable attitude, Professor Butler wisely says: "The last thing that many persons want is freedom of speech or of anything else unless its exercise happens to accord with their somewhat violent and passionate predilections."

There is a tendency in medicine toward the same kind of criticism as that complained of by President Butler, and in medical publications we must carefully conserve freedom of speech and of views if we expect to make progress. We must, above all else, avoid the suppression of truth through the exercise of the "somewhat violent and passionate predilections" of those who would limit the freedom of speech in medicine within the compass of their own narrow knowledge and sympathies.



## REMEDIALE DEFECTS IN SCHOOL CHILDREN.

Supplement No. 25 to the *Public Health Reports* for July 30, 1915, consists of a study of school hygiene in Manatee county, Fla., by Surgeon J. A. Nydegger. After describing the country, the school buildings, their environment, drainage, outhouses, drinking and lighting facilities, ventilation, etc., the writer takes up the health of the children. Apart from trachoma, the treatment of which requires great care and patience, together with the personal attention of the surgeon, the principal troubles found were adenoids, enlarged tonsils, defective teeth, and hookworm. The writer points out that the special object of his survey was to investigate communicable disease, but that other conditions were also studied, including ground itch, deformities of the back and limbs, defective vision and hearing, poor physique, dullness and backwardness, etc.

In the 1,684 school children examined, says Surgeon Nydegger in his report, 426, or 26.03 per cent., had defective teeth, ranging from a single tooth to three or four or more. A condition of the teeth noted to exist in the children of several schools, but mostly in the town schools, was the loss of the enamel from a portion of the surface of one tooth or several teeth in one individual. In some cases the enamel was noticed to have disappeared from the entire biting surfaces, while in others it was destroyed elsewhere. It is believed that this condition results from the prolonged action of acids on the teeth, such as would be brought about largely by the consumption of oranges and grape fruit, extending over a long period. The good result of dental inspection of school children was well exhibited in the Sarasota schools, where it was instituted during the present year. In the 279 children examined at the time of the visit but one case of defective teeth was discovered. This is in decided contrast with the findings at the Palmetto schools, which showed twenty-two per cent. of the children to be suffering from defective teeth. It would have been interesting to have had a special note on the teeth of colored children.

Two hundred and seventy-four children, or 16.2 per cent., had enlarged tonsils, while 164 children, or nine per cent., had adenoids. There was a noticeable difference in the proportion of enlarged tonsils observed in school children in towns from those in the rural schools, in favor of the latter. The children examined in the colored schools, numbering 243, were noted to be particularly exempt from enlarged tonsils and adenoids. Two hundred and thirty-three children, or 13.24 per cent. of the total number examined, had adenoids. The figures show a preponderance of 5.6 per cent. more cases in the

town schools than in the county schools. In 243 children examined in the two colored schools there were thirteen cases, or 5.3 per cent.

We have found this report on adenoids, enlarged tonsils, and defective teeth of special interest because these conditions would never be met with by a medical inspector if the general intelligence of the community was what it should be. It seems to us that the dentists and physicians in various parts of the country should organize some sort of an educational campaign, having for its object the bringing of the children for inspection every six months or so. Oral and pharyngeal lesions have a direct bearing on the nutrition and growth of the child and the treatment should really be prophylactic only and begin at the time of weaning. Surgeon Nydegger's best impressions of his survey, however, were conveyed by the joyous, laughing, romping assemblages of happy school children encountered at each school visited, which of itself was proof sufficient of generally well nourished and vigorous bodies. It was a real treat, he says, to mingle with these alert and vivacious young Americans, so intent on catching each word spoken to them.

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## THE DANGERS OF WHITEHEAD'S OPERATION.

Although the improvements carried out in the past years in Whitehead's operation for hemorrhoids have been many, medical literature still continues to record serious complications and unfortunate ultimate results. The difficulty, often mentioned, of dissecting out the mucous cylinder has been considerably facilitated by the use of a cork introduced into the anus as recommended by Potârca, of Roumania, but secondary hemorrhage is quite as frequent as in the early days of the operation. Out of a total of 184 cases of Whitehead's operation, Ssujetinow reports four secondary hemorrhages, while three cases are reported by Reinbach in a total of ninety-two operations, one of which was due to giving way of the sutures and resulted in the death of the patient. Penrose, Liebermann, and others record similar cases.

Complete disunion between the mucosa and skin occurs quite frequently in spite of technical and aseptic care, with the result that the mucosa recedes. The sutures cut through the tissues, even when perfectly made, so that the line of suture becomes retracted toward the rectum. Such instances have been met with by Liebermann, Reinbach, and others.

The most serious complication of Whitehead's operation is unquestionably postoperative stricture, in other words cicatricial stenosis. Cases have been published by Villard, Durand, Nimier, Vincent,

Hammon, Kelsey, and others too numerous to mention, and this unfortunate result has caused many surgeons to reject the operation, preferring in its stead partial resection of the mucosa or one of the other operations for the radical cure of hemorrhoids.

In the milder forms of cicatricial stenosis, dilatation with bougies may cause the sphincter to recover its elasticity and functions, while temporary atony of the sphincter, lasting from a few days to several months, is not an uncommon sequel of this operation.

Fecal incontinence occurred in sixteen of Ssujetinow's 184 patients operated on by Whitehead's method.

Union by second intention necessarily follows disunion between the mucosa and skin, with the result that small retractile fibrous tracts develop, which may very well slightly narrow the artificial anal opening. Liebermann records four instances of union by second intention out of ninety-two operations. Happily in only a very few cases have septic complications arisen; they have been accounted for by the opening of the vessels during dissection of the mucosa, the result being absorption of septic products.

It is evident, therefore, that with our present knowledge of the results and complications, Whitehead's operation should not be undertaken lightly and, perhaps, it might better be discarded for partial resection, which has not given disastrous results.

### THE CAUSE OF PELLAGRA.

Our rapidly growing experience with pellagra has been steadily pointing toward an etiological theory of badly balanced or unsuitable diet; in the *Public Health Reports* for November 12th, Surgeon Joseph Goldberger and Assistant Surgeon G. A. Wheeler publish an account of their experiment with twelve convicts from the Mississippi State Penitentiary, which seems definitely to settle the matter. Accepting the offer of a pardon from Governor Brewer and assurance of medical care, if necessary, twelve white prisoners submitted themselves to experiment.

The volunteer squad was organized between February 1 and February 4, 1915. On July 1, 1915, one of the volunteers was released because of the development of a prostatitis. This left eleven men in the squad, twenty-four to fifty years of age, who remained in the test, on the prescribed diet, to its termination, October 31, 1915. These men were quartered in a small, screened, one storied cottage, about 500 feet from the "cage" in which the other convicts were domiciled. From the time of its or-

ganization this squad was strictly segregated and under guard day and night.

From February 4 to April 19, 1915, these men were kept under observation without any change being made in their diet. Having detected no evidence of pellagra during this preliminary observation period and having established the desired routine of work and discipline, the diet was changed at noon April 19, 1915. The character of the experimental diet is shown by the following articles of which mainly it was composed: Biscuit, fried mush, grits and brown gravy, syrup, coffee, sugar, corn bread, cabbage, sweet potatoes, collards (colewort, a kind of cabbage), rice. The diet contained no meat and no vegetable fats. Each man consumed 3.32 pounds of food a day, of a caloric value of 2,952. The general care of the candidates was rather better than that of the average convict, but they did about the same amount of work.

Of the eleven remaining volunteers, no fewer than six showed symptoms, including dermatitis, justifying a diagnosis of pellagra. The skin lesions were noticed first on the scrotum, later on the back of the hands in two cases and on the back of the neck in one. Nervous and gastrointestinal symptoms were mild but distinct. The dermatitis was noticed about five months after the restricted diet was begun. No convict outside of the squad presented the slightest sign of pellagra. The investigators were careful to have the diagnosis of pellagra confirmed by experts, and the nature of the skin lesions by dermatologists. Their concluding statement is that pellagra was certainly caused in six out of eleven volunteers as the result of the restricted one sided, mainly carbohydrate diet on which they subsisted.

### COMPLETE INVERSION OF THE UTERUS.

C. Lachlan Fraser reports in the *Lancet* for October 23, 1915, concerning a patient who was a very delicate woman and had little stamina at the time of her confinement. The usual procedure, he says, had to be gone through—viz., chloroform and forceps—and that resulted in a very simple delivery. The placenta caused no trouble and the uterus contracted well enough. All went well for fourteen days, during which the patient was recovering strength. On that date the nurse had her up at stool, when during pressure a pain was felt and "something seemed to come down." On arrival two hours later he found the inverted fundus protruding and still being extruded. The bleeding was not severe and was easily controlled. An hour later chloroform was given, and he proceeded to attempt reduction. The method of direct pressure on the fundus was dangerous on account of the soft friable condition of the organ, and was done with a very due regard to possible consequences and not long persevered with. Then-

he passed his hand into the vagina, and with the tips of the fingers grasped the neck and began patiently to knead it in. With his left hand on the abdomen he began to feel the bulk there increasing, and after five minutes' work was gratified to feel the fundus meet his left hand with a snap. The recovery was uneventful.

### THE TRAINING OF CHEMISTS.

Dr. James Walker, professor of chemistry in the University of Edinburgh, according to the *Lancet* for November 6, 1915, addressed the members of a well known Scottish society recently on the defects of chemical training in England compared to that afforded in the United States and Germany. In the latter country no science degree was given without evidence of research work on the part of the student, whereas in England education stopped short of research work. In Germany, again, the academic chemist was turned out of the university into the works and brought face to face with practical problems; another good way was that followed in America, where the manufacturer would state his industrial problem to the university, which then supplied the chemists to work out the practical problem.

### News Items.

**The Nobel Prizes.**—Professor Theodore William Richards, director of the Wolcott Gibbs Laboratory at Harvard University, has been awarded the Nobel Prize in Chemistry for the year 1915.

**The New York Geriatric Society** will hold its first regular meeting on December 15th, 8:30 p. m., at Sherman Square Hotel, Broadway and Seventy-first Street. The subject for discussion will be The Neglect of the Aged.

**Rush Society Lecture.**—The twelfth lecture, given under the auspices of the Rush Medical Society, Philadelphia, will be delivered by Dr. Daniel J. McCarthy at the College of Physicians, on Monday evening, November 29th, his subject being Medical and Social Problems Incident to War.

**Harvey Society Lectures.**—The third lecture in the eleventh course given by the Harvey Society under the patronage of the New York Academy of Medicine will be delivered by Dr. Eugene F. Du Bois, of Cornell University, on Saturday evening, November 27th, his subject being the Respiration Calorimeter in Clinical Medicine.

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Wednesday, December 1st, Physicians' Motor Club, College of Physicians, Lebanon Hospital Clinical Society; Thursday, December 2d, Obstetrical Society; Friday, December 3d, Kensington and Southeast Branches of the County Medical Society.

**Cholera in Germany.**—During the week ending September 25, 1915, cholera occurred among civilians in Germany as follows: Two cases each at Thorn, Tilsit, and Treptow; one case at Hermannshöhe. Other cases of the disease occurred among prisoners of war in prison camps in Allenstein, Cassel, Erfurt, Marienwerder, Oppeln, Posen, and Stettin counties.

**The Health of Philadelphia.**—Statistics of the department of Health and Charities of Philadelphia show that, unless there is an unusual number of deaths between now and the end of December, the year 1915 will have been the healthiest in the history of the city. The annual death rate, based upon the rate for the first forty-three weeks of the year, will be 14.8; the lowest record of any previous year was 15.26 in a thousand of population in the year 1912. The report also shows that infant mortality, compared with last year, has decreased in a very great degree.

**A New Departure in Society Work.**—The Harvard Medical Society, of Wilmington, N. C., has inaugurated a new plan for public health work, by the organization of a public health section, membership in which is open to pharmacists, dentists, and laymen who are interested in public health matters. A further departure in the procedure followed in the South is an invitation to colored physicians to join in the work of the society.

**Passaic Physicians Form a New Organization.**—The Physicians' Club of the City of Passaic, N. J., an organization supplanting the old Passaic Medical Society, which some time ago became a part of the Passaic County Medical Society, was organized recently, with Dr. John N. Ryan, health officer, as president, and other officers as follows: Dr. A. Machlin, vice-president; Dr. Gerard J. Van Schott, Jr., secretary, and Dr. C. Vander Clock, treasurer.

**Trachoma in Kentucky.**—Surgeon McMullen, of the United States Public Health Service, reported that in an examination, principally of school children, made during the period from October 17 to 27, 1915, in certain cities of Kentucky, a total of 4,020 persons were examined, among whom 290 cases of trachoma were found. In Henderson 1,565 school children were examined and 81 cases of trachoma found; in Hopkinsville, 850 examinations with 46 cases; in Mayfield, 75 examinations with 4 cases; in Owensboro, 732 examinations with 62 cases; and in Paducah, 798 examinations with 97 cases.

**Examination of Food Handlers by Private Physicians.**—The Department of Health of the City of New York has made material changes in the procedure to be followed by private physicians who examine waiters, cooks, and other persons who handle food. Physicians desiring to make such examinations must make a written application to the Bureau of Preventable Diseases of the Department of Health, when full details regarding the amended procedure will be furnished. These details are printed in the weekly bulletin of the department for November 20th; copies may be had upon application to the Department.

**Medical Society of the County of New York.**—The following officers were elected at the 19th annual meeting of the society, held at the New York Academy of Medicine, Monday evening, November 22d: President, Dr. Frederic Sondern; first vice-president, Dr. J. Bentley Squier; second vice-president, Dr. Charles H. Peck; secretary, Dr. John Van Doren Young (reelected for the eighteenth time); assistant secretary, Dr. Daniel S. Dougherty; treasurer, Dr. Charles H. Richardson. It was the most hotly contested election ever held by the society, the conservatives claiming a victory over the economics on the basis of 300 votes to 200.

**Physical Examination of School Children.**—For several years there has been in force in the schools of Aberdeen, S. D., a regulation requiring that each child seeking admission into the schools must furnish a "physical record card," signed by a physician, giving certain information relative to the physical condition of the child. This report might be made by a physician employed by the parent, but if none was furnished the child was examined and the report made by the school physician. In a case reported in the November 12th issue of *Public Health Reports*, the Supreme Court of South Dakota decided that the regulation was reasonable and valid, that it did not unlawfully bar any pupil from the schools, and that the school board had authority to adopt it. The opinion of the court is published in full at page 3361.

**New York Physicians' Association.**—A regular meeting of this association was held on Wednesday, November 24th, under the presidency of Dr. A. Sturmudorf. The program included the following papers: The Dietetic Management of Various Forms of Obstitution, by Dr. Henry Illoway; Diet in Chronic Heart Disease, by Dr. Robert Abrahams; Some Cardinal Principles in the Dietetic Treatment of Obesity, by Dr. Jacob Gutman; Starvation and Underfeeding in Certain Types of Diabetes. Among those who took part in the general discussion which followed the reading of the papers were Dr. Edward Quintard, Dr. Louis Faugères Bishop, Dr. Edward E. Cornwall, Dr. Jacob Fuhs, Dr. Arthur F. Chase, and Dr. Thomas E. Satterthwaite. At the executive session which preceded the scientific session, nominations for officers were held; the election will take place at the December meeting.



**Minnesota Dermatologists Organize.**—The Minnesota Dermatological Society was organized in Minneapolis on October 19, 1915. The society will meet four times a year according to its first and second meetings.

**A Symposium on Backache.**—At the December meeting of the Section in Surgery of the Buffalo Academy of Medicine, to be held on the evening of December 1st, the program will consist of a symposium on backache. Papers on the subject will be presented as follows: Dr. A. A. Jones, medicine; Dr. F. W. McGuire, surgery; Dr. Bernard Bartow, orthopedics; Dr. J. E. King, gynecology; Dr. J. W. Putnam, neurology.

**School for Health Officers in Vermont.**—The seventh annual session of this school, which was held in Burlington last July, was one of the most successful ever held in the State. There were 212 health officers in attendance. The opening address was delivered by Dr. Charles S. Caverly, president of the State Board of Health, who spoke on the various disease problems with which health officers had to deal. Attention was also given to summer camp sanitation, the production of sanitary milk, and the legal side of public health administration.

**A Home for Convalescents.**—Announcement is made by Beth Israel Hospital, New York, that Mrs. Isaac L. Rice has given to the hospital association \$1,000,000 for the establishment in this city of a hospital to be known as the Isaac L. Rice Hospital for Convalescents. The site for the buildings has been selected and plans are being prepared. The new hospital will be allied with Beth Israel Hospital, but will be a separate institution, the administration of which will be in Mrs. Rice's hands or in the hands of trustees appointed by her. It will be nonsectarian.

**Columbia-Presbyterian Hospital Medical Centre Plan Falls.**—In March of this year the Presbyterian Hospital obtained an option on the old American League baseball grounds on Broadway from 165th to 168th Streets. The price to be paid was \$2,000,000, the option expiring on November 21st. An agreement was arrived at between the medical department of Columbia University and the Presbyterian Hospital under which each was to raise \$1,000,000 in cash with which to purchase the property. It was planned to establish a great medical centre there equal to those existing in the European capitals. The hospital authorities were able to provide the necessary funds for their share of the purchase price, but the university was not able to raise its million dollars, and consequently the option has lapsed. The president of the university, however, asserts that the plan is by no means abandoned, even though this particular option has expired, as he feels confident that the money required to carry out the plan can be obtained by subscription, though it may be necessary to look elsewhere for the site.

**The Week's Death Rate.**—Figures prepared by the department of health showed that there were 1,332 deaths and a death rate of 11.97 during the past week, compared with 1,244 deaths and a rate of 11.62 per 1,000 of the population during the corresponding week in 1914, an increase of 88 deaths and of 0.35 point in the rate.

The number of deaths reported from the contagious diseases of childhood was exceedingly low, there having been one from scarlet fever, three from measles, and five from whooping cough during the week. There were eight deaths reported from typhoid fever against seven in the corresponding week of last year.

The increase in the mortality was due to an increased number of deaths reported from diarrheal diseases, organic heart diseases, pulmonary tuberculosis, and Bright's disease and nephritis. During the week ending November 13, 1915, the number of deaths among children was considerably above and that among the aged, considerably below the corresponding week of 1914. On the other hand, during the past week the reverse was true—the number of deaths among children having been considerably below and among the aged, considerably above the figures for the week ending November 19, 1914. This increased mortality among the aged was found among the deaths reported from organic heart and kidney diseases. The deaths from tuberculosis numbered 162 against 155. The death rate per 1,000 for the first forty-seven weeks of 1915 was 13.57 against a rate of 13.71 in the corresponding period of 1914, a decrease of 0.14 point.

**Special Days in Tuberculosis Week.**—As a part of the plans for Tuberculosis Week, December 6 to 12, 1915, the National Association for the Study and Prevention of Tuberculosis announces that Wednesday, December 8th, will be Medical Examination Day. Plans include an appeal to all to see a doctor on that day and ascertain whether or not they are in good physical condition. The scheme also includes the inauguration on the part of factories, stores, and offices of an annual physical examination of all employees. Thousands of antituberculosis associations, other societies, and dispensaries all over the country are expected to cooperate in furnishing free examinations for those unable to pay.

Children's Health Crusade Day, Friday, December 10th, is planned to interest and instruct school children in healthful living, and the culmination of the campaign will be the sixth annual celebration of Tuberculosis Sunday. Last year over 100,000 churches in the United States gave attention to the subject of tuberculosis by sermons, talks, and announcements.

**Resolutions on the Death of Doctor Huddleston.**—At the regular meeting of the Willard Parker and Riverside Hospitals, held at the Willard Parker Hospital, on November 9, 1915, it was unanimously

Resolved, That the medical board has learned with profound regret of the untimely death on October 30, 1915, of its president, Dr. John H. Huddleston. By his death the board has been deprived of an ideal presiding officer—a man of judicial temperament, pleasing personality, and broad knowledge of the great work in which these hospitals are engaged.

Resolved, That the medical board feels that the death of Dr. John H. Huddleston is a great loss to modern medical science and sanitation. Not only was he possessed of exceptional attainments, but he unselfishly devoted his energies, time, and interest to the furtherance of all practical measures for the advancement of the public good in these fields.

Resolved, That the members of the medical board mourn the loss in his death of a dear colleague, ever kind and courteous and sincerely attached to all of them, not only officially, but by close ties of personal friendship.

Resolved, That we offer to the family of Doctor Huddleston our deep sympathy and condolence in their affliction and express the hope that they will find some comfort in the consciousness of the profound respect and sincere esteem which Doctor Huddleston inspired in his colleagues and in the remembrance of his great usefulness to his fellow men in the important activities which he so well and so thoroughly performed; and furthermore be it

Resolved, That these resolutions be spread upon the minutes of this meeting and that copies be transmitted to the family of the deceased and to the medical press of this city.

For the medical board: DR. JOHN W. BRANNAN,  
DR. HELEN W.

**Personal.**—Dr. George A. Wyeth, of New York, has been appointed by the Bronx Board of Trade a delegate to the Rivers and Harbors Convention, to be held in Washington, D. C., Wednesday, December 8th.

Dr. L. G. Rowntree, of the department of medicine of Johns Hopkins University, has been elected professor of medicine and chief of the medical department of the University of Minnesota.

Dr. Oscar La Seure, of Detroit, who has been chief surgeon at Grace Hospital since that institution was established in 1889, was the guest of honor at a dinner given by a number of his friends on the evening of November 12th. Dr. Albert McMichael acted as toastmaster.

Dr. Howard W. Beal, of Worcester, Mass., who until recently was serving as chief surgeon at the American war hospital at Paignton, England, was given a dinner on Tuesday evening, November 23d.

Dr. James J. McGuire, of Trenton, N. J., has been appointed a member of the State Board of Medical Examiners, to succeed the late Dr. Horace G. Norton.

Dr. J. C. Helper, of Benbow City, Ill., who has been suffering from anthrax for the past few weeks, has been pronounced cured.

Dr. Fred J. Russell, for seven years assistant superintendent of the Massachusetts School for the Feeble-minded in Waltham, has resigned to accept the position of superintendent of the Vermont School for the Feeble-minded at Brandon, Vt., a new institution.

Dr. Florence C. Child, of Philadelphia, has been appointed a medical inspector in the Division of Child Hygiene of the Bureau of Health of Philadelphia.

Dr. Henry A. Strecker has been appointed chief medical inspector in the Bureau of Health of Philadelphia, succeeding Dr. Charles A. Groff, who resigned recently.

Dr. Wesley M. Baldwin has resigned as assistant professor of anatomy at Cornell Medical College and has accepted the position of professor of anatomy at the Albany Medical College.

## Pith of Current Literature.

### BULLETIN DE L'ACADÉMIE DE MÉDECINE.

September 14, 1928.

**Treatment of Wounds of the Hand**, by E. Delorme.—Broad, adherent cicatrices on the back of the hand, by blocking the venous circulation, may give rise to an edematous, shining look suggestive of neuritis rather than of the condition actually present, which is rapidly relieved by appropriate surgical treatment. Various tendinous lesions may also be found as a result of these wounds. Adhesions, even slight, seriously interfere with tendon play. Localized destruction of tendons, partial section, perforation, luxation, and elongation may likewise exist. Stiffness, ankylosis, faulty positions of the fingers, and pseudarthroses of the metacarpals are other conditions to be dealt with. Though amputation of rigid fingers and of fingers remaining merely as an inconvenience to their possessors has been the rule, the author, from experience with plastic operations, believes immediate amputation unwarranted. Partially destroyed tendons were sometimes replaced by him by dissecting up a cylinder of fibrous tissue in the interval between the tendon ends, shortening it with loop or U sutures, fixing it at both extremities to the tendon ends, and preventing adhesion before the beginning of passive movements by surrounding the repaired segment with turns or figure eight loops of catgut. Among other procedures employed with success was the splitting of a neighboring tendon and its implantation into the distal cut tendon, the proximal portion of the latter being simultaneously sutured to the neighboring tendon in order to afford greater muscular power. After this and other varieties of repair, cautious passive motion of the joints and tendons at the first removal of the dressing is considered necessary, together with electric stimulation of atrophied muscles fifteen or twenty times daily. If the joints reacted by swelling, they were subjected to pressure with bandages. Massage of cicatrices with the surgeon's thumb was begun on the fifteenth or twentieth day.

### PRESSE MÉDICALE.

September 22, 1928.

**Modified Wassermann Reaction**, by Vladimir Busila.—A series of researches showed that there may exist in the blood and cerebrospinal fluid of syphilitics two syphilitic amboceptors, the one thermolabile, or unaffected by a temperature of 56° C., and the other thermolabile, i. e., destroyed at that temperature. Either or both may be present, and in the latter case, in varying proportions. The thermolabile amboceptor is the first to appear in the blood upon syphilitic infection and the last to disappear under treatment. When both amboceptors are present the Wassermann reaction yields a weaker result when the serum is previously heated than when it is not. When the thermolabile amboceptor is present alone or nearly alone, the Wassermann with previous heating of the serum gives a negative result, but without heating, a strongly positive result. A negative blood Wassermann, performed with the ordinary technic which includes prelim-

inary heating, is not, therefore, always proof of the absence of syphilitic amboceptor. Syphilitic cases with a positive reaction exclusively in the cerebrospinal fluid are much less common than is generally thought, and include mainly cases in which the blood amboceptor is exclusively of the thermolabile variety or nearly so. By performance of the blood Wassermann with unheated serum one may thus generally dispense with the cerebrospinal fluid Wassermann. The thermolabile amboceptor often exists alone in the blood in cases of latent, inadequately treated, or nervous syphilis, and the Wassermann, performed with the original technic, is thus unavailable precisely in cases in which it is most needed. In the technic recommended by Busila, the serum is left unheated and the undestroyed human complement is titrated while the reaction is being carried out. This procedure is somewhat less time consuming than the original one.

### BERLINER KLINISCHE WOCHENSCHRIFT.

June 7, 1928.

**Digestibility of Mushrooms**, by A. Loewy and von der Heide.—It is well known that mushrooms are rich in nitrogen, of which only a small proportion is used by the human body when mushrooms are eaten as ordinarily prepared. Other vegetable foods yield a larger proportion of nitrogen when reduced to fine flours. Experiments were undertaken to determine whether the same result could be secured by thorough milling of mushrooms. The results showed that the reduction of these foods to fine flours did not increase the yield of nitrogen. About fifty-five per cent. of the total nitrogen was assimilated, irrespective of the mode of preparation. Analysis showed the nitrogenous constituents to be made up of forty-one per cent. of digestible protein, twenty-six per cent. of soluble extractives and thirty-three per cent. of indigestible nitrogenous compounds. Of these constituents, the two first were fairly assimilated under the usual conditions of preparation; so far no means has been found for rendering the remainder digestible.

**Syphilis and Gastric Symptoms**, by Theodor Brugsch and Erich Schneider.—In an analysis of 106 cases, twelve per cent. showed ulcer of the stomach, a similar proportion had hyperacidity with its concomitant symptoms, hyposecretion was present in nineteen per cent., vomiting and other symptoms of hypermotility occurred in fifteen per cent., symptoms of neuritis of the nerve roots were present in a like proportion, and nearly twenty-one per cent. had abortive gastric crises. It was found that most cases of gastric ulcer in tertiary syphilis were associated with subnormal acidity. The frequent occurrence of achylia was due to a chronic gastritis. Sensory neuritis giving gastric symptoms was of two kinds—the one involving the posterior dorsal nerve roots, the other the vagus and producing abortive gastric crises.

**X Ray Demonstration of Normal and Pathological Esophagus**, by J. Schuetze.—By means of a length of fresh hog's intestine, one end of which was closed by a silk ligature, it was proved possible to obtain excellent x ray shadows of the human esophagus. The closed end was filled with a small amount of some contrast material and the patient

was encouraged to swallow the soft tube with the aid of a small amount of water. After the tube had been swallowed far enough for its lower end to reach the cardia, it was filled with opaque mixture by repeated introduction of small amounts of this into the upper end of the tube through a funnel. A few swallowing movements carried each successive portion down. This method secured the retention of the opaque fluid in the whole length of the esophagus and yielded a satisfactory shadow on the plates. By it deformities and strictures could be readily made out and their extent determined.

#### MEDIZINISCHE KLINIK.

October 26, 1913.

**The Epilation Dose of Röntgen Rays**, by Fritz M. Meyer.—A study of the doses and types of rays which lead to the temporary or permanent loss of hair was undertaken on account of the fact that cases were observed in which more or less lasting epilation followed the application of doses which had been thought to be perfectly safe in that respect. The following conclusions were reached: Filtered rays exclusively have to be considered for the production of epilation, because with them the therapeutic and toxic or destructive doses lie farthest apart. Great care must be exercised in cases in which no epilation is desired because especially in the cases with diseased skin is epilation likely to follow the use of the x rays. The hair papillae seem to be particularly susceptible to the rays in such cases. It would be better to try all other methods of treatment in such cases before employing the x rays. Epilation may follow very small doses of the rays and this danger cannot be foreseen. The same is true with regard to the prognosis as to when the hair thus lost will return. If hair is present in the neighborhood of the application of x rays, the greatest care must be taken to protect it from exposure to the rays. It has been suggested that very small doses will act as stimulants to the growth of hair after epilation, but this has not proved safe, for even these doses may further damage the follicles, and it is not feasible to control the dose sufficiently to be sure of causing no further damage. The increased effectiveness of the hard, filtered rays in causing epilation is not to be explained solely on the ground of their greater penetrating power, but resides in part in their biological properties.

**Melubrin**, by Lipowski.—Wide experience with this preparation has convinced the author of its specific powers in acute rheumatism when given intravenously. The drug is a complex synthetic containing the nuclei of both antipyrin and pyramidon and is very soluble in water. Daily doses of 0.5 gram, dissolved in an equal volume of water, should be injected into one of the arm veins. Often after a single injection there will be a drop in the height of the fever and material alleviation in the symptoms of the disease. After two or three doses the disease is usually quite arrested and the patient comfortable and free from fever. In the cases observed cure seemed to be complete when this result had been secured. Many hundreds of doses have thus been given, with good results in most instances

and without a single case in which there were any untoward effects of the drug. Many cases have responded favorably to a few doses of melubrin which had been previously unsuccessfully treated with salicylates in large doses.

#### REVISTA DE MEDICINA Y CIRUGIA PRÁCTICAS.

October 28, 1913.

**Five Years of Salvarsan Medication**, by E. A. Sainz de Aja.—This is a record of 4,032 injections of salvarsan preparations. Of these, 1,552 were of salvarsan proper and 2,480 of neosalvarsan. The dose of salvarsan was from 0.1 to 0.6 gram, and of neosalvarsan from 0.15 to 0.9 gram. The syringe is the best means of injecting neosalvarsan, while, on the other hand, intravenous apparatus is better suited for the administration of salvarsan. Also in using the newer sodium salvarsan, it is better given with an apparatus. The syringe recommended is that of Dicberg of two to three c. c. capacity with needles of nickel or platinum, sterilized by boiling, and washed with ether. Three preparations were used, the first of one in 500 c. c. of a serum solution rendered alkaline; the second, of one in 400 c. c. of serum; the third, a much more concentrated solution. At present the solution used is one per cent. in sterilized water which has been rendered neutral with sodium. It is important to use tubes containing only one dose, thus avoiding deterioration. In breast fed infants a solution of one in 400 was injected in the infrascapular region. The injections were given in a series, one a week in a slightly alkaline solution. Sarcomas and epitheliomas were uninfluenced by these injections, as were Banti's disease and Malta fever. Lichen and psoriasis, which are always benefited by arsenic, are only temporarily relieved with a return of the lesions later on. Cutaneous tuberculosis was undoubtedly much improved by this treatment, thus giving rise to confusion in diagnosis. It is important to begin the treatment of the pregnant mother in the midst of gestation in order that the child may be born free from syphilitic lesions. Tertiary lesions and specific neuropathies were not as frequently cured as secondary lesions.

**Oriental Sore**, by F. C. Alejandro.—In 1912 and 1913, in studying infantile kala azar, it was discovered that Leishmaniosis was quite frequent in Spain and identical with oriental sore. This sore shows in the Orient great extension of local lesions of serpiginous form covered with blood in abundant secretion and frequently complicated with gangrene. It resists all cauterizing and antiseptic applications and goes on to spontaneous cure with extensive scarring. Investigation shows that it is distinct from kala azar, although the latter seems to confer immunity against the former, very much, according to Manson, in the same way that vaccination protects against smallpox. Oriental sore begins with a small granule like a mosquito bite, and continues to grow until at the end of four to six months it is of the size of an ordinary boil. This breaks and a slight serosanguineous discharge exudes. The base is indurated, red, and covered with scales, and the lesion grows eccentrically. The exciting organism is a protozoon of the genus *Leishmania* and related



to the trypanosomes. The organisms are flagellated and the appendix or flagellum serves for the locomotion of the parasite. These parasites can be grown on artificial media, and the transmission seems to be by the mosquito and various insects including *Phlebotomus*.

#### BRITISH MEDICAL JOURNAL

October 30, 1914.

**Effect of Exertion on the Circulation**, by J. M. Macphail.—Changes in the pulse pressure were determined by careful study of the form of the pulse curve as secured with a Mackenzie sphygmograph before and at once after the patients had run up twenty steps. It was found that exertion produced a rise in the systolic pressure which was often nullified by the appearance of a general vasodilatation. The fall in the pulse tension, or the vasodilatation, was shown in the tracings by a lowering of the aortic notch, a flattening of the diastolic portion of the record, and a diminution or total absence of the predicrotic wave. There was always a fall in the diastolic pressure. These changes were observed in all patients studied, but they were much more marked in patients with some heart disease, and most pronounced where there was some failure of compensation.

**Rapidity of the Pulse Due to Persistent Vasomotor Disturbance**, by Knowles Boney.—The observations were made upon a group of twenty Indian soldiers who failed to improve after the cure of various ailments. The only complaints made by the patients were of weakness and inability to undertake physical exertion. The only physical sign discovered was the abnormal rapidity of the pulse rate, but improvement during convalescence was extremely slow. The pulse rate was always normal when the patients lay down for some time and the volume of the pulse was good at such time. The systolic blood pressures ranged from 120 to 140 mm. Hg. Even when the patients raised themselves to the sitting position very slowly there was usually a marked acceleration in the heart rate, rising to 130 or over. Walking slowly often further increased the rate. When the patients stood, the systolic blood pressure usually showed a moderate fall, amounting to from five to twenty mm. Hg. When the patients lay down after standing, the pulse would suddenly fall to the normal rate after only a few beats. Faint traces of albumin were found in the urine of several of the patients after they had been walking a little. The only apparent cause for this peculiar disorder of the heart rate was the existence of a severe vasomotor disturbance which was also indicated by the presence of cold hands and feet, and flushing of the face in some of the patients.

#### LANCET.

October 30, 1914.

**Tetanus of Short Incubation with Recovery**, by R. Lester Scott.—Tetanic seizures occurred suddenly after a surgical operation on a wound received only five days before. The first symptoms appeared only thirty hours after the operation. Antitetanic serum was given intravenously and in-

travenously with the aid of a dextro-tetanus narcosis; a total of 102,000 units being administered, some of the later doses having, however, been given subcutaneously. Chloral and potassium bromide, and occasional doses of morphine were also used to control the convulsions and diminish the suffering. Recovery was complete.

**Congenital Pulmonary Stenosis**, by Douglas Martin.—Several unsuspected cases of this lesion were discovered in the course of the routine examination of a large number of school children. In none of the cases was there any history suggesting cardiac disability and all of the children seemed quite normal. None showed any cyanosis, which has been regarded as so typical of the lesion. In all there were found abnormal pulsations, either epigastric, intercostal over the pulmonary region, in the veins of the neck, or in two or more of these locations. All showed a distinct precordial systolic thrill, sometimes most marked in the second and third left intercostal spaces. There was evidence on percussion of some degree of dilatation of the left auricle and all showed a loud systolic murmur over the area of the pulmonic valve. It seems obvious that some degree of congenital pulmonary stenosis is much more common than has been thought to be the case; that it may exist without the production of symptoms and signs of backward pressure, seems not to have been observed previously.

**Hypertonic Saline Solution in Diseases of Women**, by Clifford White.—Excellent results have followed the use of this simple method of depletion in many forms of gynecological disease. A solution of four drams of sodium chloride and half a dram of sodium citrate to the pint of water proved to be an effective vaginal douche in all inflammatory cases and in septic conditions, and gave better results than the customary antiseptic douches. In infected puerperal lesions of the genital tract healthy granulation was secured in a few days by the use of such douches. After clearing out the uterus in puerperal sepsis and douching it with the hypertonic saline solution, the leaving of a few tablets of salt in the uterine cavity caused the flooding of any remaining organisms with the serum drawn out to dissolve the salt and materially hastened recovery. All conditions producing pelvic congestion responded well to the use of hypertonic salt solution douches. Enemata of water containing from three to six or eight drams of salt to the pint were found effective in emptying the bowel in cases of eclampsia and in other conditions in which it was desired to secure a watery evacuation for the removal of toxic materials.

#### PRACTITIONER.

October 30, 1914.

**Iritis**, by A. W. Ormond.—In view of the assertions that tuberculosis is a much commoner cause of iritis than has been supposed, it is well to note that Ormond finds it commonest in young men and adults, being caused in seventy-five per cent. by venereal disease, while tuberculosis and infective diseases do not account for more than twenty-five per cent.

**Dangers of Tuberculin**, by W. Camac Wilkinson.—The writer maintains that in the hands of experts tuberculin is not only free from the dangers which have been associated with its administration, but is at once a valuable aid in diagnosis and an invaluable and indispensable remedy. He does not contend that it is infallible, but he has not the least doubt that an independent and impartial inquiry would disabuse the medical mind of the imaginary evils stated to arise from its use. Such an inquiry would, he thinks, dispel many of the errors still hindering a solution of a difficult problem, which has not yet been approached and analyzed in accordance with the rules of logic and science.

**Emetine Hydrochloride**, by W. Beresford Robinson.—The writer gives a sketch of his experience with this drug in phthisis, gastric ulcer, mucous colitis, hemorrhage, and dysmenorrhea, in which he has found it very useful, quicker and more reliable in action than the remedies usually employed.

**Valuation of Therapeutic Results**, by Edmund Hughes.—The time honored plan, when a therapeutic question is to be settled, is for men to divide themselves into believers, unbelievers, and doubters, and let the matter decide itself. We make confident use of the inductive form of argument, as when we affirm that a therapeutic agent found beneficial in a limited number of cases will be found beneficial in all cases of that disease, but all cases treated as instances of an identical disease should be known to be so, a rule too often neglected in clinical work. A remedy may produce quite different results in different cases of the same disease. If the expected effect does not occur, its absence must be explicable either by direct knowledge of a preventing cause, or by finding in the character of the case some qualitative variation from those cases in which the effect occurred, or a definite difference in the accompanying circumstances, and by finding that the effect is absent in other cases having the same variation or difference, and in these alone. The discrimination between real and apparent effects of a remedy should be carried out by the recognized methods of experimental inquiry, aided by the use of results of uniform simple modes of treatment as standards of comparison, so designed as to discount the relatively large sum of experimental error by average figures from series of sufficient length.

#### BOSTON MEDICAL AND SURGICAL JOURNAL.

**Respiratory Mechanism in Pneumonia**, by J. H. Means, L. H. Newburgh, and W. T. Porter.—The results of the experiments go to show that the reaction of the respiratory mechanism to carbon dioxide is diminished greatly in pneumonia, and the graver the disease the less is the reaction.

**Exercise in the Treatment of Severe Diabetes**, by Frederick M. Allen.—The writer strongly advocates muscular exercise in these cases graded according to the strength of each patient. It tends to break up physical and psychical bad habits and increases the ability to assimilate food, so that patients can be given a somewhat more liberal diet, but its value is strictly limited. It cannot raise tolerance very high, and is not equal to the dietary regime in importance.

#### JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

November 23, 1915.

**Elective Localization of Streptococci**, by Edward C. Rosenow.—Investigation of 220 strains of streptococci freshly isolated from a variety of diseases and injected intravenously into animals, showed that they often had a very striking affinity for the organs or tissues from which they were originally isolated. For example, fourteen strains of streptococci from appendicitis produced lesions in the appendix in sixty-eight per cent. of the test animals, in contrast with an average of only five per cent. of lesions in this organ when other strains of the organism were used. Ulcer in the stomach or duodenum, or hemorrhage, followed in seventy-four per cent. of the animals injected with strains derived from similar cases in man, against nine per cent. of such lesions from other strains. Analogous results showing the specific tropism of streptococci were obtained with strains isolated from cholecystitis, rheumatic fever, erythema nodosum, herpes zoster, mumps, myositis, endocarditis, and other conditions. In many cases, both acute and chronic, organisms isolated from the apparent atrium of infection showed marked tropism. This tropism, or elective affinity, was often observed in the organisms isolated from chronic cases months after the time of an acute exacerbation. Virulence seemed to be one of the factors influencing the location of the organisms, for the strains isolated from appendicitis, gastric ulcer, and cholecystitis were culturally much alike, but their virulence was different. Those from the appendix were the least virulent, those from the stomach next, and the most virulent were derived from the gallbladder. The streptococci obtained from mumps showed very marked affinity for the parotid, and they also specifically bound complement in serum from cases of the disease. The affinity of streptococci for organs in animals corresponding to those from which they were isolated is strong evidence that they were the cause of the diseases from the lesions of which they were obtained. The streptococci seemed to produce substances which caused injury to the specific organs from which they were isolated. Such specific affinity as was shown for streptococci is well known to exist among other organisms such as the tetanus bacillus and its toxin, the diphtheria bacillus, the pneumococcus, etc. The tendency to localize specifically may also be related to the function and blood supply of certain organs and to the oxygen supply in them. It seemed evident that the cells for which the streptococcus had an affinity rapidly removed the injected organisms from the blood stream, as if by absorption. By repeated culture or by animal passage various strains could be made to lose or alter their organ affinities, depending apparently upon their altered virulence.

**Influence of Peptone on Tolerance to Homogenous Ovarian Transplants**, by Louis A. Mitchell.—Repeated small injections of peptone seemed to increase greatly the tolerance of the body to homogenous transplantation of the ovaries in rabbits. The injections produced a state of greatly reduced metabolism in the animals. Whether in-

jected or not the grafts were almost completely destroyed in all animals by the end of the sixth week. An abundant vascularization at the site of the graft seemed to indicate an intense reaction to the graft rather than a tendency for it to become viable.

**Immunity Following Typhoid Vaccines and Serobacterins**, by W. E. Richard Schottstaedt.—In a series of rabbits the opsonic index and the agglutinating and bactericidal powers of the blood were determined at regular intervals after injections of various sensitized and nonsensitized vaccines. A slight reaction was observed to follow the injection of nonsensitized vaccines, but was absent after sensitized ones. Vaccines killed by heat were less active than those killed by phenol alone. Washing the organisms did not seem to influence the immunizing value of the vaccine. Sensitized vaccines were only about one quarter as potent as nonsensitized, but the height of the immunity curve was reached earlier after the former. Although opsonins and bacterins could be found long after injection, agglutinins disappeared within three months.

#### MEDICAL RECORD

November 13, 1915.

**Iodide of Potassium in Syphilis**, by Douglas W. Montgomery.—Iodide of potassium is particularly valuable in tertiary lesions, whereas mercury and salvarsan are effective in all stages of the disease. All three may be used in the same case. The iodide is not altogether valueless in the early stages, having a beneficial influence on prodromal symptoms such as fever, headache and pains in the limbs. The old idea of the chemical union of the iodine with the mercury in the body is now obsolete. The three main effects of iodide are prompt diminution in the bulk of the syphilitic tumor, possible lowering of blood pressure and a beneficial action on bloodvessel walls. Iodides have no effect on the chancre, the adenopathy, the eruptions of early syphilis, or on some later eruptions, neither have they the power to change the Wassermann reaction. Sodium iodide is less active than the potassium salt, although less disagreeable in taste. Iodoform in liquid paraffin has been used, but with great success. Iodopin is a ten or twenty-five per cent. chemical combination of iodine with the unsaturated fatty acids of the oil of sesame and can be introduced subcutaneously.

**Arterial Tension in Connection with Cardiac Murmurs**, by Paul E. Tiemann.—Functional murmurs are associated with practically a normal tension. Mitral regurgitation also has a normal arterial tension, and a high pulse pressure in such cases may be indicative of beginning aortic regurgitation. In pure aortic obstruction both systolic and diastolic pressures are slightly increased, partly from hypertrophy of the left ventricle and partly owing to the general arterial sclerosis. The pulse pressure is small. Aortic regurgitation shows a greatly reduced diastolic pressure, sometimes as low as forty or even thirty mm. Hg. According to Schwarzman this low diastolic pressure is pathognomonic of aortic regurgitation even without the existence of a murmur. The distinguishing feature of the aortic regurgitation is a constant high pulse pressure; with

a murmur present and the pressure near normal, it is probable that the valvular leak is small. In compensated mitral obstruction the tension is more frequently above than below normal, while the pulse pressure is small. This paper is based upon the examination of 155 patients seen at the home office of the New York Life Insurance Company and is of special interest to life insurance examiners.

**Traumatic Hysteria**, by Daniel B. Hardenbergh.—The essential cause of true hysteria following accident is suggestion and not trauma and the frequency of traumatic hysteria is inverse to the shock received. The trivial character of the injury in many cases, and consideration of the comparatively few instances where grave injury is followed by hysteria make trauma an unsatisfactory explanation of the cause.

**Etiology of Pellagra**, by B. W. Page.—Observation of 600 specimens of feces in 158 cases of pellagra shows an active motile cell-like body which develops into a bacillus. This organism grows on agar as a coccus while on a special medium of beef extract, dextrose, corn and potato with peptone, it assumes the form of a bacillus. End spores are seen in all cultures from two to six weeks old. The organism seems to be constant in the stool where definite symptoms of pellagra exist. This same organism when fed in pure culture to mice causes death in twenty-four to ninety-six hours and the organisms are found in the organs after death. The serum from natural blisters renders the organism nonmotile and agglutinates it in from three to thirty minutes. Again, a control case manifested pellagra from accidental exposure in a laboratory and on the third day the organism was discovered in the stools.

**Gastric Symptoms in Tuberculosis**, by L. H. Levy.—In the physiological and pathological changes in the stomach there exists a good cause for gastric symptoms in tuberculosis. These symptoms may vary from slight pain to symptoms of gastric perforation. Gastritis may be produced by a toxin from a tuberculous lesion eliminated through the gastric mucosa and this gastritis may be acute or chronic. Tuberculous ulcer of the stomach or gastric ulcer associated with tuberculosis is not as rare as was formerly thought. These ulcers resemble in pathology the more common ulcers of the stomach, and may be produced through the lymph channels from affected neighboring structures or tuberculous peritonitis, or by ulceration directly into the stomach from tuberculous glands. Ulceration may be produced by direct action of bacteria on the mucosa when swallowed or the bacteria may be brought to the stomach through the blood stream.

#### LANCET-CLINIC.

November 6, 1915.

**Treatment of Acute Middle Ear Inflammation**, by John W. Murphy.—The importance of absolute rest in bed during the early stage of this affection is emphasized; the exudation may be cut short thereby. Laxatives and anodynes are also to be employed. A one in 8,000 solution of epinephrine dropped in each nostril every hour or two will give relief if acute corvya with blocking of the nostrils and Eustachian tubes exists. Dry heat is also of value at this stage. Where there is not much bulg-



ing of the tympanic membrane, gentle syringing of the ear with a pint or more of hot water, rendered alkaline by the addition of a teaspoonful of baking soda and delivered from a bag held but a few inches above the level of the ear, will relieve pain very promptly by contracting the vessels locally; a glass medicine dropper may with advantage be used as the nozzle. Quick relief is also obtained by dropping into the meatus a warm five per cent. solution of cocaine, with a little epinephrine. If the drum membrane distinctly bulges, decongestive measures are useless, and immediate free incision of the membrane is far preferable to allowing it to rupture spontaneously. For inducing the necessary local anesthesia the author employs a mixture in equal parts of cocaine, menthol, and phenol, kept in a syrupy condition by the addition of a little glycerin. This mixture should be applied on a small pledget of cotton and allowed to remain in contact five minutes. Its insertion should be preceded by mopping out the canal with alcohol. The ear should thereafter be syringed gently two or three times a day, a few drops of warm three per cent. phenolated glycerin instilled, and the external canal plugged with sterile cotton. If the discharge continues after three or four days, the opening in the membrane may have to be enlarged. As the discharge lessens, the middle ear should be inflated every two or three days for two weeks through the Eustachian catheter or by the Politzer method.

**Effectual Treatment in a Case of Sarcoma of the Upper Jaw**, by Sidney Lange.—The patient, a negro aged seventy-one years, presented at the beginning of x ray treatment, a large, hard, and smooth swelling involving the entire left cheek. The overlying skin was smooth and glossy. The left eyeball protruded, the eyelids were swollen and closed, vision in the eye was nearly gone, the left side of the nasal cavity was blocked, and a foul discharge exuded from the nose. Potassium iodide was without effect and the Wassermann test negative. Deep x ray treatments with the Coolidge tube were given at intervals of one to two weeks, with the eye carefully protected. The fullest benefits of the treatment were sought by pushing it until a superficial burn of the left temple was produced, which healed promptly under an alkaline lotion. Rapid improvement followed the x ray treatment, twelve sittings being given in all. The patient was soon discharged, with all visible and palpable evidence of the tumor gone, and all the local functions normal.

NEW ORLEANS MEDICAL AND SURGICAL JOURNAL.

November, 1915.

**Hernias of the Ovary, of the Fallopian Tube, and of the Ovary and Fallopian Tube**, by Aimé Paul Heineck.—A hernia of the Fallopian tube, the ovary, or both may vary in degree from a complete descent into a hernial sac to a condition in which the viscus or viscera lie just without the abdominal ring. Other viscera may or may not be present in the hernia. These hernias may be congenital or acquired, unilateral or bilateral, exist alone or in association with other hernias of the same or different type, and in a small proportion of cases coexist with malformations, underdevelopment or absence

of other internal or external genitalia. They may also coexist with pathological conditions of other organs. They may develop at any period of life, at any age, and in any race. They may be designated as postoperative, ventral, gluteal, sciatic, obturator, femoral, and inguinal. They are reducible, irreducible, inflamed or not, strangulated, or their pedicle may be the seat of torsion, an accident which is peculiar to hernias of the uterine appendages and gives the clinical symptoms of strangulation. Inguinal hernias are the most common; they may be recent, old, or recurrent, direct, interstitial or intraparietal, indirect, or oblique. A few sliding hernias are on record. Bilateral hernias may or may not show the same degree of development; they may appear simultaneously or not, and may or may not exhibit the same clinical characteristics. All of the hernias with torsion of the pedicle were irreducible congenital inguinal hernias. The main factors in the etiology of these hernias are: All conditions associated with increased mobility of the uterine appendages; all that tend to increase the intraabdominal pressure; all which weaken the abdominal wall. All patients should be operated on.

OPHTHALMOLOGY.

October, 1915.

**Surgical Removal of the Tarsal Cartilage and Palpebral Conjunctiva in 402 Cases of Trachoma**, by Daniel W. White and Peter Cope White.—The efficacy of this operation seems to be known to but few. Radical removal of the pathological tissue is unconvincing to many men, but when an apparently hopeless case of blindness of long standing grows worse under every other form of treatment and an immediate improvement is noted after this operation, so that soon the patient is able to earn a livelihood, it seems as though everyone must be convinced. The writers give in detail the histories of forty of their cases, in most of which vision had been reduced to counting fingers. Some patients refused operation with results that emphasize the benefits obtained by those who submitted.

JOURNAL OF NERVOUS AND MENTAL DISEASE.

October, 1915.

**Localization of Cerebellar Tumors**, by Ernest G. Grey.—The writer presents the following conclusions from a study of the significance of staggering gait, limb ataxia, Romberg test, and adiadochocinesis in localizing new growths in the posterior fossa. While the staggering or drunken gait is probably the most characteristic symptom of cerebellar disease, a deviation in one or another direction has no appreciable localizing significance. While the Romberg test is useful in establishing a diagnosis of subtentorial tumor, a swaying toward one side or the other has no importance in localizing the new growth. In the majority of patients with unilateral disease there is more ataxia in the limbs homolateral to the tumor. When present in different amounts on the two sides, ataxia has an appreciable worth as a localizing sign. When adiadochocinesis is present in one limb, or in opposite limbs to an unequal degree, it assumes some importance as a localizing sign.

AMERICAN JOURNAL OF TROPICAL DISEASES AND  
PREVENTIVE MEDICINE.

January, 1935.

**Diagnosis and Treatment of Leprosy**, by G. W. McCoy.—Caution should be exercised in drawing diagnostic conclusions from the examination of nasal smears. Many normal persons have acid-fast bacilli in the nasal mucus, and McCoy is unwilling to base a diagnosis on nasal microscopic findings alone. Rarely the bacilli may be found in characteristic number and arrangement in nasal scrapings while absent from preparations made from the skin lesions. Ordinarily the presence of bacilli in nasal mucus or scrapings is not an early manifestation of the disease. The presence of leucodermic areas, localized anesthetics and contractions, or some combination of these, usually justifies a clinical diagnosis of leprosy, but for an official diagnosis microscopical confirmation is desirable. In the diagnosis of nodular leprosy, it is well to bear in mind the possibility of a confusing avian tubercle bacillus infection. In the treatment the only remedy which continues to give favorable results is Chaulmoogra oil. During the past year the author and his associates have used carbon dioxide snow as a freezing agent for the local leprosy lesions. Apparently in some instances it promotes absorption, but it cannot be considered curative.

## ANNALS OF SURGERY.

September, 1935.

**Autoplastic Repair of Fractures of Neck of the Femur**, by Charles Davison.—Autoplastic transplantation of bone is the best treatment for both recent and ununited fractures of the neck of the femur unless contraindicated by age or condition. The fibula furnishes the transplant of choice. The transplant impinging on the points of compact bone will graft to these points of leverage and give strong support to the line of fracture. The transplant imbedded in cancellous bone will stimulate the production of osteoblasts and the growth of new semicom-pact bone in the cancellous area around the transplant, grafting them together by bony union. The transplant must be completely immobilized until it has grafted to the recipient bone. The position of immobilization must be extreme abduction and external rotation of the thigh. The plaster case to be effective must extend from the axilla to the toes on the injured side and also include the opposite side in abduction.

**Splenectomy**, by J. B. Blake.—Splenectomy in splenic anemia or Banti's symptom complex should be recommended under the following conditions: First, in adults, when the diagnosis is agreed upon by a good physician and a competent surgeon. Secondly, when the condition of the patient is sufficiently good to withstand what may be a very serious operation, or when a poor condition can be sufficiently improved by one or more previous transfusions. Thirdly, in children, only after a very thorough trial of all possible medical methods of treatment, including fresh air, sunshine, careful nursing, liberal and appropriate diet, as well as the judicious exhibition of drugs. In a large majority

of cases, a high white count and recurring or continuous fever are contraindications.

**Chronic Intestinal Stasis**, by R. B. Williams.—Symptoms of chronic intestinal stasis are enumerated as follows: First, attacks of abdominal pain which are usually referred to the epigastrium or right iliac region and which may or may not be accompanied or followed by vomiting. Secondly, local tenderness which is practically confined to two areas, that of the right iliac region and the region of the hepatic flexure. The point of maximum tenderness in the right iliac region is usually somewhat below and internal to the point of greatest tenderness in appendicitis. Thirdly, constipation, which is a marked feature in a majority of the cases. Constipation often precedes the attacks of abdominal pain by a considerable period. Not infrequently the distended cecum and ascending colon can be felt. Fourthly, symptoms of intestinal autointoxication. Such symptoms are a feeling of general ill being, a lack of energy, headache, backache, loss of appetite. There is usually a sallow, muddy complexion, with rings beneath the eyes. There is quite commonly a very considerable loss in weight. Fifthly, in addition to the foregoing symptoms the most important diagnostic sign is stagnation of bismuth at certain points in the intestinal canal as shown by radiographs after a bismuth meal.

## SURGERY, GYNECOLOGY, AND OBSTETRICS.

September, 1935.

**Extraperitoneal Appendicitis**, by Abraham Strauss.—The extraperitoneal position of the appendix is not uncommon. The operator must be on the alert not to miss an extraperitoneal appendix and consider that it has sloughed away or that there was none. Disease of an extraperitoneal appendix may give a straightforward picture of appendicitis, or it may simulate perinephritic abscess or psoas abscess. It may cause a subhepatic abscess or a fecal fistula. Fetid pus obtained from an abscess incised in the right lumbar region should suggest to the operator a diseased extraperitoneal appendix as the etiological factor.

**Primary Carcinoma of the Appendix**, by L. B. Meyer.—Carcinoma of the appendix was formerly believed to be very rare, but is now known to occur in about 0.5 per cent. of all removed appendixes. It is a condition never recognized before operation and is usually unrecognized at the time of operation. (Only about ten per cent. of removed appendixes are suspected before being sent to the pathologist.) Furthermore, while up to the present time the condition has been considered as histologically malignant, but clinically benign, it must be recognized that clinically malignant cases do occur. The condition is therefore of sufficient importance to warrant study of all cases. Only by such study can our knowledge be increased, so that some day a clinical diagnosis may be possible. It is not impossible that some carcinomata in the abdomen in which no primary growth is discoverable, e. g., carcinoma of the peritoneum, a nonepithelial organ, may be secondary to carcinoma of the appendix.

**Autoplastic Repair of Recent Fractures**, by C. Davison and F. D. Smith.—Autoplastic treatment

of recent simple fractures is indicated where non-operative methods are inefficient. The transplant, in the medullary canal, in recent fractures of the shaft of long bones, supports the line of fracture, lives and grafts to the compact bone of the fragments. The transplant in cancellous tissue, when supported by contact to compact bone, grafts to the compact bone and infiltrates the spongy bone with new bone supporting the line of fracture. The transplant gradually undergoes modification and absorption as functional demand for support at the line of fracture ceases.

#### CANADIAN MEDICAL ASSOCIATION JOURNAL.

*October, 1915.*

**Subcutaneous Administration of Fluid in Acute and Subacute Conditions in Infancy,** by Roy P. Smith.—Subcutaneous injection of saline or four per cent. dextrose saline prepared from freshly distilled water was without danger and produced a beneficial result in seventy-one per cent. of the cases observed. General indications are loss of tissue and dehydration, which exist in infants suffering from diseases which cause rapid fluid losses from the body. The immediate results are shown by increase in weight, improvement in tissue and general condition.

### Proceedings of Societies.

#### ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES.

*Twenty-fourth Annual Meeting, Held at the Hotel  
Raleigh, Washington, D. C., September  
13 to 15, 1915.*

The President, Colonel JEFFERSON R. KEAN, M.C., United States Army, in the Chair.

*(Continued from page 1069.)*

**The Training of a Hospital Corps Man.**—Dr. F. E. McCULLOUGH, surgeon, United States navy, showed that the training of a hospital corps man must be of a special character, for even the drill which a trained nurse received was too limited properly to equip for a military organization. There must be a large measure of objective and practical teaching and a great limitation of purely didactic subjects. The hospital corps was popular among recruits at the training stations where schools had been established because of the large amount of selection possible, yet the instructors had a difficult problem with the average indiscipline of the American youth. A weeding out of all candidates left only the best for the hospital corps. After the rigid schooling came duty in the hospital and then the didactic and experimental were eliminated and became secondary to the essentially practical. The apprentice must not encounter conditions of which he would be ignorant or he would feel only half instructed and his self confidence would be impaired. The instructor must remember that the pupil possessed only a limited knowledge of bacteriology and there must be strict adherence to a carefully planned and systematic course and digression should be made only to avoid mental fatigue. All this in-

struction should be taken very seriously. Instruction in a naval hospital should always avoid duplication of instruction received at a school where laboratory facilities and drill grounds were infinitely superior. Here there must be operating room instruction, hospital routine, mess management, etc., and rotation in wards should take place as for interns in general hospitals. The instruction here should be of at least six months' duration before assignment to a ship was made. The drill and service for landing force detachments had not been as thorough as for other lines, and only the energy and earnestness of qualified medical officers had remedied these shortcomings. The enlisted force of the hospital corps comprised hospital apprentices, hospital apprentices first class, and hospital stewards, and between the last two there was quite a gap, both in knowledge required and pay. There should be an intermediary grade. The grade of steward led to a warrant (pharmacist) and eventually to a commission (chief pharmacist). Time and effort spent on a man, even if his term did expire in four years, was not wasted, for most desirable men re-enlisted, and those who did not formed large potentialities for a reserve hospital corps. The Federal training was extended to the naval militia through the various regulation handbooks, and there could be inaugurated at Newport and San Francisco a correspondence course, supplemented by detailing navy men to the militia cruises.

#### The Inactive Medical Reserve Corps in War.

—Dr. HENRY C. COE, lieutenant, M. R. C., United States army, announced that the importance of the establishment of the medical reserve corps had never been recognized. The past summer had witnessed the first general recognition of the corps which was due to its modest chief. The results of Plattsburg proved how great would be the advantages to medical officers if they had the same opportunity. Tobyhanna was small, but a great success. The circulars issued by the surgeon general asking for information regarding the willingness of members of the medical reserve corps to answer a call had quickened the pulses of the lethargic. Those who accepted a commission with a mental reservation lacked the obedience of the true soldier. After fifty-five or at most sixty years of age, a surgeon should withdraw from active service and give the younger men a chance. Although there might be no diminution of his skill, yet he had passed the stage when he was likely to add to the increment of scientific observation, or devise new and improved operations. Men between fifty and sixty would be most useful in base or evacuation hospitals. Men between forty and fifty with sufficient training might supply the wastage in important positions under the chief surgeon. Initiative and executive ability would bring capable men to the front. The younger men should be ready to fill any position to which they might be assigned. Progressive up to date surgeons would be in demand at the base. The medical reserve corps man should not lie awake nights to think about how he could add another bar, or leaf, or a spread eagle to his shoulder straps. They were all doctors and there was no nobler title. Political intrigue should be discredited and relations with the organized militia should be absolutely har-



monious. Camps of instruction were necessary because present officers could not teach the duty unless they themselves had knowledge. But the older fellows should resign; the physical strain incident to a hard campaign, the steady nerves, the prompt decision and action belonged to younger men. The "African game trails" and the "River of Doubt" were for the superman, and even he might stub his toe.

**Present Status of Artificially Treated Drinking Water in the Field.**—Dr. WILLIAM LYSER, major, M. C., U. S. army, explained that furnishing troops with safe drinking water had now become a practical matter. The same measures relative to water, which were effective against typhoid, would suffice to protect against cholera and dysentery. The problem of water borne diseases in the European armies was great because in such large armies the percentage of those not in the highest state of physical condition was greater than in small armies of selected material. There was also a relatively larger number of carriers of disease. By mobilizing practically the entire male population, those were withdrawn who would safeguard the supplies of the cities. The welcome with which the Forbes sterilizer had met, especially in the Philippines, demonstrated the difficulty of using heat as a means of sterilization. The violet ray apparatus was cumbersome, and if the water was not clear, the results were not perfect, although the advantage of this was in heating and serving an immediate supply. The ozone filter system was also cumbersome and liable to injury. Sterilization with hypochlorite of calcium had been the last method to attract attention, and was now in general use in Europe. Many articles had been published in the *British Medical Journal* on this means of sterilizing water. Chlorine gas generators, however, involved the use of cumbersome material which must take into consideration passable roads, weight and size of appliance, application to both large and small commands, and the necessity of forage and fuel. The most efficient system would supply water to every one in the army; hypochlorite of calcium offered the greatest chance of developing this system. Elberfeld, in an article in *Hygienische Rundschau*, xxv, 1915, gave an account of successful experiments with this agent in the sterilization of drinking water. He used a high percentage of calcium chloride which carried about seventy-five per cent. of chlorine. The advantages were great stability and a smaller amount of chemical was necessary. After the water was treated he neutralized it with ortizon, a stable compound of peroxide of hydrogen and carbamide. Wessenberg's idea was to provide each soldier with a small box containing a percentage of calcium chloride and the ortizon in separate glass tubes with directions for use. Only extensive experiments in the field would demonstrate whether neutralization of the water was necessary. The speaker believed that with intelligent use of hypochlorite the water treated would not become offensive—whether the commercial article was used, or one with a high percentage. If starch iodine reaction was used to determine the existence of gases in the water after sterilization, then neutralization would not be necessary. In experiments on a small scale in which water was treated with hypochlorite,

the taste was never offensive and rarely was detected. The "Water Bag, Sterilizing," gave promise of being a convenient and practical container. It was cheap, light, and very portable and seemed likely to render a command independent of special water transport.

**The Submarine; Its Casualties in Peace and War.**—Dr. WILLIAM H. HALSEY, passed assistant surgeon, U. S. navy, stated that since a submarine crew was specially chosen from the efficiency standpoint, the work of the medical officer was largely preventive and prophylactic. Every officer and man in the crew was necessary, and the loss of five men was very liable to place the boat *hors de combat*. Eyestrain or optical defect in the man at the periscope might cause distortion of the image and consequent collision. Deafness of the man at the ballast tanks or rudders might cost the safety of the boat. An officer or man who showed the slightest neurotic tendency must be transferred at once. All communicable diseases and any injury, however slight, might hold dread potentialities. An illness or injury on a battleship might not keep a man from his regular duty, but on the submarine such a person would have to be transferred to the tender or hospital and his place taken by an equally well trained man. A medical officer in this line must have a working knowledge of the principles of preventive medicine and an intelligent understanding of the unusual hazards incident to submarine operations. There were always unavoidable and potential accidents. Accidents which might happen while the boat was on the surface or under way were: Gasoline poisoning, gasoline explosions, trauma due to falls, drowning; while on surface and under way were: Sea sickness, drowning, ramming or being rammed, trauma due to violent shifting of the boat; or by being struck by heavy objects adrift inside the boat; while awash or submerged were: Leaks, both in boat and in battery tanks, battery explosions, ramming or being rammed, vitiation of air, noxious gases, inability to regain positive buoyancy, inability to right the boat while descending, leakage of compressed air, explosion of torpedo in tube, torpedo stuck in tube with engine running, terrific cold in northern waters in winter, explosives from aeroplanes. Fear of submergence was rare, but there was fear of too great a depth. Fear of striking a passing ship on emergence was frequent. Psychasthenia and neurasthenia occurred often and must be constantly watched for. Every man worked under high nervous tension and a hysterical laugh or cry might precipitate a panic. Officers must always be calm, for men noticed the slightest sign of weakness and followed like sheep. Suffocation was the most impending danger. Suffocation might be from carbon dioxide, hydrochloric acid, chlorine, gasoline fumes, or from burned oil fumes. There was a certain depth beyond which a submarine could not rise, owing to air pressure not being strong enough to empty the ballast tanks. The insidious onset of gasoline intoxication caused much dread, for the crew became used to the continuous odor of gasoline and was not conscious of impregnation until one of their number dropped or raved in delirium. Cold in winter in northern waters and heat in tropical waters

contaminating and there was never any real comfort, but in spite of these dangers submarine crews were always steady and brave.

### The Prophylaxis and Treatment of Tetanus.

Dr. ALFREDUS McGRANNAN, lieutenant, M. R. C., United States Army, described the organism of tetanus as a spore bearing anaerobic bacillus. The spores were extremely resistant. The bacillus occurred in the intestine of many herbivorous animals, especially horses, and this explained the contamination of soils, dust, vegetables, clothing, and skin of people working around stables. The spores resisted disinfectants and antiseptics, and contaminated material could be sterilized only by persistent high temperatures. When a susceptible animal was inoculated with tetanus, the organisms produced a toxin at the site of inoculation, from which point the toxin traveled by way of the nerve fibres to the spinal cord, then through the cerebrospinal fluid to the brain. The effect of the toxin was borne by the cells of the central nervous system. Death usually resulted from overwhelming toxemia and exhaustion from the exertion of the convulsions added to loss of nourishment brought about by the dysphagia. Prophylaxis of tetanus began with the recognition of suspicious wounds and immediate local treatment with tetanus antitoxin. Forty-eight hours was the limit of positive protection. The injection should be into and around the principal nerve supplying the region of the wound, between the wound and the spinal column. Suspicious wounds were deep punctures and wounds having much contusion and laceration. Saprophytic and pyogenic bacteria contaminating a wound might assist in the development of tetanus by using up the oxygen. Tetanus was rare after rifle wounds, but common after shrapnel wounds. Infection by contact was possible, therefore tetanus patients should be isolated. Tetanus victims should not lie directly on straw. Deep wounds should be laid open, disinfected, and given free drainage. The wounded surface should be kept moist and free from drying scabs. Phenol was the time honored local anesthetic. Carrell's chlorinated lime and boric acid dressing seemed a better way to apply this agent, because impermeable crusts were less likely to form. Iodine as a disinfectant was still disputed, but it was practically nontoxic; it was not caustic and did not sear the surface of the wound; it would prevent the growth of ordinary pyogenic organisms and produced a marked and long sustained hyperemia. The treatment of the wound was not so important as immediate injection of antitoxin, and this could be done very easily at the advanced dressing station. Aschoff and Robertson recommended absorbent cotton soaked in antitoxin and dried. Upon being applied to large wounds, the cotton became moistened by the secretions and the antitoxin was liberated into the wounds. The treatment of tetanus aimed to provide for neutralization of the toxin in the cerebrospinal fluid and blood; to limit or prevent development of toxin at the focus of infection; to interrupt the flow of toxin from the wound to the central nervous system; to preserve the nutrition of the patient; to prevent convulsions; and to control convulsions. The best method of treatment seemed to be noninterference unless the wound needed opening for drainage and disinfection. Bringing the peripheral ends of nerves out of

the wound for drainage was unduly radical. When dysphagia was present nutrient enemata were helpful, but every effort must be toward relaxation of the spasm. Morphine hypodermically was useful in early stages, but large doses were not without danger. Magnesium sulphate intraspinally was valuable, but might cause paralysis of respiration. After the injection, the spasms usually relaxed in about an hour and the effect of the drug continued for about six to eight hours. Tightness of the chest and difficulty in swallowing were the early signs of returning convulsions. Magnesium glycerophosphate had been advised in place of the sulphate in the hope of overcoming some of the bad effects of the latter. Intratracheal insufflation would supply air without respiratory movements. Bacelli's phenol injections did not give as good results as the serum method. Intraspinal and intravenous administration of antitoxin far surpassed any other form of treatment. If there was scarcity of antitoxin, the intraspinal dose should be given rather than the intravenous. For military surgery magnesium sulphate injections were cheap, good, easily available, and permitted safe transportation. This could be combined with a dose of opium when necessary. As symptoms of tetanus were aggravated by rapid travel, a hospital train should not go faster than twenty miles an hour. Some of the early symptoms of tetanus were pain and stiffness of muscles around the wound, sometimes accompanied with twitching; also pain about the mouth, fatigue in chewing, difficulty in swallowing, cramps in chest muscles, profuse sweating and a rapid pulse, also starting at noises, lights, or draughts. A patient should be given quiet and darkness. Water should be given by rectum as well as by mouth in as large quantities as possible. The bladder might require catheterization and enemata might be necessary to empty the bowels. Above all every effort must be used to limit the effect of external stimuli on the central nervous system.

**Comparative Hearing Requirements in Foreign and American Navies.**—Dr. G. B. TRIBLE, passed assistant surgeon, U. S. Navy, reviewed the requirements of foreign navies in testing hearing. In the French navy the voice and watch test were used and an examination was made of the external ear, the external auditory meatus, and canal. First the extent of the field of audition was ascertained by measuring the distance at which a word pronounced in a low tone ceased to be heard, and then the degree of acuity of hearing for slight noises was determined by measuring the distance at which the noise of the movements of a cylinder watch began to be heard. In the British navy the candidate stood with his profile to the examiner; the ear nearest the examiner was covered and a few words were spoken in a low tone. In the Japanese navy practically the same system was used, although only the near ear was examined. In the Russian navy a man was disqualified who had a deformity in the external auditory canal, or chronic suppurative middle ear disease. For special branches, such as the submarine, those suffering from catarrh or retracted drums were excluded. If an officer had scars or dry perforations of the ear drum he was excluded. In this service a whisper must be heard at nine metres. In the German navy the ears were

examined with a speculum and the near ear was tested by whispering. A closed room was employed and the far ear must be closed. Hissing sounds combined with deep vowels were whispered. In the Austrian navy a closed room was also used and the candidate stood twelve metres from the examiner and must hear a whisper. However, exceptions were made down to a distance of four metres and such as were able to hear at the shorter distances were assigned to auxiliary service. In the United States navy a thorough examination was given. Deafness in either ear was a cause for rejection. Candidates for appointments as commissioned officers must possess normal hearing 40/40 by watch and 15/15 by voice. Less than 7/15 in either ear disqualified. For admission to the naval academy, the entire structure of the ear must be free from disease. The ticking of a watch must be heard at forty inches in quiet surroundings. There was a test of a stage whisper at one metre and of usual conversational tone at ten metres. For aviation duty there must be no disease of the ear and the hearing must not be below normal in any respect. Additional tests were made to discover disease in the inner ear. The United States navy had a more rigid examination for the ear than any other navy, but under the present stress European requirements were not as strict as usual and the American demands would probably be lowered under similar extraordinary circumstances.

#### **The Wheel Litter and Wheel Litter Travois.**

—Dr WILLIAM W. RENO, major, M. C., U. S. army, explained that when an infantry company went on the march, its medical transport must be either an ambulance or a hand litter, but that the former was too much and the latter too little and too laborious—one or more wheel litters were all that were necessary. If it was cavalry, let a hospital corps man pull a travois behind his mount. Major Reno's wheel litter consisted of a pair of wheels thirty-four inches in diameter on an axle three and a half feet long. Two metal uprights seventeen inches long were clamped to an ordinary medical department litter. Their lower ends passed through holes in the axle. They also had coiled springs around them to absorb the jar. His wheel litter travois could be obtained from the wheel litter by attaching two straight hickory poles to the axle. One pole had a hinged iron bar crossing to the other shaft, where it was attached by a metal pin. This cross bar had two holes to receive the front handles of the wheel litter. This completed the wheel litter travois. The shafts were so arranged that a horse or mule with ordinary harness or a saddle animal could be attached to them. The wheel litter could be assembled without tools in two minutes or the travois in three minutes. Every part was simple and substantial. The patient could be strapped to the litter. Each sling first passed around the stirrup on the side where it was attached, then across the patient and attached to the other stirrup. If a pair of these wheels with axle and uprights were attached to each end of a litter, an improvised operating table could be made. Or if a box with handles was clamped to the uprights, they had a good company cart, which was at hand in garrison or in field. The wheel litter and travois could also be used for general transport purposes. Repeated test had demon-

strated that the wheel litter with two men operating it had more than double the evacuation power of two men with a hand litter. The wheel litter travois had more than three times the evacuation power of two men with a hand litter.

**A Greater Field of Activity for the Fleet Surgeon.**—Dr. DUDLEY N. CARPENTER, surgeon, U. S. navy, believed that a fleet surgeon had a greater field of activity, especially an authoritative status outside of the professional handling of sick and wounded. Since the time of Medical Director Curtis there has been a gradual expansion of the duties of the surgeon. The surgeon should become a staff member and have a position of authority and trust. Lack of authority seriously hampered the work of the medical officers in the Spanish American war. Increased authority of army medical officers did not diminish the authority of the line officers, and similar authority in the navy would be regarded in the same manner. If medical officers studied the art of war they could systematize their work much better. The fleet needed a more compact organization among its medical officers such as there was in the line. The mission of the medical department was to insure and maintain fitness and restore the sick and injured to duty. In the Russian-Japanese War casualties were from ten to fifteen per cent., and the U. S. navy should be prepared for this amount. Of course there might be a hundred per cent. loss by drowning, as in the present war. A number of medical inspectors or senior surgeons—eligible for duty as fleet surgeon—should attend the course at the naval college. This training should be as good for a prospective fleet surgeon as the army chief surgeon. The ideal fleet surgeon was a practical man; he should not be a theoretical man, but a man who had served on all types of vessels. The fleet surgeon must have initiative, authority, and responsibility, but since he acted as the representative of the Bureau of Medicine and Surgery, he should submit all radical changes to the bureau for approval. It was advisable for the fleet surgeon to hold meetings with the medical officers, where papers were read and discussions were held, for in this manner the fleet surgeon became better acquainted with his personnel, which was very useful in selection for promotions and appointments. In rating a ship on "general excellence" the sanitary standing should be considered as well as engineering and gunnery, for very often these last two depended on the first.

#### **Instruction of the Sanitary Personnel of the Organized Militia.**

—Dr. CHARLES W. COMFORT, Jr., lieutenant, M. C., Connecticut National Guard, showed how interest of a sanitary corps lagged after one season of drill and encampment, and suggested as an aid to remedy this the enlargement of instruction camps such as Tobyhanna for the enlisted men of the line. Anatomy and physiology were subjects that could be dwelt on. Treatment of wounds, bandaging, fractures and dislocations, etc., could be better impressed while the anatomy of the part was freshly in mind. Lieutenant Comfort then outlined a series of lectures for such a campaign. The first was on types of tissues of the bone, muscle, nerve, and blood. The second was on first aid. The third was a discussion of the head and neck. Others were on the upper extremity, lower extremity, abdomen and pelvis, alimentary system, excretory systems,



special senses, emergencies, hygiene, etc. Of course long lectures would drag and the men would be prone to sleep, therefore it was best to have the evening divided as follows: First five minutes for roll call and announcements, then twenty minutes for drill, then a half hour lecture or one just long enough to hold attention, and then a quiz and practical work, with the men divided into competitive groups.

(To be continued.)

## Letters to the Editors.

### BACILLUS BULGARICUS.

NEW YORK, November 19, 1915.

The Editors:

Was very much interested in an article appearing in the *Journal of Medicine* for September 18, 1915, on The Fallacy of Indiscriminate Internal Use of Bacillus Bulgaricus and Some Evident Dangers, by Dr. Orval Smiley, of Indianapolis. While I am heartily in accord with Doctor Smiley on the fallacy of indiscriminate administration of Bacillus bulgaricus, I can hardly agree with him on all the statements contained in his article. It seems hardly possible that the administration of lactic cultures for as short a period as three to four days would cause so marked a change in the reaction of the intestinal tract, nor can lactic acid, even though absorbed as such, be broken down into acetone bodies, unless perhaps if taken in tremendous quantities, and that would hardly occur in the very small amount formed by Bacillus bulgaricus.

From the examination of numerous stools of patients who are taking Bacillus bulgaricus, we have found that it takes from seven to ten days to recover it from the feces, and it takes almost as long to change the reaction of the intestinal tract; and even though a sufficient time had elapsed to get up a marked growth and the formation in fairly appreciable amounts, it is broken up in the liver into  $\text{CO}_2\text{H}_2\text{O}$  and sodium carbonate, according to Nagul.

Graham Lusk believes that lactic acid when absorbed is eventually synthesized to glucose in the diabetic, for he has recovered it as a glucose from the urine and blood of a dog that received lactic acid by hypodermic injection, and where it is not broken down to glucose, it may be formed into methyl glyoxal and that broken up into carbon dioxide and water.

Von Noorden, in his last book, *The New Aspects of Diabetes*, mentions the fact "that lactic acid to a certain extent inhibits the formation of acetone." We therefore see that cultures of Bacillus bulgaricus will hardly contribute to the establishment of a ketonuria.

In mild cases of acidosis complicating diabetes, we find that even without the administration of alkalis the acidosis gradually disappears, and in these cases we give large amounts of cultures.

We do not see what can be accomplished by the administration of Bacillus bulgaricus in cancer, tuberculosis, or in the secondary anemia caused by these diseases. But in cases of anemia caused by a chronic auto-intoxication, or in nephritis aggravated by an existing toxemia from the intestinal tract, the use of cultures will positively not harm but improve the conditions.

As for its use in diabetes, my experience in hundreds of cases over a period of five years refutes any statement that it is harmful. There are cases that go on to fatal termination, no matter what medication or mode of treatment may be adopted, and a severe acidosis becomes more marked and gradually coma and death supervene, but that is not due to the use of Bacillus bulgaricus. We know that these fatal cases are attended by the same results at times even when tremendous quantities of alkalis are given or other treatments instituted.

Regarding the increased blood pressure, again I cannot agree with the author of that paper. In over five hundred cases I find that with very few exceptions not only is there no increase in pressure, but a considerable diminution. In some cases there was a drop from sixty to eighty mm. during a course of treatment. PHILIP HOROWITZ, M.D.

104 West 114th Street, New York.

## Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Love. *A Treatise on the Science of Sex Attraction.* For the Use of Physicians and Students of Medical Jurisprudence. By BERNARD S. TALMEY, M.D. With Forty-seven Cuts, Eighty-four Drawings in the Text. New York: Practitioners' Publishing Company, 1915. Pp. viii-438.

Doctor TalmeY explains in his preface that this volume contains a summary of his three previous works, *Woman, Genesis, and Neuraesthesia Sexualis*; together with the natural expansion of his knowledge of sexual subjects. We think it fortunate that books of this kind are becoming more or less commonplace among educated people in the United States, for nothing could be worse from the moral viewpoint than the old atmosphere of mystery, tempered with barroom anecdotes, in which sexual matters used to be wrapped. This work begins with a sort of history of how sex matters have been regarded in the past and proceeds to the evolution and anatomy of the sex organs, sexual physiology, psychology, pathology, hygiene, and, finally, sexual morality. It is emphatically not a book for the young, for the information it contains is no more necessary to youth than knowledge of the various kinds of crime; but the physician or medical jurist lacks an important part of his education without an acquaintance with the common sexual vagaries and their extraordinary ramifications into everyday life. Certain gynanders and androgynes who now circulate in respectable society and, save to the initiated, are at most mere objects of amusement, ought to be segregated and treated surgically or otherwise, for they are a dangerous menace to the young. The chronic retailer of witless pornographic stories is more than a pest, and it is said his mind can be disinfected by hypnotic suggestion. The curious connection between sexual and religious symbols is of prime interest to the student of medical history, although this volume touches only lightly on this side of the matter; there seems to be good reason to believe that the phenomena of reproduction furnished the basis for early religious conceptions.

Doctor TalmeY builds quite a system of morality upon his studies of the sexual relations and apparently shares the views of many middle aged and elderly writers that continence is an easy matter for young men. It may be for the athlete or other youth busily engaged upon some special work, but that it is not so for the average wage earner is amply proved by the existence of a tenderloin in every town of importance and by what is known to the initiated of life in many a village. If the struggle for existence advances the age of marriage, we can be sure that prostitution will thereby be encouraged. The struggle to be chaste has often nearly wrecked the reason or health of a young man of strong puritan principles, and it certainly interferes with the work of a youth subjected to the ordinary temptations of modern life. It is at all events an unscientific outrage to attempt to control the ravages of venereal disease simply by appeals for abstinence.

The author falls easily into a sort of *latin de cuisine* or "dog Latin" in veiling some of the more unpleasant aspects of his subject. Perhaps this is advisable in some instances, but the effect is grotesque when the foreign idiom is used quite unnecessarily; *secum pernoctare*, for example, is an absurd piece of prudery. Errors in the proof are frequent. We note the reproduction of some case reports and illustrations from the columns of this JOURNAL due credit being given. We commend the book to its legitimate audience.

*Modern Aspects of the Circulation in Health and Disease.* By CARL J. WIGGERS, M.D., Assistant Professor of Physiology in Cornell University Medical School, New York. Illustrated with 104 Engravings. Philadelphia and New York: Lea & Febiger, 1915. Pp. x-376.

This is a book of unusual interest and will prove of value to the medical student and to the practising physician. The author takes it for granted that the reader has a general knowledge of the physiology of the circulation, but the

physician whose study of the subject is not quite recent would do well to refer to some modern textbook, for the physiology of today is somewhat different from that of a decade ago. In the first section of the book will be found the modern conception as to how the circulation is maintained in health. The second section deals with the various instruments and procedures which are available for studying the circulation of man; and it is not a mere catalogue of apparatus, or list of procedures and interpretations, but it attempts to place a correct valuation upon different forms of apparatus and to point out their limitations and errors. In the third section an effort has been made to correlate the data obtained by experimental investigation of abnormal conditions in the laboratory with the results derived from the application of instrumental methods at the bedside. A classified and well selected bibliography is appended to many of the chapters.

*The House Fly. A Slayer of Men.* By F. W. FLEISCHMANN, F. Z. S., F. R. M. S., etc., Director, Port Elizabeth Museum. With Illustrations. London, New York, Bombay, Calcutta, and Madras: Longmans, Green & Co., 1915. Pp. 89. (Price, 35 cents.)

Within the past few months several volumes dealing with the menace of the fly to man have made their appearance. Among them there have been treatises of a scientific nature, popular science books, and volumes of a purely popular nature. Each has its proper place, but it is well known among physicians and sanitarians that the dangers of the house fly are real and great, though their precise scope has not yet been measured. It seems that the greatest need is for popular presentations of the facts in such a way as to educate the population at large to the dangers and to induce them to take steps for their prevention. Such is the purpose of the present booklet. The language is simple and the presentation comes "straight from the shoulder." Plain talk is necessary if we are to convince a large proportion of the community of the risks they are taking, and plain talk only is to be found between the covers of this little work. We fear that the author has indulged in some measure of exaggeration as to the frequency with which the house fly carries pathogenic organisms, but exaggeration may well be pardoned if it aids in securing the ends for which the book was written. We are inclined to think that it is of real help in this direction. The foresight of the publishers also deserves commendation, for they have prepared the volume in a reasonably attractive form and have still kept its price within the reach of all, a matter of great importance in spreading a propaganda.

*A New Aerobic-Anaerobic Culture Tube.* By IVAN C. HALL. University of California Publications in Pathology. University of California Press, Berkeley. Pp. 147-155.

The object of this device is stated by the author to be the provision of a more satisfactory means for determining the sterility of products such as serums and vaccines than has been heretofore available, and to provide in a single container a means of conducting both anaerobic and aerobic cultures simultaneously. Of the various types of apparatus formerly used, Smith's tube proved the best, but it had the disadvantages of initial expense, difficulty of cleaning, easy breakage, and of being awkward to manipulate. To overcome the difficulties and disadvantages of this and other tubes, experiments were undertaken which ultimately resulted in the construction of a tube 15.5 cm. long and 2.5 cm. in inside diameter. This is constricted to an inside diameter of 1.2 cm. at a point about two cm. from the bottom. Into the tube there is inserted a marble, 1.5 cm. in diameter, or better a porcelain double concave disc with a diameter of 2.1 cm. and a thickness of 1.2 cm. This marble or disc effectually prevents the diffusion of oxygen downward into the lower portion of the tube. The medium is introduced, the disc placed in position, and the whole sterilized properly. Just before sowing, the excess of absorbed oxygen should be dispelled by boiling for a few moments. On cooling the implantation is made and the disc allowed to fall into place. The tube has been tested with several obligatory anaerobes against other methods of anaerobic culture and has been proved to yield better results than any of the other methods. It is cheap, easy to manipulate, is cleaned without difficulty, and is little likely to be broken.

## Interclinical Notes.

Are any of our readers interested in the market? The editor of *Commerce and Finance* in the issue for November 17th, reprints his article from the *Outlook* on How to Read the Financial Page of the Newspaper. There is also editorial comment on cancer, pellagra, and the inevitable dying out of old families. The physician might well round out his reading with *Commerce and Finance*, which states that it is published to "promote sound economic thought; intelligent commercialism, and financial discrimination"; our colleagues, as a rule, are ignorant in these matters.

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Dr. Alice Hamilton writes in the *Survey* for November 20, 1915, on What We Know about Cancer; it takes, alas! less than six columns to contain the information. There is a strong plea by Nina Bull to do Christmas shopping now and thus prevent nervous exhaustion on the part of both purchasers and clerks. Much space is devoted to the recent Williamsburg fire and the blame is placed unhesitatingly. Under the heading, Surgeon Conscience, Sarah N. Cleghorn has the following verses:

"Nay, for I cannot bear it,  
Now that I see the long glitter.  
Turn away, my surgeon!  
Darken the door and the window."  
"Light, friend and *sursum corda*.  
Steady!" "It burns!" "Steady!"  
"It blinds! Christ!" "Rest and recover."  
I have probed to the sore's deep heart."

\* \* \*

A picture in *Leslie's* for November 19th that excited our deepest sympathies, was one of a soldier from New York seated at the bottom of a trench and dreaming of his home town; we should think that sixteen months of trench life would take off the fine edge of it, so to speak. *Leslie's* war pictures are all excellent, and a telling contrast is obtained by reprinting pictures of the civil war, quaint woodcuts, which have, however, merits of their own, and are more acceptable to many people than photographs. There are some appropriate editorial comments on the estrangement in the United States between manufacturers and trained chemists. It is hardly too much to say that our future progress is in the hands of chemists, who can begin by throwing out the mass of rule of thumb formulae which obtain in numerous industries.

## Meetings of Local Medical Societies.

MONDAY, November 20th.—Psychiatric Society of Ward's Island; Poughkeepsie Academy of Medicine.

TUESDAY, November 30th.—Medical Society of the County of Chautauqua, N. Y.

WEDNESDAY, December 1st.—New York Urological Society; Brooklyn Society for Neurology (annual); Society of Alumni of Bellevue Hospital; Harlem Medical Association; Bronx Medical Association (annual); Elmira Academy of Medicine (annual); Society of Alumni of St. John's Hospital, Brooklyn; Schenectady Academy of Medicine; Long Island Society of Anesthetists.

THURSDAY, December 2d.—New York Academy of Medicine (stated meeting); Brooklyn Surgical Society; Practitioners' Club, Buffalo; Geneva Medical Society; Glens Falls Medical and Surgical Society.

FRIDAY, December 3d.—New York Academy of Medicine (Section in Surgery); New Utrecht Medical Society; New York Microscopical Society; Gynecological Society, Brooklyn; Manhattan Dermatological Society (annual); Practitioners' Society of New York; Corning Medical Association; Saratoga Springs Medical Society; Society for Serology and Hematology.

SATURDAY, December 4th.—Benjamin Rush Medical Society, New York.



## Official News.

## Births, Marriages, and Deaths.

## United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending November 17, 1915.*

**Bailey, Charles A.**, Acting Assistant Surgeon. Directed to proceed to St. John, N. B., with the Immigration Service for the medical examination of aliens. **Corson, H. P.**, Sanitary Chemist. Directed to proceed to Grove City, Pa., by way of Cincinnati, Ohio, for duty in connection with studies of industrial wastes. **Ebersole, R. E.**, Surgeon. Granted one month's leave of absence from December 9, 1915. **Fox, Carroll**, Surgeon. Directed to proceed to Martinsburg, W. Va., to advise with the local health authorities with regard to an outbreak of diphtheria. **Freeman, A. W.**, Epidemiologist. Directed to proceed to certain points on the Ohio River watershed for the purpose of making investigations and collecting epidemiological data. **Fricks, L. D.**, Surgeon. Granted one day's leave of absence on account of sickness, October 26, 1915. **Korn, W. A.**, Surgeon. Detailed as a member of board of commissioned medical officers convened at the Marine Hospital, San Francisco, Cal., November 17, 1915. **Lake, G. C.**, Assistant Surgeon. Directed to proceed to Keyport, N. J., and vicinity, to assist in the investigation of coastal waters. **Lumsden, L. L.**, Surgeon. Directed to proceed to New Albany and McComb, Miss., and Monroe, La., for continuation of studies of rural sanitation. **Slaughter, W. H.**, Assistant Surgeon. Granted one day's leave of absence on account of sickness, October 11, 1915. **Smith, H. F.**, Assistant Surgeon. Directed to report at the Marine Hospital, Pittsburgh, Pa., for temporary duty. **Williams, L. L.**, Surgeon. Relieved as a member of board of commissioned officers convened at the Marine Hospital, San Francisco, Cal., November 17, 1915.

## United States Army Intelligence:

*Official list of changes in the stations and duties of commissioned and other officers serving in the Medical Corps of the United States Army for the week ending November 15.*

**Banta, William P.**, Captain, Medical Corps. Directed to proceed from Eagle Pass, Texas, and to Hot Springs, Ark., and report to the commanding officer of the Army and Navy General Hospital for observation and treatment. **Casper, Joseph**, Captain, Medical Corps. Granted one month's leave of absence on a certificate of disability granted by the surgeon. **Clarke, Howard**, Captain, Medical Corps. Previous orders amended, and directed to proceed to Fort McDowell, Cal., for duty. **Duncan, Louis C.**, Captain, Medical Corps. Directed to proceed from Fort Bliss, Texas, to Sierra Blanca, Texas, for temporary duty. **Hoskins, Albert J.**, First Lieutenant, Medical Reserve Corps. Directed to proceed from Mercedes, Texas, and to report at Donna, Texas, for temporary duty. **Humphreys, Harry G.**, Captain, Medical Corps. Previous orders have been amended; relieved from duty at Fort Oglethorpe, Georgia, and then directed to proceed at once to Fort Crockett, Texas, for duty. **Koerper, Conrad E.**, Major, Medical Corps. Granted eighteen days' leave, effective about December 18, 1915. **Meister, William B.**, Captain, Medical Corps. Previous orders amended; directed to proceed to Fort Lawton, Washington, for duty. **Miltenberger, Val**, First Lieutenant, Medical Reserve Corps. Directed to proceed to Los Indios, Texas, from Brownsville, Texas, for temporary duty. **Pinkston, Omar W.**, Captain, Medical Corps. Granted ten days' leave of absence on relief from duty at Fort Oglethorpe, Georgia; this leave has been extended two months and twenty days, with permission to apply for one more month's extension. **Roberts, William P.**, Major, Medical Corps. Directed to proceed from Douglas, Ariz., to Fort Sam Houston, Texas, and report to the commanding officer of the base hospital for observation and treatment.

## Married.

**Cushing—Barnard.**—In Niagara Falls, N. Y., on Monday, November 8th, Dr. Harold B. Cushing, of Montreal, and Miss Jessie A. Barnard. **Hippolitus—Cella.**—In New York, on Thursday, November 25th, Dr. Paul D. Hippolitus, of Bridgeport, Conn., and Miss E. M. Cella. **Kilburn—Baush.**—In Farley, Mass., on Wednesday, November 3d, Dr. Ira Nelson Kilburn and Mrs. Sadie Morgan Baush. **Maas—Hecht.**—In New Brunswick, N. J., on Saturday, October 30th, Dr. Charles Maas and Miss Emma Hecht. **MacMurdy—Lewis.**—In Salt Lake City, Utah, on Tuesday, October 26th, Dr. Carlyle K. MacMurdy, of Ogden, Utah, and Miss Lilah Oretta Lewis. **Osgood—Bolles.**—In Boston, Mass., on Tuesday, November 9th, Dr. George Osgood and Miss Barbara Kendall Bolles. **Van Meter—MacFarlin.**—In Boston, Mass., on Wednesday, November 10th, Dr. Abram Le Van Meter and Miss Elva MacFarlin.

## Died.

**Albright.**—In Grand Rapids, Mich., on Monday, November 8th, Dr. Joseph Albright, aged seventy-eight years. **Boaz.**—In Covessville, Va., on Monday, November 8th, Dr. Emmett Boaz, aged sixty years. **Bowlby.**—In Waterford, Ontario, on Tuesday, November 9th, Dr. Alfred Bowlby, aged ninety-six years. **Burke.**—In Washington, D. C., on Monday, November 15th, Dr. Thomas W. Burke, aged sixty-seven years. **Chittenden.**—In Anderson, Ind., on Sunday, October 31st, Dr. George Franklin Chittenden, aged eighty-four years. **Church.**—In Passaic, N. J., on Friday, November 12th, Dr. Charles A. Church, aged seventy-six years. **Davis.**—In Camden, N. J., on Sunday, November 14th, Dr. Nehemiah Davis, aged sixty-one years. **Dunnigan.**—In Washington, D. C., on Thursday, November 11th, Dr. John P. Dunnigan, aged forty years. **Duvall.**—In Philadelphia, on Saturday, November 13th, Dr. Augustus W. Duvall, aged seventy-five years. **Fawdry.**—In Corfu, N. Y., on Wednesday, November 10th, Dr. John W. Fawdry, aged fifty years. **Fox.**—In Washington, D. C., on Saturday, November 13th, Dr. Charles A. Fox, of Beltsville, Md., aged seventy-three years. **Galt.**—In Upperville, Va., on Wednesday, November 17th, Dr. Francis L. Galt, aged eighty-three years. **Grafton.**—In Concord, N. H., on Monday, November 15th, Dr. Frank W. Grafton, aged forty-six years. **Groves.**—In Hardy, Ark., on Friday, November 5th, Dr. James A. Groves, aged seventy-six years. **Hollingsworth.**—In Belair, Md., on Wednesday, November 10th, Dr. Charles A. Hollingsworth, aged fifty-eight years. **James.**—In Ashley, Pa., on Wednesday, November 10th, Dr. T. A. James, aged sixty-five years. **Kimball.**—In Norwich, Conn., on Tuesday, November 16th, Dr. Rush W. Kimball, aged fifty years. **Knox.**—In McKeesport, Pa., on Friday, November 12th, Dr. William F. Knox, aged eighty-four years. **Kollock.**—In Philadelphia, on Wednesday, November 17th, Dr. Katherine Kollock, aged seventy years. **McCleary.**—In Monmouth, Ill., on Saturday, November 13th, Dr. Ralph B. McCleary, aged eighty-two years. **Mulligan.**—In Modesto, Cal., on Sunday, November 7th, Dr. A. P. Mulligan, aged fifty-six years. **Papin.**—In St. Louis, Mo., on Thursday, November 11th, Dr. John R. Papin, aged fifty-eight years. **Patton.**—In Dallas, Texas, on Thursday, November 11th, Dr. E. G. Patton, aged seventy-seven years. **Pinkham.**—In Lowell, Mass., on Monday, November 15th, Dr. George E. Pinkham, aged seventy-five years. **Pulsifer.**—In Skowhegan, Me., on Saturday, November 13th, Dr. William M. Pulsifer, aged fifty-two years. **Ranney.**—In Lansing, Mich., on Wednesday, November 10th, Dr. George E. Ranney, aged seventy-six years. **Reese.**—In Philadelphia, on Thursday, November 11th, Dr. John A. Reese, aged sixty years. **Richards.**—In San Francisco, Cal., on Monday, November 8th, Dr. John F. Richards, aged forty years. **Sample.**—In Jackson, Miss., on Monday, November 8th, Dr. J. R. Sample, of Summit, Miss., aged seventy-four years. **Sands.**—In Port Chester, N. Y., on Saturday, November 13th, Dr. Norton J. Sands, aged seventy years. **Smith.**—In Toledo, Ohio, on Monday, November 15th, Dr. Anna Groff Smith, aged fifty-four years.



# New York Medical Journal

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### Lectures and Addresses.

#### ARTERIOSCLEROSIS AS A CELLULAR DISEASE.\*

*Together with a Study of Its Hygienic Treatment.*

By LOUIS FAUGÈRES BISHOP, A. M., M. D.

New York,

Clinic Professor of Heart and Circulatory Diseases, Postgraduate University School of Medicine, Physicians, Lincoln Hospital.

The subject of this address is arteriosclerosis. By arteriosclerosis I mean the general disease with which every physician is familiar, but which is very badly named when it is called arteriosclerosis. Like many other conditions it has received its name from a localized condition, just as enteric fever is a synonym for a certain disease that consists of a bacterial invasion of the body by certain specific germs that get into the blood stream, pervade all the organs, and run through a certain cycle of events leading normally to the production of the necessary antitoxins and the recovery of the patient. Enteric fever is a very inadequate name, and was given to the disease because in most cases—if not all—there was an ulceration of the intestinal tract which was seized upon as the supposed seat of the disease, and gave the name to the condition.

In the same way arteriosclerosis, a general disease, from which no part of the body is exempt, involving in a degree all the organs of the body, has received its name because in its well developed stage the arteries are found—when they are observed—to be thickened and conspicuous. Like typhoid fever, arteriosclerosis is a general disease. It is not due to a particular microorganism. It is due to what is known in medicine as a "disturbance of metabolism." The term, disturbance of metabolism, means very little unless we define it.

In this instance, we define it as the processes of the ultimate products of digestion to the nourishment and maintenance of the cells of the body. That is metabolism.

A disturbance of metabolism is a disturbance of the relation of the ultimate products of digestion to the nourishment and maintenance of the life of the cell.

So the disease, arteriosclerosis, is a disturbance of the relation of certain material which comes from the food for the maintenance, nourishment, life, and health of the cells of the body. As it involves all cells of the body, it is liable to be more pronounced first in one place and then in another.

You all know what a person with advanced arteriosclerosis looks like.

Any one with this condition might also be defined as suffering from cardiovascular renal disease. You know that when such a person comes under observation in a well developed stage of the disease, you are puzzled to know whether you are dealing with a heart condition, whether you are dealing with a kidney condition, or whether you are dealing purely with a bloodvessel condition. You know that the functions of the intestines, liver, and kidneys are involved, and you know that whatever conclusion you reach, someone else will say to the contrary: If you say the person suffers from heart disease, somebody else will say he is suffering from kidney disease; if you say kidney, somebody else will say arterial disease. So it is not possible in these conditions to say just what the nature of the disease is, provided that you insist upon the organic nature of the disease.

This problem is so interesting that it has occupied much of my attention, and I have reached the conclusion that the condition known as arteriosclerosis is really a disease of the cells of the body, and that the involvement of particular organs is a matter of sequence and follows on the general condition.

The cell must digest its nutrient material or else it cannot be nourished, just as the animal must digest its food before it can become available for the nourishment of the cells. Thus we have two digestions: One which is very conspicuous, the digestion of food by the gastrointestinal tract, which is interesting to everybody and is a matter of consciousness. It is only relatively important compared with the other digestion. The other digestion consists of the digestion of food by the individual cell, and that digestion is of vast importance and extremely complicated. The gastrointestinal digestion consists simply in the preparation of food for absorption—of the breaking down of food into the simpler forms so that it may be easily absorbed into the blood stream. The food is not much changed by gastrointestinal digestion. It is rather torn apart into its fundamental divisions. The animal food is broken up into its aminoacids and so forth, but the aminoacids are not broken up and their nature is not changed by the gastrointestinal digestion.

Metabolism is entirely different. In the process of metabolism, the protein molecule is absolutely broken up and its identity is completely lost. That is a very complicated biochemical process and is carried on by a great many organs. It is carried on by the liver, the spleen, the thyroid gland, the suprarenal glands, and the kidneys, which have all some metabolic function. The marrow of the bones and the ductless glands have to do with the process

\*An address delivered at Stamford, Conn., November 1, 1915, before the Stamford Medical Association.

of metabolism. Many chemical processes are carried on in the muscles.

As I say, this digestion is vastly more complicated and vastly more important than the gastroenteric digestion because unless metabolism is well carried on, the body is not well nourished and is diseased as a whole.

The question arises then, Why is it that a healthy man develops this condition which gradually irritates and destroys the cells of the body and leads to the production of connective tissue?

The answer is, that it is because of the disturbance of metabolism.

The nature of this disturbance of metabolism is very obscure, and the hypothesis that I have elaborated is that it is due to a disturbance of the relation of particular proteins to the body cells. In other words, the cells of the body become sensitized to particular proteins.

If you take a guineapig and inject into its blood a small amount of egg albumen, which is a simple form of protein, the pig becomes sensitized to white of egg. If later, you give the pig more white of egg, all the cells react in a manner known as anaphylaxis, and very often the guineapig dies. That is a simple laboratory example of sensitization.

If human beings become sensitized to proteins, which seems to happen from nervous shock, acute food poisoning, some infectious disease, or something else that makes a profound impression on the organism, from that time on the cells of that person's body may be unable to deal with the particular protein in question. Bacteria from a form of supuration may provide the offending protein.

We do not have to go very far to find examples of food sensitiveness. You all know people who cannot eat fish, strawberries, or this or that kind of food, and are made sick by them.

I saw a gentleman this morning who, one Easter when he was a boy, gorged himself with eggs. He ate a great many eggs. I don't know how many, and was made very ill, so that he had nausea, vomiting, and fever. He was confined to his bed and made a slow recovery. It was a case of acute food poisoning, from eating a great number of eggs. Following that, every few days he would be sick again. Finally it was discovered that if he ate eggs it made him absolutely ill. He stopped eating eggs or anything with eggs and got on well. For thirty years the man could not eat eggs or any article of food with eggs in it because that poisoning had caused him to be sensitive to eggs.

I know a doctor's child who is so sensitive to fish that if you conceal a piece of fish in a potato, and the child eats it, he is sick before he leaves the table. We can parallel such examples numberless times. I have heard of a child who was so sensitive to eggs that his eyes would water if eggs were opened in the same room.

The question of food idiosyncrasy is so extraordinary that there seems nothing about it that can be beyond belief. I know an old lady who cannot eat mutton. Mutton always makes her very sick. On one occasion there was nothing in the house where she was visiting but mutton. So her host took a scrap of mutton and cooked it in some way to conceal its flavor, and told her it was venison. Almost

immediately upon eating it she became violently ill and everyone thought she was going to die. Finally, her host confessed to her what he had done, and she exclaimed, "Oh, I know I won't die—I have been through this so often and did not die." She got through all right, but was very much frightened before she knew what was the matter.

These instances of sensitization to food are extremely important in connection with this general question of cellular disease leading to organic degeneration in the advanced form which is known under the general name of arteriosclerosis.

Unfortunately—I say unfortunately because I mean it—food poisoning is not by any means always accompanied by disagreeable symptoms. In fact, food poisoning may be accompanied by agreeable symptoms, just like any other poisoning. If a person is slowly poisoned by arsenic, it gives him a sense of well being until it is withdrawn. The same is true of other poisons. If a person is poisoned by meat, the withdrawal of meat is accompanied by a sense of prostration, and the restoration of the meat by stimulation. If the person is not poisoned by the meat, it can be withdrawn without any particular discomfort.

The natural history of the production of arteriosclerosis is, I believe, as follows: The person goes through a period of great nervous shock or strain, some very acute illness, or some acute food poisoning, and this produces a change in the relation of the body cells to the customary food proteins. The person may be sensitized to meat, fish, eggs, or other proteins. When a person has been sensitized to food protein and goes on eating that food, the cells of the body are irritated and some of them destroyed, and the organs become defective and are not able to do their work properly. When the kidneys become markedly sclerotic they do not function normally and Nature attempts to make them function better by a rise of blood pressure. This rise of blood pressure leads to hypertrophy of the heart. It leads to thickening of the bloodvessels and that creates a vicious circle. The high blood pressure damages the bloodvessels and the kidneys are further and further damaged until finally we get the picture of cardiovascular renal disease.

Such a person coming under medical observation is ordinarily said to be suffering from one or other of several conditions—either heart disease, bloodvessel disease, or kidney disease. In reality, it is all one thing. It is cardiovascular renal disease to which for convenience we have given the name arteriosclerosis.

The cardinal symptoms of arteriosclerosis are hard to define because the disease is not a symptomatic disease. Nature provides a margin of safety in the heart, bloodvessels, and kidneys that is very wide. So the heart is very badly damaged, the kidneys are very defective, and the bloodvessels are greatly thickened before nature complains. Thus the person with arteriosclerosis has no symptoms in the earlier stages of the disease. He has certain objective signs which may be discovered by examination.

As far as I know, the first symptom of arteriosclerosis is pain in the chest on exertion after eating. The quickest way to relieve this pain is by

treating the heart. Nitroglycerin properly administered acts almost like magic in this type of cardiac pain.

This disease is not found in any of the textbooks, but I believe that a clear conception of its nature as a general disease that attacks so many people is of great importance. I know that it is of great importance to me in my work, which is limited to cardiovascular renal disease. When I treated kidneys, I never helped my patient. When I treated the heart, I never helped my patient. When I tried to soften the arteries I did my patient a good deal of harm. But since I have treated the body as a whole, and regarded the sufferers as victims of disturbed metabolism, I am sure the hygienic measures that I have advised have helped a great many of them.

Thus it would seem that the disease called arteriosclerosis, which is really cardiovascular renal disease, is primarily due to a disturbance of metabolism extending over a long period of time. This disturbance of metabolism consists in a sensitization of the cells of the body to particular proteins ordinarily found in food. Meat proteins are most often to blame. Fish proteins are sometimes to blame. Egg proteins are also harmful to a good many people. This process is subsymptomatic for five, ten, or fifteen years until such time as a sufficient number of cells have been destroyed to impair the functions of the organs. This gives rise to symptoms and the disease is discovered.

The remedy in this disease is to be found in the discovery and removal from the dietary of the offending proteins, meat being most common, and in the correction of metabolism by physical methods, particularly exercise. Exercise is the greatest stimulant of metabolism there is. Exercise makes the patient breathe deeper, it helps the digestion of food, and stimulates the kidneys. It is the great stimulant of metabolism. Exercise has an important place in the treatment of arteriosclerosis. First diet and then exercise. The third important thing is attention to the intestinal tract.

We cannot throw overboard all that has been said of late years as to auto-intoxication, intestinal stasis, and all these things, but there is a remedy that is the best for dealing with the intestinal condition. Serial doses of castor oil, out-of-door exercise, and diet from which the offending proteins have been removed intelligently, so that there is no protein starvation, lead to a condition of improvement that makes further attention to the question of auto-intoxication unnecessary.

This is the cellular theory of arteriosclerosis, with the hygienic treatment that logically follows its adoption.

In addition to this, we have to treat the sick person. The general plan of treatment—the diet, out-of-door exercise, and so on—is the underlying basis, but you have to treat the individual. When there is cardiac pain, attend to that.

The dilated heart, provided that there are symptoms of heart failure, must be taken care of with digitalis. The kidneys do not require any direct regimen. The psychical side of these persons is very important—they need reassurance.

54 WEST FIFTY-FIFTH STREET.

## Original Communications.

### PROSTATISME SANS PROSTATE.\*

*A Study of Median Bar Formation as a Cause of Urinary Obstruction.*

By ALEXANDER RANDALL, M. A., M. D.,  
Philadelphia.

Beside the senile bladder insufficiency so generally associated with prostatic hypertrophy, there is yet another form of trouble whose symptomatology is the same, yet whose cause is of a totally different nature. Both owe their existence, as a pathological entity, to changes at the prostatic orifice of the bladder, and possibly of the prostate itself, but whereas in the former the gland is found to be hypertrophied, in the latter the gland is more or less atrophic. The patient complains of frequent micturition, urgency, difficulty, and at times painful micturition, or the pseudoincontinence of retention, in other words, the classical picture of the third stage of prostatism, with all the symptoms typical of an hypertrophy of the prostate. The catheter will demonstrate the presence of residual urine, but to digital examination the prostate will be found to be small, perhaps actually atrophic, and on cystoscopic examination of the internal vesical orifice, it will be found that there is no intravesical enlargement of the prostatic lobes.

Though this condition was described more than seventy-five years ago, as a definite abnormal development responsible for a certain group of symptoms, it is only within the last twenty-five years, or more truly within the last decade, that attention has been properly focused upon the importance of the symptomatology arising from the atrophic and sclerotic changes that occur about the prostatic orifice of the bladder and involve the region of the internal vesical sphincter.

The picture of the third stage of prostatism, with its retention of urine, its reflex pains, its signs of kidney deficiency, and cystitis, has been thoroughly impressed upon the profession. That exactly similar phenomena may arise *without* prostatic enlargement has not been fully appreciated. Surgeons have been led astray by such symptoms, and in operating have been surprised on opening the bladder to find no intravesical enlargement of the prostate. They have learned to speak of this condition as the small sclerotic prostate, and are well aware of the difficulties attending its removal. That relief may be gained by such a procedure, however, has been the

\*Read in abstract before the Philadelphia Gynecological Society, March, 1914.

\*Of the many names and titles that have been given nonprostatic obstruction of the bladder, or causes to which it has been attributed, the following may be enumerated: 1, Bar or Stricture of the Neck of the Bladder (Guthrie); 2, Valvules du col de la vessie (Mercier); 3, Barrières uréthro-vésicales (Civiale); 4, Atony of the Senile Bladder (Ciechanowski); 5, Prostatea vesical (Guyon); 6, Sclerosis or Atrophy of the Internal Sphincter (Sussenguth, von Frisch); 7, Contracture of the Vesical Neck (Fuller, Chuloff, Keyes, Chetwood); 8, Median Bar Formation (Young); 9, Atrophy of the Prostate (Engelisch, Barth, Kimmell, Groslick, Dubs). I have here chosen the title of *Prostatisme sans prostate* as being so expressive of the knowledge of the present day concerning this form of urinary obstruction, and besides it is a question herein dealt with. It is as the actual cause—a mooted question herein dealt with. It might be added, with propriety, that I have spent some time in an effort to find the originator of this expressive phrase, *prostatisme sans prostate*, and though by numerous authors Guyon has been accredited with the honor, it has not been the writer's fortune to find it among Guyon's many titles. The German writers often use a similar phrase *Prostatiker ohne Prostata*, a free translation of which into English might be given as meaning, symptoms of prostatism without prostate.



experience of many, and though the operation is both difficult and dangerous, the success to be gained by the removal of such a small amount of tissue, often all that is obtainable, has justified to a certain degree the risks encountered. It is this type of case which Wade calls "prostatic fibrosis or chronic interstitial prostatitis," and of which he says it is perhaps its misfortune that the only features it shows in common with hypertrophy are the clinical indications of prostatism, "that are so closely similar as to tempt certain surgeons to treat them by a similar operative technic, with occasionally disastrous consequences."

#### HISTORY.

There is always a thin veil of mystery surrounding the man who first had the medical acumen to appreciate a pathological entity, and raised his voice in efforts to make his too often skeptical associates see as clearly as he saw, while there is often also a touch of romance to be found when searching for such an originator. Likewise it is almost the rule that a successor is given the credit by posterity, of an unappreciated master's work.

So it was with the subject at hand. Mercier, that talented French surgeon, whose name is elsewhere frequently met with in urology, is today generally given the credit of having first described non-prostatic obstruction to the vesical outlet, and one hears frequent reference made to the *Valvules du col de la vessie* of Mercier. That the honor belongs to another, an English surgeon, has been recognized by but three subsequent writers, one of whom, Civiale, did not even mention his name, and used it simply in defense of his own position when accused by Mercier of plagiarizing the latter's supposed original observations.

In 1830, G. J. Guthrie, an Englishman, in his lectures before the Royal College of London, first described under the title of Bar at the Neck of the Bladder a condition which has now taken almost a century to gain the sanction of urologists throughout the world, and whose pathology and treatment is today one of the most debated questions in the specialty. By the surgical world, as a whole, this subject has been sadly, almost entirely neglected.

On account of the importance of establishing this unrecognized priority of Guthrie's work, a little space will be spared to quote his lectures. There are references in the literature earlier than Guthrie's writings, notably those of Everard Home (1811), of Charles Bell (1812), of William Blizard (1823), and of J. Howship (1823), which deal with obstruction situated at the posterior lip of the internal vesical sphincter, but these all refer to early descriptions of the presence and development of the third or middle lobe of the prostate, and fail of differentiation between hypertrophy of the glandular tissue of the middle lobe and the "bar" as described by Guthrie.

Guthrie's conclusions are, *a*, "that the elastic structures at the neck of the bladder may be diseased without necessary connection with the prostate gland; *b*, that the prostate may be diseased without any necessary connection with the elastic structures." In his Lecture xv, On Chronic Thickening of the Neck of the Bladder, after speaking of a gradually increasing residual urine, he says, "at this period the

elasticity of the neck of the bladder is impaired; it will not dilate with the ordinary action of the detrusor, and this (the residual urine) is therefore augmented." Further on, after speaking of the physiological action of the bladder muscle and trigone, he adds, "these structures *do not* perform effectively their functions of expelling the last drops of water, while the under part of the orifice, by its greater firmness and loss of elasticity, presents the commencement of a bar or dam over which the last quantity of urine is not projected." He then cites a case which "shows the elastic structure at the neck of the bladder diseased without any affection of the prostate and particularly of the third lobe. The patient passed his water with great difficulty, in consequence of the barrier formed by this unyielding structure, and died ultimately of the disease, after much suffering." A second case which he details had some enlargement of the lateral lobes, especially of the right lobe, which had drawn up the mucous membrane of the orifice so as to form a bar across its under part. "This bar," he adds, "is quite membranous, and does not include the elastic structure which is not diseased, neither is that part called the third lobe, nor is there any projection into the bladder, save the bar or valve formed by its mucous membrane at the very orifice." "This bar formed at the neck of the bladder has, I believe, been mistaken for an enlarged prostate; it has not, at all events, been considered as a separate disease." This is the simple statement of the original master mind, that saw in this condition a disease separate from the recognized prostatic obstructions to the vesical outlet, and made known to the surgical world one of those "truths that wake, to perish never."

In Lecture xvi, On the Cure of the Bar at the Neck of the Bladder, Guthrie condemns attempts to dilate the orifice of the bladder by a large or dilating instrument, saying that it only brings on pain and increases the evil. He speaks of the relief of an inlying catheter, and in case of its failure, asks the question, whether the person shall be allowed to die without a further effort being made for his relief. This he answers as follows: "I think not; and in such a case would suggest that an operation be performed. The object is to divide the bar, dam, or stricture, with as little injury as possible to any of the neighboring parts." He then describes his urethral instrument, and as to its use says: "The knife being projected just as the instrument is felt to be passing over the bar, will cut it, and if after it has just passed into the bladder, it be withdrawn, the little knife, in coming back, will enlarge the original cut. . . . If the bar be thin or narrow, I have no doubt of the possibility of dividing it in this way without doing mischief, and in two cases in which I have tried it I have reason to believe the object was effected. . . . I do not believe, however, that when the bar is complicated with an enlargement of the middle, or of the left lateral lobe behind it, the division of it can be effected in this manner; and I am at present disposed to confine this mode of operating to the pure cases I have described, and in those only when relief cannot be obtained by any other means."

Such an exhibition of far sighted wisdom cannot be extolled too highly, and when we appreciate the

trivial squabbings of some who have come after this man, we cannot but pity them for their narrow visions. *Le génie est la raison sublimée.*

In 1830, Mercier maintained that he had published his first description of his valves at the neck of the bladder. This article is difficult of interpretation, and not until his later publications, in 1839 and 1841, does he become specific in his descriptions. In May, 1841, Civiale graphically described in an unquestioned manner, nonprostatic obstruction to the vesical outlet. He classified three different types, and dwelt on the etiology and treatment. This article, read before the Académie des sciences, acted as a firebrand to Mercier, and, though but thirty years of age, and twenty years Civiale's junior, he attacked the latter bitterly, openly accusing him of plagiarizing his observations. Mercier used as a medium a medical journal of which he was the coeditor, and it seems almost significant that the life of this journal was but two short years. Its pages are generously footnoted with caustic criticisms of Civiale's recent book, in each case showing references to Mercier's previous writings. He does not even limit himself to the original subject at hand, but covers the entire ken of urological knowledge of the day, taking exception to Civiale's statements and attempting to show that he had made similar statements at earlier dates. Civiale's only reply to his accusation of plagiarism was a short letter written in the calm terms of a man of broader mind. He couched his letter in the form of three questions, each of which he answered as follows: Did Mercier question his originality? He asserted none, and stated that the originality belonged to some English surgeon. Did Mercier criticize the exactitude of his descriptions? Civiale says, "I never pretended to lay down a limit to science, I have but described what I truly saw." Did he dispute his treatment? "From that point of view experience alone ought to speak."

For a year every time that Civiale addressed the académie on a urological subject, Mercier attacked him, and the controversy became so heated that, at the request of Mercier, there was a commission appointed, consisting of M. le Baron Larrey and M. Breschet, to corroborate Mercier's assertions. Unfortunately this commission never reported, probably owing to the death of Baron Larrey the following year (1842), which loss was soon followed by the death of his fellow commissioner. The only solution lies in the fact that, nine years later, that is in 1850, the Académie des sciences awarded to Mercier a prize for *Recherches anatomiques, pathologiques et thérapeutiques sur les valvules du col de la vessie, et pour ses observations et ses remarques sur le traitement de la rétention d'urine causée par les valvules du col de la vessie.* At the presentation of this prize, the following was read before the académie:

Owing to the tumors or simple projections, which are often produced at the neck of the bladder, owing to an abnormal development of either the musculomembranous tissue of the bladder, or of the prostate, and whose size hinders, more or less, the spontaneous evacuation of the urine, there results an alteration of the bladder, of the ureters, and of the kidneys. This condition becomes aggravated in time and against it the efforts of the art of surgery have as yet found only palliative treatment. Dr.

Auguste Mercier, has well described under the name of *Valvulites du col de la vessie*, some of the formations which have come to be a question, and has studied their structure, which no one did before him. He has, after thorough endeavors and modifications in his proceedings, perfected the construction of instruments, easy of handling, by aid of which one incises, or with the same excises the valve, in a manner to produce a more certain and prompt cure. We consider that M. le Mercier has rendered a service to the therapy of one of the most grave and rebellious diseases of the urinary organs. We propose to accord him a recompense of 1,500 francs.

Again, in 1852, Mercier was awarded a prize for his work on this subject. This time it was the *Prix d'Argenteuil*, given by the National Academy of Medicine. They appointed a commission, who carefully examined the works of men prior to Mercier's writings and nicely summarized the status of affairs by concluding "that the muscular valves of the neck of the bladder have been recorded by divers observers before M. Mercier; no one contests, however, that to him belongs the merit of having studied them more exactly than had any one before him and to have established, by his conclusions, the treatment applicable to them."

It is probably due to the publicity of these prizes (which Mercier did not hesitate to aid), that the true priority of Guthrie, which even Civiale recognized, was entirely lost sight of.

During the next three decades there are very few references made to the subject. Slight mention is given to nonprostatic obstructions to the bladder in the writings of Messer (1860), of Dittel and Chrastina (1867), of Gross (1876), and to a fuller degree, of Thompson (1886), while isolated cases are reported as having been observed by Segond, Guelliot, Gourdon, Monod, Bron, Poppert, Trendelenburg, and Eigenbrodt.

With the advent of the cystoscope, renewed interest was aroused by the increased possibility of accurate diagnosis, and the French school of urology under Guyon, brought this subject again to the fore, and popularized its recognition by terming it *Prostatisme sans prostate*.

#### ANATOMY AND PHYSIOLOGY.

The size and shape of the bladder, and also to a great extent its relation to contiguous structures, vary with the amount of distention of the organ. When empty it lies wholly within the true pelvis and directly behind the symphysis pubis. The junction of the urethra and bladder, known as the internal vesical or urethral orifice (Fig. 1), is placed at the lowermost point of the bladder cavity. The term, neck of the bladder, is often applied to this region, as here the bladder appears as if suddenly constricted to form the urethra. That portion of the bladder wall posterior to the urethral orifice, which is directed toward the anterior wall of the rectum, is called the base or floor of the bladder, and upon this portion is situated the vesical trigone (Fig. 3). During the various changes in form and position which the bladder undergoes, the region of the internal vesical orifice remains almost fixed in its place, and only under great distention is it slightly depressed to a lower level in the pelvis. The internal vesical orifice lies immediately above the prostate, behind the symphysis pubis (being about two to two and a half inches from it), and

approximately half an inch above the level of a plane passing through the lower margin of the symphysis pubis and the lower end of the sacrum (Cunningham).

The vesical trigone is a triangular surface of almost equilateral dimensions, situated behind the internal vesical orifice, and upon the base or floor of the bladder. Its apex lies at the internal orifice of the urethra, while its base is formed by a fold which extends between the orifices of the right and left ureter. It measures approximately one and a quarter inch on each of its three sides, and is sharply differentiated from the remainder of the bladder wall by its smooth mucous membrane, which, over this area alone, has a submucosa binding it closely to the underlying muscle wall.

Directly under the trigone, and that portion of the base of the bladder on which it rests, lies the prostate. It entirely encloses the first portion of the urethra. The so called base of the prostate is in direct contact with the base of the bladder, to whose outer surface it is closely bound by one of the layers of the rectovesical fascia. Inasmuch as the prostate surrounds the first portion of the urethra, the urethra is said to pass through the prostate, and this portion is known as the prostatic urethra. It enters the superior surface or base of the gland, a little anterior to its central axis, passes through the prostate nearer to its anterior than its posterior surface, and emerges at the apex of the prostate, where it immediately passes through the triangular ligament, to become known as the second or membranous portion of the urethral canal.

The prostate consists of glandular acini and ducts imbedded in involuntary muscle; the latter, supported by fibrous tissue, constitutes the stroma of the gland, which makes up more than one half of the bulk of the organ.

The musculature of the bladder (Figs. 4 and 5) consists of an external layer of longitudinally directed bundles of muscle fibres, which, as they approach the neck of the bladder, run more obliquely, frequently crossing over one another, and are ultimately lost upon the outer surface of the prostate. The middle or circular muscle layer increases somewhat in thickness at the neck of the bladder and is continued into the circular muscle coat of the urethra. Some of these fibres pass backward from the urethra to the capsule of the prostate, and help to form a septum of fibromuscular tissue which partially divides the prostate into two lateral masses (Richardson).

It is this layer of circular fibres which in the region of the internal vesical orifice is considered to form the internal vesical sphincter. The muscles of the ureters, which are continued across the trigone, meet near the vesical orifice, interlace somewhat, and are prolonged down the urethra, chiefly along its posterior wall, forming the innermost longitudinal layer directly under the mucous membrane. The contraction of these fibres tends to shorten and raise the trigone, and dilate the vesical orifice by leveling out the angle between the urethra and the floor of the bladder. It is these longitudinal fibres as they converge at the vesical orifice, lying immediately under the mucous membrane, that cause the formation of a slight longitudinal fold of the mu-

cosa known as the uvula vesicæ, which is continued down the urethra as a small midline ridge to enter into the formation of the verumontanum.

Normally the urine brought to the bladder by the ureters accumulates within its cavity to a certain limit. It is prevented from escaping by the involuntary tonic contraction of the vesical sphincters. If the accumulation becomes greater than these can endure, the temporary voluntary contraction of these same muscles can be brought into play. It is held by some that the external and internal vesical sphincters alternate in their action by the latter controlling the bladder contents up to a certain point of distention, after which the internal and weaker sphincter relaxes, allowing the urine to enter the posterior urethra, as far as the location of the external sphincter about the apex of the prostate, which in its turn controls the retention of urine until micturition is performed.

The act of urination is a simultaneous association of voluntary and involuntary muscular action, as likewise one of inhibition and of stimulation. The involuntary muscles of the bladder wall are aided, if necessary, by the voluntary stimulation, contraction, and fixation of the muscles of the abdominal parietes and the diaphragm, after closure of the glottis, while the tonic contraction of the vesical sphincters is completely inhibited. The expulsion of urine starts with the contraction of the longitudinal fibres and those circular ones that surround the main body of the bladder, while at the vesical neck and along the urethra relaxation takes the place of tonic contraction through inhibition of the sphincters. The clean expulsion of the last few drops of urine is mainly a voluntary act. It commences with the involuntary muscle that surrounds the lower part of the bladder, passes on from there to the first portion of the urethra, and is finished by the voluntary muscles that surround the apex of the prostate and the canal beyond (Moullin).

#### ETIOLOGY.

Guthrie, who, as has been shown, was the first to describe median bar formation, defined two distinct types of obstructive bars. The first he considered to be "an unnatural elevation of certain fibrous structures which underlie the mucous membrane at the posterior or vesical limit of the urethra, but which is unaccompanied by and unconnected with any enlargement of the prostate." He considered it to be the result of a localized diseased condition, whereby the normal elasticity is lost and an "unyielding structure" forms the barrier. His second type is that in which the intravesical enlargement of one of the lateral lobes of the prostate has so affected the orifice that the bar formed at the neck of the bladder consists of its mucous membrane, elevated and drawn tight across the under part of the opening, in consequence of its connection with the prostate through the subjacent parts. If the prostate, he says, could have been removed, the mucous membrane forming the bar would have fallen back into its proper place.

Civiale, who was familiar with Guthrie's views on the subject, likewise described a "simple membranous fold, smooth, thin, and almost transparent," and a second type in which "the free edge of the fold



is in the form of a rounded cord. Here the barrier is more thickened and we find between the two layers of the mucous membrane a dense and resistant tissue analogous to that of the vesical sphincter, except that the one under consideration is sclerotic and the other muscular." He also speaks of the occurrence, which he considers not rare, of small enlargements of the third lobe of the prostate as being productive of a similar type of obstruction. He attributed the cause of nonprostatic obstruction to either, *a*, an abnormal development; *b*, inflammation, associated with an involuntary contracture, either temporary or permanent; or, *c*, rheumatism. He also makes the original observation that in these cases, instead of an hypertrophy of the prostate, an atrophy is more likely to be found.

Mercier, especially in his later writings, gives two types of bar formation. One is produced by a repeated spasm of the muscle fibres of the internal vesical sphincter, until after long continued and oft repeated attacks these fibres become permanently contracted, so that, as a consequence, a bar or barrier is formed by the posterior lip of the vesical orifice. This he calls his "muscular" type and holds that it is due to any excitant of muscular activity. His second type is the hypertrophy of the glandular tissue of the median portion (submontanal) of the prostate, and this he terms his "prostatic" variety.

It is of interest to pause here and to realize that in the ideas of these three men, the original investigators, are incorporated the prevalent ideas of the present day, though in the meantime the attention of all observers has been directed into other channels, seeking for the reason of the occurrence of the retention of urine.

The writings of S. D. Gross contain the sanction of the ideas of Guthrie. Gross recognizes a form of obstruction not of prostatic origin, which he says is due to infections or other excitants of chronic spasmodic action, which terminate in contracture and hypertrophy of the muscle fibres in this situation.

Sir Henry Thompson, in 1886, carefully covered the field of opinions, and while admitting the occasional occurrence of the irritative contracture of the vesical neck, nevertheless was "persuaded, after careful and repeated examinations, that unnatural elevations at the neck of the bladder are more frequently caused by some enlargement or outgrowth, however small (and they may be seen in all degrees of development), springing from the posterior part of the prostate, and that such are not mere elevations of the mucous membrane and submucous structures only, but are commonly formed by genuine prostatic enlargements."

It was at this period that the pendulum started to swing away from the idea that a mechanical obstruction existed at the bladder orifice, and attention was directed toward discovering some cause in the bladder wall itself as a reason for the insufficiency of the bladder's function. The French writers, particularly those of the Guyon school, departed from the teachings of Civiale, Mercier, and Guthrie, and sought for the cause of the retention of urine in an alteration of the vesical musculature. Guyon, in an article entitled *Prostatisme vésical* (1889), says that

he had recourse to that name because the symptoms which characterize the third period of prostatism are directly dependent upon an alteration of the bladder wall. He held to the opinion that a primary arteriosclerosis was followed by a secondary degeneration of the bladder wall. This second view was first mentioned by von Bergmann and Albarran, and later the idea was further strengthened by the observations of the Austrian, Ciechanowski, who estimated the proportion of connective tissue in the bladder wall, and found that while in the normal adult it formed but one quarter of the total thickness, in the prostatic it assumed a greater percentage, often being increased to one third or even one half of the whole. This idea, as all the teachings of the prominent French urologists of that day, exerted tremendous influence, and for a number of years failure of the bladder musculature was considered to be the cause of the retention, and any changes which might be present at the vesical orifice, were entirely ignored. Indeed Guyon went so far as to consider even prostatic hypertrophy, but a concomitant factor and not the pathological change responsible for obstruction in such cases.

In 1897, Eugene Fuller, of New York, started the pendulum on its backward swing toward the recognition of the cause being situated at the vesical orifice, owing to changes localized at this point only. He considered the condition as the result of functional contracture or spasm, secondary to some settled disorder of the genitourinary tract, and compared it to the action of the sternocleidomastoid muscle in torticollis.

Later, the contentions of Albarran and Ciechanowski were not confirmed by Motz and Arrese, who, on the contrary, proved that the quantity of muscle fibres was not diminished in the bladders of these prostatists, but on the other hand, a hypertrophy of the bladder musculature was the rule. In 1903, they further sounded the death knell of the theory of the Guyon school by the operative removal of the prostate in such a case, and thus showed that with the ablation of the obstruction at the vesical orifice, the muscle wall of the bladder regained its physiological function.

In 1905, C. H. Chetwood came to the conclusion, after the study of thirty-six cases, that there was not a hypertrophy of the muscular elements of the internal sphincter, but a fibroid stenosis of the orifice. He gave the name of Contracture of the Neck of the Bladder to the condition, and denied that there was any hyperplasia of the muscular elements of the sphincter, nor of the adenomatous tissue of the prostate, nor was it a simple spasm or a mucous fold, but a "fibrous infiltration inflammatory in character." Chetwood's communication was not accompanied by any histological study, and though he probably could exclude the presence of spasm or of a mucous fold, while examining the orifice at operation, under general anesthesia, his expression of an opinion as to the microscopic structure of the obstructing tissue would hardly carry any weight. It must be conceded, however, that later studies have proved, to some extent, the correctness of his ideas in certain cases. Reference to Chetwood's work will be made later, while at present let us follow the vicissitudes of the theories, and

the attempts made toward finding a solution of the problem through clinical observations.

It had been frequently observed, as first pointed out by Civiale, that the prostate as found at operation was often smaller than normal. This led Englissh, Groslick, Barth, Dubs, and other German observers to attribute the condition to a primary atrophy of this gland. The valve or bar formation was looked upon as being essentially due to the sclerosis of the sphincter muscle, which, owing to its close association anatomically with the prostate, shared in the atrophic process. Barth believes that almost all cases of prostatic atrophy with bar formation originate from a congenital hypoplasia of the gland, while others consider that in certain cases, the atrophic condition is secondary to chronic inflammation. The advocates of this atrophic origin of the obstruction have tabulated the various conditions under which an atrophy of the prostate may be expected, and often have been able to cite a case here or there illustrative of the various types. The conditions may be mentioned briefly: *a*, Atrophy of inflammation; *b*, atrophy of cachexia; *c*, atrophy of compression; *d*, atrophy of castration; *e*, senile atrophy; *f*, congenital atrophy; *g*, traumatic atrophy; *h*, and atrophy following x ray exposure. It will be seen at first glance that the only three of importance, the others being excluded by their infrequency, are the congenital atrophies, the atrophy following inflammatory conditions, and the senile atrophies, all of which will be considered at greater length when studying the pathology of the changes existing in such cases.

A few observers, among whom may be mentioned Marion and Zuckerkandl, while not entirely denying the possibility of the occurrence of such a condition as *prostatisme sans prostate*, have nevertheless insisted on the rarity of such cases, and feel that a diagnosis of this sort should be made only after a most exhaustive attempt to exclude other possibilities. Marion cites various cases, such as prostatic calculi, urethral polyps, and small hypertrophied median lobes, where except for careful search, the diagnosis would have been different. Removal of such conditions was followed by cure. Zuckerkandl likewise calls attention to the occurrence of small median lobe hypertrophies, which when situated within the orifice, are able to cause marked retention, and aptly terms this condition prostatic hypertrophy in miniature. There is no doubt whatever of the occurrence of just such cases as those of which Marion and Zuckerkandl speak, but they are conditions apart from the subject here under discussion, and should most decidedly be excluded when the diagnosis of such a case is undertaken. It is regrettable to see Marion trying to put in a case of retention due to a polypoid growth in the posterior urethra, as one conflicting with the recognition of a case of bar formation; it is likewise regrettable to see that this diagnosis was made only after the prostate and posterior urethra had been removed from a man forty-five years of age by suprapubic prostatectomy and the urethra laid open and examined.

The final theoretical argument offered as a cause of the vesical insufficiency, came from the French school of urology, and almost as an echo of the teachings of Guyon. In 1908, Albarran and Nougès

put before the First International Congress of Urology, a loss of the Hemmenden reflex as the cause of the retention. Regarding this reflex, they stated that the function of the internal vesical sphincter was fourfold:

1. Permanent involuntary contraction—to retain urine.
2. Temporary voluntary contraction—occasionally used for the same purpose.
3. Temporary involuntary and reflex contraction—occasionally used to retain urine.
4. The phenomenon of voluntary inhibition to contraction—which is observed at each micturition.

In explanation of the retention they say that they believe that the sphincteric trouble, which is capable of causing prolonged retention of urine, is produced more particularly when the faculty of normal inhibition, reflex or voluntary, is lost. They also believe that many of these troubles due to inhibition do not have their site exclusively in the sphincter apparatus, but also exert influence on the contractility of the bladder. They gave it the name of "retention by inhibition" and offered proof that such inhibitory disturbance may arise from chronic prostatitis, hypertrophy of the prostate, large calibre strictures, and other causes, concluding "that these troubles of inhibition have their influence on the bladder to diminish its expulsive force, and on the urethra, to derange the function of the sphincter."

This point of view was warmly defended by Bazy, Marion, Frankl-Hochwart, and others, and is a further elaboration of Janet's earlier work on vesical inhibition. Certain types of cases presenting symptoms of intermittent retention were cited by them and explained to be due to such nerve disturbance. Concerning the origin of these reflexes, and the manner and way of their control on the contractility of the bladder, the authors were unable to offer anything precise, hence this theory has never gained the slightest acceptance.

#### SYMPTOMATOLOGY.

It is to be observed at the outset that none of the subjective symptoms arise from changes that have occurred at the vesical orifice *per se*. As in enlargement of the prostate, it is not the presence of hypertrophic tissue in the body that occasions the symptoms characteristic of that condition. So it is likewise true in the subject under discussion, that the symptoms do not arise from the pathological changes at the neck of the bladder, but because of them. It is the *interference with the normal function of the bladder and urethra* to which all the symptoms are attributable, hence the similarity in symptomatology between median bar formation and prostatic hypertrophy.

The onset of trouble is often a very gradual development, as is characteristic in hypertrophy of the prostate, for time is necessary for damage to take place in the bladder or kidneys, before the patient realizes that he is the subject of some abnormal condition. At first it may have but little influence upon the patient's health, and it does not follow of necessity that in one who shows early symptoms of trouble those symptoms will steadily continue to develop. Many men continue with mild evidence of obstruction for years, during which time they suffer slight inconvenience, but no serious harm. As a rule, however, when these symptoms of obstruction

start, they continue to develop, and either they lead to further complications, or those which are present become more pronounced.

*Age.* This form of vesical obstruction has generally been considered to occur earlier than the benign hypertrophy of the prostate, whose occurrence before the fifty-fifth year of age is rare. It was the finding of symptoms of prostatism in men of middle age, between thirty-five and fifty years, that has pointed especially to the existence of some condition other than hypertrophy of the prostate as the cause of the symptomatology. Sixty-three per cent. of the patients in Young's statistics were under fifty-nine years of age, while thirty-three per cent. were less than fifty years old. Cases have been reported as occurring in the third and second decade of life (Somers), until realization has gradually worked back, through the various ages of man, to the acceptance of Englisch's ideas, that a few of these cases are, in truth, congenital in origin. There is a hiatus, however, of years, between those that are acquired and those of congenital origin, for the former appear in men generally over thirty-five years of age, while the symptoms from the latter date from early childhood or shortly subsequent to the attainment of puberty.

Of the congenital cases Englisch believes that in some individuals the complete development of the prostate is halted, and though perhaps normal at birth, their *Anlage* does not permit of mature development. According to him, this type does not suffer from symptoms, as a rule, until the time of puberty or shortly thereafter, when the hypoplasia of the prostate first makes itself known by causing obstructive symptoms at the vesical orifice, the most significant of which is enuresis. Young has also seen instances of similar obstruction at the vesical outlet in mere children, and a few similar cases are to be found in the literature, such as those reported by Gourdon, Duparque, Vidal, and Voilemier. The conception that this pathological-anatomical condition may be responsible for cases of congenital hydronephrosis, exaggerated types of which are occasionally seen in infants, considerably broadens the subject. There are also cases found in adult life whose histories of difficult micturition date back to earliest remembrance. It should be borne in mind that the degree or amount of obstruction, when of congenital origin, may vary, as may also the age at which symptoms become obvious. For the sake of argument, a comparison may be drawn with the congenital stenosis of the pylorus in adults. Landerer, in 1879, described such a condition in a man forty-five years old, where after years of stomach trouble, there was found at post mortem examination an enormously dilated stomach, without structural change or thickening at the pylorus, although the outlet was so small as to measure only two mm. in diameter. Landerer collected nine other such cases between the ages of forty-five and sixty-three years. Maier added thirty-one of similar type and Lockwood a further one. The latter author says that in these cases we are not dealing with the well known congenital pyloric stenosis of infants, where muscular hypertrophy exists, but simply with a pylorus normal in every respect, except that it is infantile in size. Hence it is not until bodily growth is estab-

lished, that obstructive symptoms are presented. Some of the writers on this condition report the occurrence of a mild fibrosis at the orifice, and it may be deemed that such might be expected after a life-long struggle. This is an interesting corollary, as the function of either sphincter, pyloric or vesical, closely simulates that of the other, and the conditions may be considered to be closely allied.

Of the acquired cases let it be said that they increase in the frequency of their occurrence up to sixty years of age, and from then on become progressively rarer as age advances and "man begins to look through the silvered rings of the arcus senilis." By far the greater proportion of the cases of bar formation belong to the acquired group, and so it should be that when we observe such symptoms of prostatism in a man of middle age, apparently advanced beyond his years, that we should suspect trouble other than that with which hypertrophy of the prostate has been associated and endeavor to demonstrate the presence of *prostatisme sans prostate*.

*Micturition.* With the onset of obstructive changes at the vesical orifice, the power of the bladder musculature to cause complete emptying of the cavity is of necessity augmented. Aided by the abdominal muscles and the diaphragm, the patient is enabled to accomplish this act for a while, and experiences as the only symptom a slight delay and difficulty in starting the stream. Normally, as micturition begins, the internal orifice dilates, and the neck of the bladder becomes funnel shaped. The contracture of the bladder begins with the longitudinal fibres and the circular ones that surround its cavity, while at the neck everything is relaxed. When obstruction arises at the posterior lip of the vesical orifice, associated with thickening and sclerosis, the longitudinal fibres can no longer shorten the neck and depress the uvula vesicae situated at the apex of the trigone, and the prostatic portion of the urethra cannot dilate and form a single cavity with the bladder as normally it should. This occasions delay and difficulty at the outset of micturition, and is one of the early symptoms of beginning obstruction. The efforts that later are necessary to overcome the dense and rigid orifice tend also to cause changes in the bladder wall, and even though hypertrophy of the bladder musculature sets in, it does not appear able to keep pace with the problem before it. Ultimately there is observed a diminution in the force of the urinary stream, its usual trajectory is decreased, its size lessened, and considerable straining is necessary to accomplish urination. The termination of the act deteriorates into an unappreciable dribble, and the strong voluntary muscle that normally expels the last few portions of urine is unable to do so, as it does not receive the urine into its grasp in the prostatic urethra with sufficient regularity and in sufficient quantities.

*Pain.* Pain is not a troublesome symptom, though rarely is a patient entirely immune from some of its manifestations during the course of his trouble. In the early cases a burning irritability at the neck of the bladder, either before or after micturition, is often very distressing. This is liable to vary, owing either to the character or to the amount of the residual urine, and may disappear entirely in time.



Pains referred to the lumbar region, the hips, perineum, or thighs, are present in about fifty per cent. of the cases.

**Residual urine.** With the increase of the obstruction to the complete emptying of the bladder, sooner or later occur evidences of failure of the musculature to perform its duty, resulting in the retention of a small portion of the urine. It may be only a few c. c., but it collects in the lowest portion of the bladder, just posterior to the interureteric fold, and here it lies uninfluenced by the various postures normally assumed by the body. The presence of ever so small an amount is a constant invitation for its increase. At the end of each act of micturition great pressure is brought to bear upon this residual urine, with the result that this portion of the bladder wall yields in time and is pushed out into a pouch, or *bas fond*, as the French speak of it. The reasons for this yielding may be manifold; undoubtedly the constant presence of an accumulation of urine here is detrimental to the tonicity of the bladder muscle, moreover this portion is appreciably thinner than the trigone with its stronger musculature, and when further handicapped by the abnormal elevation and rigidity of the lower lip of the vesical outlet, it is placed in a position of peculiar disadvantage. Furthermore, the frequent observation of the occurrence of herniated diverticula of this portion of the bladder cavity suggests either the existence of a predisposition to weakness, or subjection to greater strain at this point. At first the amount of residual urine bears but little relation to the aggravation of symptoms. The young man of today seeks medical advice earlier than heretofore, so that the majority present the accumulation of only a small amount of residual urine when first seen, and the greater number carry less than one hundred c. c. Young cites nine cases where the residual was over 100 c. c., the greatest being 460 c. c.

When the bar is complicated by other vesical abnormalities, such as diverticula, the amount of residual urine may be greatly increased early in the

of the catheter, once daily or at bedtime, rapidly become addicted to it and practically never give up the practice, and the chances are that a number become dependent upon it from slovenliness and indifference rather than from absolute necessity.

It is to be borne in mind that of all the symptoms and signs, this one, the presence of a residual urine, is the most important and the most imperative to control. From it nearly all the subjective symptoms arise, and to it alone are all the dangers due. Be-

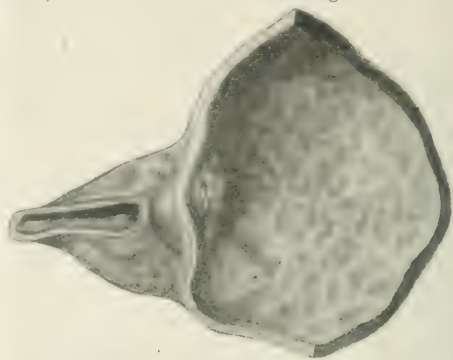


FIG. 2.—Contracture of the vesical orifice. Median bar formation. (Chetwood, modified.)

side its propensity toward self perpetuation and increase, there are the constant dangers of the infection of this ideal culture medium, and the continuous increased work thrown upon the kidneys in having to secrete against such a back pressure. Moreover, the answer is clearer in this than in any other problem in surgery, for if once drainage has been established, and the bladder is again able to empty itself completely, an entire alleviation of all symptoms ensues.

**Infection.** The association of a Neisserian infection as an etiological factor is hard to confirm. In some cases the transition from an acute urethritis to symptoms of obstruction appears to be very clear from the history, but whether it is coincidence playing a part, or the undue attention paid to these organs at such a time, it remains unwise to draw any direct conclusions as to an intimate relation of the one condition to the other. That a previous infectious prostatitis does lead to the development of changes which may be obstructive in character, will be shown when studying the pathology, and this is as far as it is safe to go in holding a previous urethritis responsible. That identically similar changes and symptoms may arise in persons who have never suffered from a Neisserian infection is without question.

As long as a man carries residual urine, no matter how trivial the amount, he is constantly subjected to the possibility of this becoming infected. The possibility practically becomes a certainty if the regular use of the catheter is instituted, as is so frequently done, in order to empty the bladder completely before retiring and so insure a night's rest. It is a question if ever a catheter life has been instituted without infecting, sooner or later, the bladder cavity. As can be easily appreciated, everything is conducive



condition, according to the capacity and contractility of such formations. It is rare that complete obstruction occurs, but retention to the degree of incontinence of overflow is occasionally observed in long standing cases, and is most frequently seen in elderly men. The patients who start the regular use

to the perpetuation of an infection once it is started, for with such an ideal culture medium constantly renewed and kept at body temperature, nothing more could be asked. This condition known as cystitis is possibly a misnomer, as the mucous membrane of

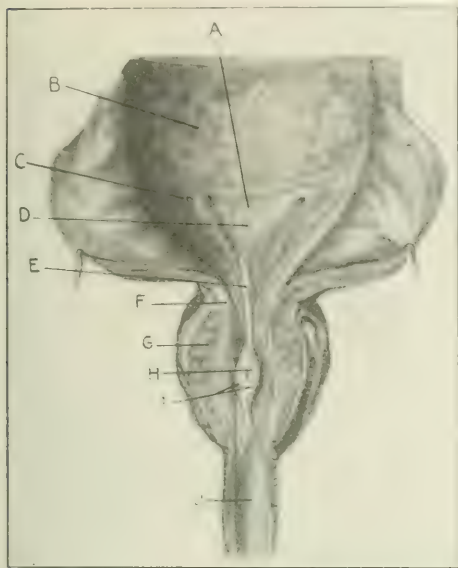


FIG. 3.—Normal anatomy of the vesical orifice (Spencer). A, interureteric fold; B, bladder wall; C, ureteral orifice; D, trigone; E, uvula vesicae; F, internal vesical orifice; G, prostate; H, verumontanum; I, ejaculatory ducts; J, urethra.

the bladder is peculiarly resistant to such invasion, and may harbor an infected urine for some time without itself undergoing inflammatory changes.

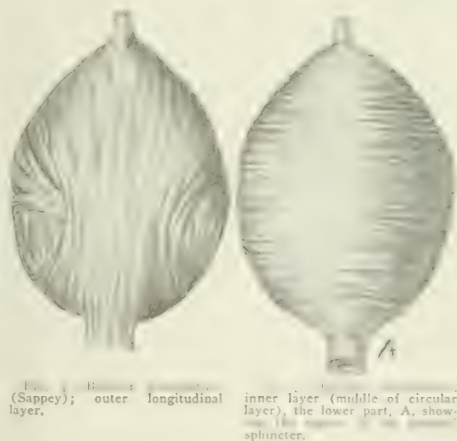
Such infection, however, plays other roles. By causing the urine to be more irritating it materially increases the discomfort of the patient by its action upon the already irritated neck of the bladder, and micturition becomes urgent, more frequent, and painful to an extreme. This marked urgency will render control impossible, and a pseudoincontinence ensues. The second danger that such infected residual urine creates, is the possibility of contiguous or metastatic infections elsewhere in the body, especially of an ascending infection to the kidneys. With an increasing amount constantly in the bladder cavity, the expulsive action of the ureteral musculature is continually overtaxed. The function of the ureteral sphincter is hampered, and dilatation of the ureters follows. It has been proved that such infection may ascend in one of three ways to the kidney, by means of the urinary stream, by the blood channels, or by the lymphatics, and whichever route it takes, the end results are the same, i. e., a destructive process in the kidney and its pelvis, with subsequent derangement of the renal function.

**Frequency.** Bearing in mind the obstructive nature of the changes at the vesical orifice which have in turn given rise to retention of some of the urine after each micturition, we can easily realize

why frequency of micturition is an early symptom. The greater part of the mucous membrane of the normal bladder is comparatively insensitive, and will tolerate a great deal of irritation, as exemplified in cases of calculus of the bladder, without the desire to micturate being excited; but the mucous membrane about the vesical orifice is extremely sensitive, and any unusual irritation at this point will immediately cause the bladder to contract. The muscular efforts associated with urination in attempting to overcome the beginning obstruction cannot but occasion a congestion of the orifice, and when in some cases, as has been already shown, a chronic infection is simultaneously present, the mere contact of the urine is sufficient to cause an increased frequency in the calls to empty the bladder.

At first, when the irritation is trifling, the patient may not even notice that he has to pass his water a few times oftener by day than has been his custom, but when he finds that he has to rise once during the night, his attention is immediately drawn to his condition. At first the nocturnal frequency is present only at intervals, and can often be accounted for by indiscretions in food or drink; but by degrees he finds that fatigue, constipation, or anything that increases the pelvic congestion, will cause the same result, until rarely a night passes without his sleep being disturbed. There are some people with whom this habit of arising once every night to void urine has been a lifelong custom, and such a history has been especially evident in cases, already spoken of, which may be considered to have a congenital origin for the obstruction.

While this frequency is developing, probably the amount of residual urine is likewise increasing, and as it increases so does the absolute necessity of frequent micturition become imperative. If a bladder which previously held 400 c. c. and had to be emptied every six hours, begins to retain 100 c. c. at each urination as residual urine, it becomes self



evident that it will have to be emptied at intervals of every four and a half hours now, and hence as the residual increases, the periods between urination become less.

*Urinal insufficiency.* It is often the failure of the renal functional activity that brings the patient under the care of his physician, and only after questioning does the patient appreciate that the nocturnal frequency and occasional periods of urgent urination were danger signals and should have been recognized as warnings of trouble ahead if ignored. And to the physician those signals should be interpreted with but one meaning—beware of renal insufficiency! The occurrence of persistent and unexplainable headaches, transient edemas of the eyelids and extremities, increased arterial tension, alterations in vision, or digestive disturbances may all lead us to suspect chronic interstitial changes in the kidneys, and demand, when the differential diagnosis is undertaken, the exclusion of this type of vesical obstruction. Unless some undue strain is suddenly imposed, acute uremia may be said rarely to occur, but many men, owing to the very gradual development of their symptoms, are found to be in a state of what might be diagnosed as chronic uremia.

The failure of the kidneys to perform their duty properly is, in the absence of infection, a purely mechanical problem. As the result of obstruction in the lower urinary tract, a continued high pressure above such an obstruction is created. This pressure is augmented by the action of the abdominal muscles and the diaphragm at each urination, and as a result dilatation of the ureters, varying grades of hydronephrosis, and later actual atrophy of the parenchyma of the kidney may follow. If the residual urine is infected, greater dangers are added, all too well known to occupy further space here.

Heitz-Boyer has shown experimentally that in chronic interstitial nephritis, such as one finds in these cases of urinary obstruction, it is the "concentrating power" of the kidney, as he terms it, that suffers. He demonstrated that the kidney has a coefficient of excretory power above which it cannot concentrate the excretion of any given substance. He found, for instance, that no matter how much urea may be known to be circulating in the blood stream, a normal kidney can only concentrate the excretion of any given substance. He found, for instance, that no matter how much urea may be known to be circulating in the blood stream, a normal kidney can only concentrate the excretion of this to 4.5 per cent., or forty-five grams to the litre of urine. It is this power, he states, that is decreased or lost when nephritis is present, and hence if the individual has lost half of his concentrating faculty, in order to rid the body of forty-five grams of urea he will need two litres, where formerly one litre would have sufficed, for now he can eliminate urea in a concentration of but 22.5 grams to the litre. This all tallies so accurately with the observations of urologists who have "forced water" upon these chronic uremic patients in order to rid them of their symptoms, that it should be borne in mind when treatment is instituted.

*Calculus.* The continual presence of an infected pool of urine is a constant invitation to the precipitation of urinary salts. The symptoms of bar formation are fairly often complicated with those of vesical calculus, where the stone has formed secondarily to the presence of the residual urine.

In Young's statistical study of over 100 cases this complication was present eleven times. A word of caution should be given in cases of vesical calculus, that the cause of such stone formation should not be overlooked. Cases of recurrent calculus formation, in the absence of kidney derangement, should be carefully studied for the demonstration of a small residual urine and the presence of bar formation, for the diagnosis of vesical calculus is so easy, and its cure at times so spectacular, that the actual cause may be entirely overlooked, only to have the patient return in a short space of time with recurrence of the entire original complaint.

Derangements in the sexual sphere are at times recorded. They do not constitute a marked symptom, and when present generally consist of a depreciation of the normal appetite and vigor. On the other hand, however, symptoms indicative of the added muscular efforts expended during micturition are not at all infrequently present, such as hernia of recent development, hemorrhoids, or even prolapsus ani.

(To be continued.)

## THE BOLLINGER CASE.\*

*Its Clinical, Ethical, and Moral Aspects,*

By H. J. HASELDEN, M.D.,  
Chicago.

Every physician during his practice meets, time and again, the same question I was confronted with in the Bollinger case.

The baby was born to Allen and Anna Bollinger, Friday, November 12, 1915, at four a. m.

*Previous history.* Mother, Irish; father, German. Married ten years. Both healthy people from childhood; of good habits and no specific taints. Three children were previously born to the couple, all mentally and physically perfect. The first child was born three years after marriage. One year ago the mother had typhoid fever and about six weeks after her temperature became normal, conception took place. She was apparently normal all through the period of gestation. As pregnancy advanced she became stronger; typhoid fever, however, was a probable factor in the maldevelopment of the child.

The mother entered the hospital, Thursday, November 11, 1915, at nine p. m. Labor was normal in every respect. The mother had three labor pains and the baby arrived with the last pain. The baby looked blue and carried the tint all through its short period of life. It was not a pink, full blooded baby that would invite attention, but a thin, deformed little one, from which the uninitiated would turn away. Dr. Clemens Serviss, who attended the mother, stated that it was the easiest confinement she had ever seen. The presentation was normal.

Shortly after the birth, Dr. C. Serviss, with the baby's father, came to me for surgical advice. I examined the child and found no ear on the right side of the head and no auditory canal on the right side. The eye was lustreless and film covered.

\*Written expressly for the New York Medical Journal.



The lid of the right eye opened widely, while the left one drooped and was constantly closed. Pupillary reaction was remarkably slow; even slower in the left than in the right. From the examination of the eye great changes from the normal were believed to exist in the optic nerve and other structures of the eye.

Both shoulders were elevated; the head was set directly on the shoulders. The skin of the right shoulder was fastened to the mastoid region. The face was markedly drawn to the right. The chest had a caved in appearance, owing to the deformity of the ribs. Upon further examination a partially closed prepuce and an imperforate anus were found.

The second day, an attempt was made to nourish the baby. After modified milk was given, very carefully with a medicine dropper, there was an immediate regurgitation through the nose, which showed the involvement of the nerves controlling deglutition. Frequently from the time of birth a purulent discharge came from the nasopharynx (as much as two ounces a day).

A bismuth meal was given and several x ray pictures were taken, which showed a somewhat dilated stomach. Several pictures, taken at varying intervals, showed an otherwise nearly normal gastrointestinal canal, aside from a valvelike formation in the lower portion of the colon, which required thirty-six hours before the bismuth passed it. Up to this point it had traveled with a reasonable degree of rapidity. Only one x ray plate is shown with this article, which demonstrates the practical absence of neck. The elevated shoulders can be faintly detected. Food was still held back by valvelike formation of membrane; a number of pictures were taken at varying intervals after its ingestion. On the fourth and fifth day the baby continued to grow weaker, and on the fifth it died.

The question of operation arose. Surgically it would have been a comparatively simple matter to make an anal opening. Life might have been prolonged, but for what should we have saved it?



FIG.—X ray of Bollinger baby six hours after ingestion of bismuth meal.

An anesthetic can readily be administered to a normal infant with a certain degree of safety. I always hesitate to give an anesthetic, however, to a partially paralyzed baby; the outcome may be complete paralysis.

STATEMENT OF DOCTOR RHEINHART, CORONER'S PHYSICIAN, ON  
BABY BOLLINGER.

The first physical examination showed a compactness only of the cervical vertebrae and curvature of the dorsal region only slightly toward the left. The bones in the legs and arms appeared to be prematurely ossified. The skull showed a circumference measurement from the parietal around the occiput of thirteen and one half inches.

The anterior fontanelle measured one inch by one inch. The posterior fontanelle was entirely closed. There was a false fontanelle one inch anterior to the posterior fontanelle. The bones of the head were quite ossified, pretty hard for a newborn baby. The skin of the shoulder on the right side was immediately attached to the side of the head, where there were two pedicles of skin in lieu of the ear. The skin of the shoulder extended directly to the mastoid. The head was crouched upon the trunk; the shoulders were in line with the ears. There was a linear pigmentation one inch in length over the perineum. No opening for anus. The genital organs were a little large; the prepuce was slightly closed.

Upon opening the body I found the bladder distended up to the umbilicus, containing a large quantity of urine, which on compression, was forced through the urethra, showing that there was no obstruction in the penis. The colon had four flexures. The ascending colon had a flexure into the transverse, the transverse had a flexure in the centre, then formed a Z down to the perineum, posterior to the bladder, where it had a blind attachment. This bowel was distended, admitting on section two fingers.

The small intestines were still in a fetal state. Nothing had ever passed into them. The stomach was slightly dilated, but was empty. The liver was congested, but normal in size. In place of the right kidney there was an accessory lobe of the liver. There was no kidney on the right side. On the left side at the brim of the pelvis there was a double kidney with one ureter. The left testicle had descended and there was no cord or testicle on the right side. The spleen was normal in size; nothing abnormal in the structure. The right lung was collapsed. The left lung was inflated and presented six areas of subpleural hemorrhage about the size of a large pin head. The heart sac contained a quantity of straw colored fluid. The parietal pericardium was markedly injected; there were no hemorrhages. Otherwise the heart was normal.

The brain membranes were excessive in thickness and covering. Between the dura and the brain there was considerable fluid. The pia bloodvessels were markedly injected. On the left side in the fissure of Sylvius, between the frontal and temporal bones, there was an area of hemorrhage underneath the pia, which measured one inch by one inch and a half, with no change in the brain tissue beneath. Otherwise macroscopically the brain appeared to be normal.

In my opinion death was due to autointoxication from intestinal obstruction, following congenital malformation. In addition, I found slight trace of the external sphincter muscle, and the internal sphincter muscle was rudimentary.

Doctor Zell, a pathologist, examined the baby's brain after it was removed at the post mortem examination. It was very soft, which undoubtedly was due to the degeneration of the nerve tissue. If so, fatty degeneration had set in and the child would possibly have grown up a mental defective.

After I was informed of the findings of the Coroner's physician, Doctor Rheinhardt, as well as those of the pathologist, Doctor Zell, I was doubly sure I was in the right. Fifteen other physicians and surgeons of reputable standing, who saw the baby alive, confirmed my decision. I did not kill the baby; nature killed him. Nature saw her terrible mistake and remedied it.

If the child had lived, I believe it would have been physically defective and mentally starved. It

could do no positive good in the world. That the father and mother would care for it, is true, but the father and mother have three other children, sound and healthy, to whom they owe care and attention. If the parents died early, what became of the misfit then? It would go to some institution and be herded in with the rest—a frightful existence—until death should claim it. I have been to our institutions of this kind for defectives and I know. Had I not seen these masses of unfortunates in their surroundings I might feel differently, but I have seen them and what constitutes an existence for them I deny to be life.

The practice of the medical profession is usually to save life, wherever possible. There are thousands of cases, however, where children of this kind have been allowed quietly to die, and this knowledge has been confined entirely to the immediate family and the attending physician.

Chicago does well to ponder. It is a city full of the mentally and physically abnormal. They produce crime and immorality and disease. They propagate profusely and therein lies the tremendous danger. This is no time to grow sentimental over the misfits of the world. Europe, in a few years, will be crawling with defectives. The abnormal and misfits will be left to repopulate. In cases similar to the Bollinger case I believe that Nature should be allowed to correct her mistakes by a policy of non-interference. They criticise me here in Chicago, where there are a thousand abortions every week and no effective measures have been taken to stop this dreadful practice.

I understand very well that this maternity case as a maternity case has comparatively little value to the medical world. The real point at issue is not the medical aspect as much as the question of ethics involved. When the baby first was born and its striking deformities were noticed, belief followed quickly that the child might have its life extended. There were already several healthy children in the family, bright, active mentally, and physically well developed. This child, extremely deformed and in all probability ever defective, with the prospect of being a social outcast because of its lack of control of gas and stool, would be a blight upon the entire family.

Through the hospital employees, word had been whispered about the child's condition. Rumors could have been misunderstood; so contrary to the teachings of my great leader and wonderful friend, Dr. Christian Fenger, I decided to make the case public. I called for a reporter on one of the leading papers; one whom I had known for a great many years—a conscientious and broad minded woman—knowing fully the story would travel from post to post. The first public statement of the case was clear cut and sensible, but it brought up the whole question of the moral and legal right of physicians and involved a great religious question, and therein lies the gist of an entire controversy over race success and race failure.

The main point at issue is not the medical or surgical aspect of the case, but the ethics. Have we or have we not the right to withhold aid in cases of this character, a policy of inaction rather than of action?

## THE PUERPERIUM.

*Some Common Mistakes in Its Conduct.*

By J. O. ARNOLD, M.D.,

Philadelphia,

Assistant Obstetrician, Samaritan Hospital.

One whose obstetric work is chiefly in association with that of other physicians, is apt to see many things that are not strictly orthodox. By no means all of the departures from the time honored and accepted practices, however, are bad. I should be far from censuring a physician for having the courage to do a thing differently from the prescribed and accepted methods, if he has reason and satisfactory results to support his action. In fact, what I shall have to say is prompted more by the mistakes I have seen in those who have adhered blindly to prevailing customs and teachings, than by any serious lapses in the application of these teachings. Many of us, I fear, can give no other reason for the use of certain remedies, or adherence to certain methods in practice, than that such is the common teaching. This is what the books say to do, and since everybody else does it this way, it must be right. This criticism is by no means restricted to the busy men in general practice. Many textbooks and teachers "say the same words and think the same thoughts their fathers have thought." A direct line of heredity may often be seen running through successive generations of textbooks, just as certain physical features run from generation to generation of the same family. Not only is this true of textbooks, but it is seen in schools, communities, and countries. We may often trace a certain line of practice to definite geographical boundaries, or a theory of disease to the protégés of some distinguished teacher.

The particular theory or method in question may long since have been overthrown or abandoned elsewhere, but it clings like a native perennial in the land of its origin or early adoption. I recall an amusing incident some two years ago in Liverpool, that shows how the influence of a great man may continue to control his followers long after his methods have become obsolete in the natural course of progress.

I spent a very pleasant and profitable day with the venerable professor of obstetrics and gynecology in the Liverpool university. There were many interesting obstetric cases, and a number of operations. One thing especially attracted my attention in the surgical technic. After perfectly clean abdominal sections—such, for instance, as for retrorotation of the uterus—a glass drainage tube was always used. When I jokingly questioned the operator on his reasons for erecting such beautiful English smoke stacks where there was so little probability of fire, he replied: "You do well to ask me this question, for I am proud of the fact that as a young man I received my surgical training as an assistant to the great Sir Joseph Lister. Lister taught us to use these drainage tubes, and I have never felt quite safe in abandoning the practice." Here were the students of a modern university being taught a needless or harmful technic, not from reason but from reverence for a great man of a former generation. I know another doctor whose therapeutic

touchstone for 365 days in the year, almost always is a certain rather uncommon and generally conceded to be inert drug, the supposed virtues of which he once chanced to hear extolled by the learned Bartholow. These are but typical of a class of physicians, who, without having made for themselves the tests necessary to establish or condemn certain methods of treatment, go on in the use of such methods until they actually fear to break the charm that seems to go with their drugs or drainage tubes. Like the men in the two instances cited, they are often greatly beloved teachers, and many of their students naturally go out into their medical careers and follow certain lines of practice for no other reason than that "this is what Professor So-and-So always did and he was very successful," not stopping to think that Professor So-and-So would have been just as successful all these years as the progressive men around him have been, without the fetish of the Listerian smoke stack or the Bartholowian touchstone.

Nowhere, perhaps, is this tendency blindly to follow precedent and custom more prevalent than in the practice of obstetrics. The very nature of the work largely favors such a course. Especially is this true in the conduct of the puerperium. I am sure I have nothing new to offer in the way of treatment for the puerperal woman, and my only excuse for offering anything on the subject is to try to counteract, to some extent at least, a very natural tendency to drift into routine methods. It is trite but true, that here, as elsewhere, it is the patient that must be treated and not the condition. We are prone to forget that the patient retains her individuality in the puerperium, just as much as she did in her pregnancy and labor. Few physicians today fail to individualize the women who come to them for care in pregnancy. They advise and prescribe for each one according to her own peculiar needs, and in the conduct of labor from the very nature of things, there is no way to escape this individual attention; but when it comes to the puerperium, our attitude toward the case often seems to change entirely. I suppose there are reasonable explanations as to why this is so. With the completion of the third stage of labor and the sense of relief that is apt to be experienced by all hands after long hours of watchful if not toilsome waiting, there is a very natural tendency on the part of the doctor to feel that his responsibility is largely at an end, and that he may now give a few routine orders, or turn the whole matter over to the nurse and let it go at that. And it is a notorious fact that in a large percentage of cases it will go well, at least so far as immediate results and the general appearances would indicate. In this fact lies much of the danger. Not every case will go well without individual attention in accordance with individual needs. It is no longer enough that the lying-in woman shall escape serious morbidity or death. There was a time perhaps when this was the *summum bonum* of obstetric practice, but now we are expected, not only to get our patients well, but to get them well more completely than in the past. This can only be done by a careful study of the conditions and needs of each woman, and it is chiefly to emphasize the importance of this individual attention, that I have chosen to write on what I be-



have to be some of the more common errors in this direction.

I shall begin with one of the first routine acts in the puerperium—the application of the abdominal binder. It may be obstetrically sacrilegious to say it, but I certainly believe it is a mistake to suppose that a “high stomach” may be avoided, post partum hemorrhage prevented, or the process of involution favored, by boxing up the uterus in abdominal pads placed “exactly so” and held there by a tightly fitting abdominal binder, which pads and binder, fortunately for the patient, remain “exactly so” for only a very brief length of time. The latter fact in itself is sufficient proof of the uselessness of the practice. If a binder is used at all, let it be a simple one, that for a few hours may conduce to the mental and perhaps physical comfort of the patient, and at the same time not prevent the physician or nurse from easily observing the condition of the uterus. There have been a number of harmful effects charged to this indefensible pad and binder tradition, but there is enough to condemn it without admitting these. The false feeling of security that the practice engenders, the prevention of that very desirable oversight of the uterus in the first few hours of the puerperium, and the entire uselessness of the procedure are sufficient reasons for its discontinuance.

Second, it is a mistake to attempt to keep every puerperal woman flat on her back for a great length of time. Of course there are exceptional cases where such treatment may be necessary, and it may be advisable to have the woman remain quietly on her back for a few hours post partum, but in the great majority of cases, routine orders to keep the patient on her back have no other justification than the physician's fear to depart from common practice.

In the first place, such orders are seldom obeyed, and in all but the exceptional cases it would be imposing an unnecessary hardship, or doing the patient a positive injury if they were obeyed. To permit a woman to move from side to side, to be raised up in bed when necessary, and to have the greatest freedom consistent with her strength, will not only add greatly to her comfort, but will facilitate drainage, aid the pelvic circulation, and favor involution.

Third, another rather prevalent custom that seldom has any reasonable argument in its favor, is that of starving the puerperal woman for the first three or four days. I have often asked those who still adhere to this tradition to give me their reasons. Thus far, I have not yet received a reply that I should consider worthy of discussion. For years it has been my practice to feed my puerperal patients in accordance with their needs and desires, even to the extent of a full meal within twenty-four hours, or as soon as the appetite demands it; and I have never seen any ill effects or any reason to revert to the old starvation diet. On the contrary, I am satisfied that this judicious liberality in food, and in post partum activity, has given better lactation and an earlier and more satisfactory convalescence.

Fourth, it is usually if not always a mistake to suppose that an elevation of one or more degrees of temperature without other apparent cause, is gastrointestinal in origin. What a host of little sins

of omission and commission are covered by this much used gastrointestinal cloak! As an excuse it is almost as much overworked as the old “catching cold” explanation used to be. Nor do those who still hold to this self excusing view prove their contention by citing many cases of moderately elevated temperature that clear up under active catharsis. A mild degree of infection or of sapremia, as such a temperature practically always indicates, may often be favorably influenced by the increased elimination, the stimulated pelvic circulation, and the facilitated drainage produced directly or indirectly by a purgative. The treatment may be very good, but this does not explain the cause and should not console the obstetrician into the belief that he is not to blame, and thus prevent his making a closer and more critical study of his technic and of the conditions of the birth canal, with a view to preventing such infection in the future. I can see no reasonable ground for believing that such temperatures are due to a day's constipation. Just why the failure to have a bowel action for a day or two should suddenly begin to produce elevation of temperature in a woman whose normal habit all her life perhaps, has been one of constipation, is something I have not yet seen explained by those who profess to believe in it. My own treatment in such cases (and we all have them now and then), is to give whatever attention is necessary to the bowels; that, of course, is important; but more important is to increase the patient's resistance with the stimulation of good food; to quicken her pelvic circulation by allowing her a reasonable amount of activity; and to favor better uterine drainage by elevating the head of the bed (or having the patient sit up) and to stimulate uterine contractions both manually and with drugs. And this leads me to note that the fifth rather frequent mistake I have seen is that of thinking that a post partum high temperature such as this, which does not readily clear up with a purgative, or that is accompanied by a foul discharge and some tenderness and subinvolution of the uterus, is an indication for intrauterine douches, curettage, or other such questionable interference. More than once have I seen this mistake lead to prolonged and serious illness, and even to the death of the patient. A safe rule in such cases is to keep out of the uterus absolutely, even though one may suspect or believe that there are retained secundines. Facilitate drainage as I have just indicated, by elevating the head of the bed, and give one or more doses of pituitary extract or of ergot, or both. These drugs, with a little massage, will often contract down a boggy, subinvolved uterus; force out old clots and sapremia producing debris, and thus readily and safely lower a bothersome temperature.

Sixth, another traditional custom still widely prevalent in general practice, and strange as it may seem, still taught in some textbooks and medical schools, is that of attempting to dry up the lactating breasts by various internal medicines and applications. When for any reason, such as the death of the child, there is no demand for lactation in the puerperium, or when at a later period, as at weaning time, it becomes necessary to take the child from breasts that are in full function, the question of what to do to dry up the milk, is often an urgent

and important one. It seems to be very difficult, both for the profession and the laity to get away from the old idea that some more or less complicated or specific treatment must be employed for this purpose.

Generation after generation of textbooks and obstetric teachers have so instilled this ancient delusion into the minds of the profession at large, that we cannot wonder that many physicians still cling to it. Some years ago I had occasion to make a little study of this question. I found at that time that nine out of twelve modern works on obstetrics recommended for drying up the milk, a varied and extensive line of treatment, including potassium iodide, potassium acetate, camphor, chloral, ergot, atropine or belladonna in some form, either internally or externally or both, electricity, lead water and laudanum, all kinds of salves and poultices, with saline purges, restriction of diet, massage, breast pumps, and tight binders, any and all of which have long since been repeatedly proved not only to be unnecessary but absolutely useless.

With so many of the leaders in the profession still giving out these antiquated ideas on the subject, it is little wonder that each family doctor has his own pet method, or is obliged to vie with the laity in the number, if not the absurdity of the remedies recommended. The one simple and invariably successful method, of course, is to let the breasts absolutely and severely alone. This has been demonstrated so often and so conclusively now, that it seems superfluous to speak of it again. Yet it may be worth while very briefly to refer to a few practical points that may make or mar the success of the treatment.

Letting the breasts alone means, of course, the prevention of all local stimulation, and this usually means that all arm movements that disturb the mammary glands, must be for a time prohibited; for instance, the attempts of the patient to comb her hair. I used to make the mistake of torturing these women with a tight breast binder, but this also is wholly unnecessary, and gives no better results than a simple supporting sling. The breasts, when thus let alone, will of course overfill and often become quite painful for a day or two, but they will do this under any treatment unless the milk is drawn, and it is better to relieve the pain with a narcotic than to use the breast pump. Mammary abscess need not be feared unless surgical cleanliness is grossly neglected. I have used nothing but this let alone treatment for the past ten years and have never had an abscess and never a failure to get prompt and satisfactory results, except where the patient or nurse was too skeptical to obey orders. It seems reasonable to suppose that the restriction of liquid foods would have a good effect, but I have not found it so. Nor, let me say in passing, have I found that the quantity and quality of foods, liquids, and stimulants ordinarily used to increase the flow of milk, have half as much effect for this purpose as local stimulation by massage, heat, and systematic nursing.

Seventh and finally, there is the mistake so commonly made of having a routine time for getting the patient up after confinement. The question as to when a woman shall leave the lying-in bed is often

determined more by the age of the baby than by the condition of the mother; by the number of the day rather than by the degree of involution. There is a wide range of practice in this respect, from those who regularly get their women up on the third or fourth day, to the more conservative men who seldom allow a patient out of bed under two weeks. The point I make is, that it is a mistake to fix upon any day, early or late, as a routine time for getting puerperal patients up. They are certainly not all alike; why should they be made to conform to a common rule? Careful examination will show that one woman is as far advanced in the process of restoration on the sixth day as another equally well appearing woman is on the twelfth day. It would be injustice to both women to make them conform, for instance, to a "ninth day" rule. Lack of space forbids discussion of the several factors that determine whether the puerperium shall be long or short. This much I will say, however, and then I am through. It has been proved beyond any question, that the mental and physical energies, in many cases, can be so conserved, by a more liberal use of anesthesia in labor, that the convalescence and time of getting up will be greatly favored. I know that in my own experience, which is not different from that of many others, the judicious use in the first stage of labor of the morphine scopolamine combination, for instance, and of chloroform properly administered in the second stage, has so frequently shown a favorable influence in the puerperium, that for this reason alone, I should feel amply justified in the use of these drugs.

But even these, or any other drugs, or anesthetics, must not be used as a routine. I close my paper, therefore, as I began, with a plea for the individualizing of the puerperal woman, and for a more rational conduct of the puerperium.

2503 NORTH EIGHTEENTH STREET.

## DUODENAL ULCER.\*

BY SAMUEL F. MULLINS, M. D.,

Danbury, Conn.,

Assistant Surgeon, Danbury Hospital.

In presenting for consideration a paper on duodenal ulcer, the writer realizes the futility of an attempt to cover the entire subject in the space he feels he should consume; he will therefore be as brief as is consistent, and deal more particularly with that form of ulcer usually designated as the chronic type. Furthermore he lays claim to nothing in the way of originality and hopes only to provoke a discussion by which each of us may learn from experience of others.

Historically, duodenal ulcer is an old subject, but viewed from the aspect of present day diagnosis and treatment, is comparatively recent. For example, the first record of duodenal ulcer was in 1817, when Mr. Travers, of London, reported two cases in which death occurred from peritonitis, which was found upon post mortem examination to have resulted from perforating duodenal ulcer.

\*Read before the Fairfield County Medical Society, Shelton, Conn., October 2, 1906.

Many abdominal cases were reported during the following half century, but it was not until 1887 that a diagnosis of the condition was made from the symptoms, it later being proved correct by autopsy findings. In 1893, the surgical treatment of duodenal ulcer was inaugurated by A. Codivilla and the following year, 1894, saw the first successful operation for perforating ulcer. From that time on the diagnosis and treatment of ulcer have made strides probably as great as, if not greater than any other branch of surgery.

The question is often asked, What causes ulcer? Many theories have been presented, for and against which there have been as many explanations. Among them are that of toxemia, as in uremic poisoning; trauma, meaning injurious effects upon the mucous membrane from irritants in the gastric juice; thrombosis of small vessels, causing infarctions which later undergo molecular destruction, etc.

With the increase of knowledge of the role played in disease by microorganisms, it is not surprising that the infectious origin of ulcer should be suggested, in support of which the following logical arguments are put forth: In duodenal ulcer following extensive burns of the body, it was found that most of the burns were of the second and third degree and harbored infectious material which could be carried to other parts of the body; in ulcer during uremic seizures, it was found that the uremia was in those cases associated with an enterocolitis; in tuberculous ulcer, which is rarely found so high up in the intestinal tract, there was usually an accompanying tuberculous focus elsewhere in the body. It is a noteworthy fact that a history of previous infectious disease, such as tonsillitis, cellulitis, pneumonia, typhoid fever, etc., can frequently be obtained. Experimentally at the Mayo Clinic it has been repeatedly demonstrated that an emulsion of the freshly excised macerated ulcer injected into the ear of a rabbit would in due time produce ulcer in the stomach and upper intestinal tract.

Whether there is a selective tendency on the part of certain organisms for the alimentary canal is not ventured, but with the foregoing facts at hand it would seem at least plausible to entertain the possibility of secondary infection from a primary focus, and the frequency of involvement of the duodenum may be explained by its normal physiological function which leaves it liable to irritation of one form or another, thereby preparing a site for the cultivation of any incident infection.

The symptom complex of duodenal ulcer is usually definite and presents a more constant picture than most of the conditions with which we have to deal. The earliest symptoms may date back from a few weeks to many years and are usually insidious at the onset. Chief among them and the one from which the patient seeks relief is pain. This varies from a feeling of fullness or pressure after meals, to a severe gnawing or burning sensation which comes on two hours or more after eating, being promptly relieved in the early stages of the disease by the ingestion of more food or alkalis. The regularity of the daily recurrence of this pain is quite characteristic, especially its tendency to be proportionate in its severity to the size of the preceding meal,

that is, the heavier the meal the more severe and of longer duration is the pain. Night pain is common and like that at other times, yields readily to the taking of milk or similar article of diet. The site of the pain is usually circumscribed over the epigastrium or a little to the right of it.

As a rule, the appetite is good and the patient has no hesitancy in satisfying it, for he experiences comfort rather than discomfort by eating, and does not associate his disturbance, which comes hours later, with his previous indulgence.

Vomiting is not a common symptom in the early stages of ulcer, but occurs after complicating stenosis has taken place owing to partial healing and cicatricial formation at the pylorus.

Hemorrhage may be present, either as vomited blood or in the form of tarry stools, but as Moynihan remarks, it should be regarded as a complication rather than a symptom. Occult blood in the stools is a valuable sign, but is very often overlooked, unless detected by a routine fecal examination under the microscope, over a considerable period.

The periodicity of the subjective symptoms is important, for the majority of patients give a history of alternating periods of freedom from pain with the picture as detailed above. Exacerbations frequently occur in the spring and fall, often with a history of exposure to cold.

The objective signs are few and indefinite except for the radiographic findings. There may be slight tenderness over the pylorus with a rigidity of the right rectus in its upper portion. Tumor is not present unless the condition has progressed beyond its uncomplicated stage. But in the Röntgen rays we have one of the most valuable assets yet afforded in the diagnosis of ulcer, not only as to its presence, but also its site, extent, and indicated surgical procedure. With such a means at our disposal, confirmation of the diagnosis by Röntgen rays should be sought, for there may arise good reasons for determining on lines of treatment of which the patient may be deprived without such a precaution, and the surgeon would suffer less embarrassment were he able to change his plans before reaching the operating room.

Gastric analysis, though an aid in diagnosis, can scarcely be relied upon in preference to an accurate history already obtained, for it is as frequent to find hypochlorhydria as it is to find hyperacidity. However, with the condition advanced and stenosis present, gastric stasis, blood, etc., can be demonstrated.

Although duodenal ulcer is a disease apparently easy of recognition, there are other abdominal conditions from which it is often difficult and sometimes impossible to distinguish it. Among these are gastric ulcer, cholelithiasis, chronic appendicitis, etc., any of which may present symptoms simulating duodenal ulcer.

In gastric ulcer the pain occurs much sooner after eating, usually within an hour, the tendency to vomiting and hemorrhage is more pronounced, and the seasonal recurrence of attacks not so marked. In cholelithiasis, the sudden onset of pain with chills, fever, leucocytosis, and the intensity of the pain with its peculiar radiation followed by sudden cessation and jaundice leave little room for doubt



as to diagnosis. Chronic appendicitis with its irregularity as to time of occurrence, localized tenderness, and high temperature during exacerbations, seems to be a clear enough picture to permit of solution of the problem.

But with any of these there may occur reflex gastric symptoms of so called hyperacidity and pylorospasm, and it is in those cases that difficulty of diagnosis is encountered, and it is also in those cases that the difficulty is often surmounted by resorting to a Röntgen ray examination, and it not infrequently remains for the exploratory incision to settle the perplexing question, though such instances are rapidly becoming fewer.

The prognosis of duodenal ulcer embodies the complications, which are hemorrhage and perforation, either of which may prove fatal with little warning. Should the ulcer heal, which, however, is not the tendency, contraction with stenosis may occur, the results of which are only too well known. There is still another outcome of ulcer, and that is the development of carcinoma upon it as a base, but with ulcer on the distal side of the pyloric ring such an outcome is strikingly less common than in the case of gastric ulcer.

#### TREATMENT.

In considering the treatment of duodenal ulcer, it must be admitted that in the acute and early stages of its development medical and hygienic methods are beneficial and often curative, but when the condition has repeatedly recurred or does not respond after a reasonable trial of palliative means, it must then be designated a chronic ulcer, the treatment of which resolves itself into surgical procedure. Several operations have been devised, the details of which I shall dwell upon only to call attention to their comparative value. They are: Excision; one or other form of pyloroplasty; gastroduodenostomy after Kocher; gastrojejunostomy, either anterior or posterior, with or without plication at the pylorus.

Excision can be practised only when the ulcer is small lest too great a narrowing of the duodenum result, unless by resection of the first part of the duodenum and the pylorus with the subsequent gastroduodenostomy.

Pyloroplasty after the Heineke-Mikulicz method—incision in the long access of the gut with suture in the opposite direction—is applicable in cases of mild stenosis, while in more pronounced forms the Finney or horseshoe incision has the advantage of affording a larger and freer opening from the stomach to the bowel.

In cases in which the pylorus is bound down by adhesions and in a state of marked induration, the Kocher gastroduodenostomy offers a less difficult means of procuring the same result.

The anterior long loop gastrojejunostomy has become less popular owing to the danger of vicious circle, unless provisional enteroenterostomy is employed.

The operation of choice in the majority of cases today seems to be the no loop posterior gastrojejunostomy, with or without the infolding of the ulcer as the case demands. To compare pyloroplasty with this operation, the latter has the advantage that the period of convalescence is shortened

and the relief from symptoms more immediate, which alone, all else being equal, would warrant its application.

17 WEST STREET

## SYPHILIS OF THE CARDIOVASCULAR AND RENAL SYSTEMS.\*

BY JOSEPH H. BARACH, M. D.

Pittsburgh.

In these days of man's greatest activity both for the bad and for the good, we are very apt to be distracted from our own immediate interests, to lose ourselves in the problems of mankind in general. Nevertheless, in our own special fields of endeavor the changes and advances are just as electrical—just as revolutionary. It may not even be said that "a good healthy truth lives ten years"—for what we accept as being true today we may be forced to discard tomorrow. This is particularly true of syphilis.

Most of us remember the announcement, which came in 1903, that Metchnikoff and Roux successfully inoculated the chimpanzee, ape, rabbit, and guinea pig with the virus of syphilis. In 1905, Schaudinn and Hofmann discovered that the infective agent in this virus was *Spirochaeta pallida*. In the same year the serum complement reaction of Bordet and Gengou was applied in this disease by Wassermann, Neisser, and Bruck, from which reaction we have the invaluable Wassermann test.

In 1909, Ehrlich produced salvarsan and, in 1911, Noguchi presented his luetin reaction. This array of discoveries has very quickly thrown most of our preconceived notions of the disease into the background; and, while much still remains to be known, yet the accumulated evidences of the present day in the ensemble present a vastly different disease picture than that of ten years ago.

For example, Collé's and Profeta's law of immunity in syphilis, is now known to be erroneous. We have learned that a person is never immune to syphilis, and it is a curious fact, that while the syphilitic is subject to the ravages of the disease from within, yet he is immune to fresh infection from without. It has been proved that patients really cured of syphilis are just as susceptible to reinfection as the uninfected.

The behavior of *Spirochaeta pallida* in the body is about as follows: First, inoculation; while in the great majority of instances there is a distinct primary lesion at the point of entrance of *Spirochaeta pallida*, it is also known beyond a doubt that the organism may become infected by a quick entrance of the spirochete into the general circulation with a complete infection of the body—and yet the patient has never had the primary sore, the chancre. Ordinarily, however, the chancre is the point of entrance. The spirochetes, having become lodged in the skin, and having survived the transplantation, multiply and call forth changes in the tissues. The histological changes are chiefly a thickening of the bloodvessels—endarteritis and panarteritis. From the primary focus of infection the spirochetes enter the lymph and blood stream. Another fact

\*Read before the American Medical Association, 1930.

which has come with our new understanding of this disease, is that the blood of the syphilitic is infectious during the entire history of the disease, during the so called primary, secondary, and tertiary stages, in accordance with the degree or amount of infection present.

From the primary sore to the most remote lesion produced by the disease, the reaction on the part of the body tissues to the effects of the exciting organism is always the same. There is always a thickening of the minute blood channels from within and without. This thickening consists of a lymphocyte and plasma cell infiltration. New bloodvessels are formed and these undergo the same modification. This cellular deposit is either converted ultimately into connective tissue, it may be absorbed, or, as occurs in the case of gummata, it may undergo necrosis and break down. Let us then reiterate the foremost and important point, that in syphilis the vascular tissues are first, last, and always affected. Just as the minute capillaries are involved so are the larger bloodvessels—the aorta and the heart. In the most active period of the disease there is every evidence of a septicemia with involvement of any or all parts of the vascular system.

Those who have studied this disease most carefully are in entire accord that the most frequent and earliest lesions found in syphilis are arterial and myocardial. It comes to us somewhat as a surprise that Whartin (1) found in the study of 200 cases that the heart was one of the most frequent sites of syphilitic lesions. Whartin reports finding spirochetes in the myocardium, *a*, without recognizable tissue lesions; *b*, with pale degeneration of heart muscle; *c*, with fatty degeneration of muscle; *d*, with atrophy of muscle fibres; *e*, with necrosis of muscle fibres; *g*, with interstitial changes showing edema or proliferation. Whartin states it as his belief that syphilis, congenital and acquired, is the most important etiological factor in the production of cardiac disease, myocardial and endocardial. Among men of wide clinical experience this last view is not likely to be unconditionally accepted, nevertheless, the statement deserves serious consideration.

I dare say, that ordinarily the physician who treats cases of syphilis gives very little or no thought to the cardiovascular system. Yet when we recall the many cases that at some time or other have presented cardiac disturbances, such as tachycardia, intermittency, irregularity, and arrhythmia, and that nearly all cases show marked depression, pallor, and general debility, it becomes quite clear to us that these are evidences of involvement of the cardiovascular system to a greater or lesser degree.

The cardiac disturbance in this disease may assume any form; from the occasional extrasystole on exertion, to the serious cases of heart block; and there is no one form that is particularly common in this disease. In going over my records for the past eighteen months I find that out of twenty-four cases classified as heart cases which gave a positive history of syphilis and positive Wassermann, seven were arrhythmia, six were cases of tachycardia, three were auricular fibrillation, two were heart block, four were aneurysm, two showed extreme hy-

pertension, and one angina pectoris. Brooks (2) reports involvement of the endocardium in seventy-four per cent. of his fifty cases and in one third both aortic and mitral valves were involved.

The heart may be involved early in the disease or late. Brooks, in an anatomical study of fifty cases, records three deaths caused by involvement of the cardiovascular system during the acute stage of the disease. Out of my twenty-four cases, four occurred during the first two years of the disease. As to the correct diagnosis, aside from the history of the case, we are dependent very largely upon the Wassermann and lucin tests.

Careful and painstaking investigators have found that the strength of the reaction in a case of syphilis may vary from day to day, depending upon unknown factors. Captain Charles F. Craig (3), of the U. S. army, studied a series of cases in prisoners whose manner of living was under complete control and was almost precisely the same each day. In this series of cases, Craig found the widest daily variations in the strength of the Wassermann reaction. The cause for such variations is being carefully studied and all careful workers are vigorously pursuing the possible elements of error in their technic, but in spite of that, we occasionally find ourselves in apparent error. My experience with the Wassermann has been very satisfactory; in my own work I nearly always repeat the examinations, and have no hesitation in postponing or giving an indefinite diagnosis when working over the case in conjunction with other physicians. A man working carefully, knowing something of the patient and aware of the importance of his decision, is much less apt to fall into the errors which must come to workers who do these tests by wholesale, and, as I know laboratory work, I feel that there is hardly any other test which offers so many chances for error in technic, and I also feel that there is no other test which offers so much evidence and such decisive evidence.

Having made the diagnosis that syphilis is the underlying cause of the cardiac disturbance, the treatment in these cases is usually pretty well defined. When salvarsan first came into use, cardiac involvement, particularly in the later stages, was considered a positive contraindication. A wider experience has shown us that if we approach these cases carefully, we may use salvarsan with the greatest benefit. A beginning course of iodides, small or increasing doses of salvarsan repeated at weekly intervals, and with these the judicious use of mercury, have in my experience caused the complete disappearance of heart block in one case, very marked improvement in another, and the apparent cure of various cardiac irregularities. On the other hand, I have advised the temporary discontinuance of specific medication in some cases with the most gratifying results.

In the precarious cases the cardiopath should remain in bed twenty-four to forty-eight hours after the administration of salvarsan, but not for too long a time. We must not forget that the erect posture is normal to man for sixteen hours out of twenty-four; and that a heart may appear to be in a bad way on the sphygmograph and yet the patient will have very few or no evidences of decompensation.





was cured with a method of over years ago, and that he believed that he was still infected. Had had various kinds of treatment for his prostatic and urethral troubles, including high Valentine irrigations, anterior injections, posterior instillations of silver nitrate, massage of the prostate, etc., in spite of which he had the following train of symptoms. Penis felt cold, erections were poor and ejaculations premature, pain along the back of his spine which at times traveled into his hip, numbness and paresthesia of both legs. Tired on slightest exertion. Suffered with marked constipation. Suffered neither from urethral discharge nor from increased frequency of urination. During the past six years had infected three different women with acute gonorrhea. These infections occurred in spite of the fact that he had been frequently told by his doctors that he was absolutely cured and that intercourse would be advisable. For this named reason he was sure that he was not cured, even though smears repeatedly taken were negative for gonococci. He had never had cultures taken from prostatic or seminal vesicular fluid.

General examination showed a very robust, healthy looking man, weighing about 175 pounds. No Argyll Robertson, Romberg, or Westphal signs. Spine not tender to palpation or percussion.

Urine examination, March 20, 1915: Macroscopically, first urine voided showed a fairly marked pus cloud and a considerable number of shreds. Urine after massage was cloudy and also contained shreds. March 30th, laboratory examination of second urine before massage of the prostate, showed specific gravity of 1022, highly acid, urea 8.8 grains to the ounce, faint trace of albumin, glucose 0.6 per cent., indican plus, occasional hyaline, no granular casts. No red corpuscles. Occasional single leucocyte. These findings showed evidence of mild renal disturbance, with high acidity, extremely heavy indican reaction, and a very small amount of glucose, suggesting an intestinal glycosuria.

Laboratory examination of the sediment of urine after massage, showed very few pus cells, occasional red corpuscles, and small round epithelial cells. Very few spermatozoa. No bacteriological examination was made.

Examination of prostatic fluid: Few pus cells, few red corpuscles, and small round epithelial cells. Few spermatozoa. Bacteriological examination by plate method showed one colony of the gonococcus. Gonococci present in small numbers.

Urethroscopic and cystoscopic examination: Bladder normal, except for slight trigonitis. Posterior urethra showed marked inflammation in the region of the verumontanum.

#### TREATMENT.

This patient received vigorous massage of his prostate and stripping of his seminal vesicles every fifth day, followed by instillation of silver nitrate solution, one to 1,000 into the posterior urethra, with a Bang's syringe sound. He also had five per cent. silver nitrate applied to the verumontanum through the urethroscope, every two weeks. After about eight treatments, the patient disappeared from observation, so that I cannot detail the further course of his disease.

#### CONCLUSIONS.

This case is reported to point out the fact that there are certain cases of gonorrhea in which the gonococcus lives for many years in the genitourinary tract. This was undoubtedly a case in which the gonococcus was lodged in the prostate. The inflammation in the posterior urethra was entirely secondary to that in the prostate, and was probably due to the drainage of infected material from the prostatic ducts into the posterior urethra. Secondly, this case is reported as a warning that ordinary smears for gonococci, after the infection is chronic, are practically worthless; thirdly, that cultures should be taken in every case before it is discharged as cured; fourthly, that in order to obtain a satis-

factory specimen of the fluid for cultural examination for the gonococcus, we should be familiar with the technic of prostatic massage and stripping of the seminal vesicles.

In conclusion I wish to draw attention to the fact that while a good many patients have vague subjective and objective symptoms after gonorrhea, in the large majority the disease is not contagious. The case reported is simply one of the exceptions, demonstrating viability of the gonococcus in the genital tract for years, giving few of the usual signs of its presence in the host, nevertheless retaining its virulence, as indicated by the several infections which followed intercourse.

40 EAST FORTY-FIRST STREET.

#### GASTROENTEROSTOMY.\*

By JOHN B. HAEERLIN, M.D.,  
Chicago.

The operation, gastroenterostomy, was born of necessity. The occasion of its performance was an obstructed cancer of the pylorus, making the passage of food impossible. The necessity of stomach outlet was so impressed upon the minds of the surgeons, Wolfier and Nicholadoni, that the joining of the bowel with the stomach became self evident. They took a loop of the small gut and joined it to the anterior wall of the stomach. The patient recovered. Thus, in September, 1881, we have the birth, I believe, of the most valuable operation of all gastric surgery, an operation which when done properly and when indicated, gives most excellent results and affords untold benefit to stomach sufferers. I mean modern posterior gastroenterostomy.

There is no one exempt from the possibility of this operation. Who can tell which one of us will be a sufferer from carcinomatous pyloric obstruction? There is always a certain percentage of individuals in whom develop the pathological conditions of the stomach and the duodenum, which give an indication for this operation. Conditions occur in the infant as well as in the aged. There are many recorded cases of children born with ulcerations of the duodenum and stomach, and during early infancy we have added to ulcerations, conditions of congenital pyloric spasm and stenosis.

Stillman, of San Francisco, reports ten operations in infants with one death. From this low mortality we learn that where we have a true pathological lesion in infants it is the safer plan and of sounder judgment to undertake surgical rather than medical treatment.

Holt (1), in speaking of hypertrophic stenosis of the pylorus, states: "I believe fully fifty per cent. of these cases prove fatal." In pronounced cases, those in which there is adequate indication for operative interference, diagnosis is usually simple. For example, projectile vomiting and loss of weight and wasting, dilated stomach, and at times visible peristalsis, along with a tumor make a symptom complex which leaves no doubt of the necessity of relief. When we consider the medical mortality of fifty per cent. or over in comparison with a surgical

\*Read at the experimental surgical session of the LaSalle County Medical Society, Ottawa, Ill., April 27, 1915.

mortality of ten to twenty-five per cent. who dares, "given a correct diagnosis with its imperative symptoms," to falter from his duty and give the child its greater fighting chance for life? Richter reports some twenty-one gastroenterostomies in infants with a remarkably low mortality—three deaths. Among the aged this operation is indicated whenever the pylorus is obstructed or strictured from neoplasm or a pathological condition sufficient seriously to impair nutrition. The operation may be performed at all ages, from the cradle to the grave. The years from late childhood up to early adult life I believe to be comparatively free from need of operation. Fenwick (2), in an analysis of 1,015 cases, states that women are subject to acute ulcer more frequently than men, although the reverse is true of chronic ulcer.

In gastric surgery we have three operations which compete with one another, namely, 1, gastroenterostomy; 2, Finney's operation or gastroduodenostomy (pyloroplasty); 3, Rodman's operation or resection of the ulcer bearing area.

In doing a gastroenterostomy, we have the choice of either the anterior or posterior wall of the stomach. The anterior used to be most commonly performed, but of recent years we have learned that practically all complications can be avoided by doing the posterior short loop or no loop operation. The dangers of the anterior operation are those that bring death, being, first, the vicious circle and regurgitant vomiting; secondly, edema of the bowel wall, producing paresis and obstruction; thirdly, peptic ulcer (of only occasional occurrence after anterior gastroenterostomy); fourthly, dangers of loop complications, such as kinking and strangulation, or the passing of gut under the loop from one side to the other or pressure on the transverse colon. All these complications are of not infrequent occurrence in anterior gastroenterostomy. There is a perceptible difference in patients after anterior and posterior gastroenterostomy. The patients with posterior gastroenterostomy far outclass patients with the anterior operation as to both early and late complications. This makes the posterior gastroenterostomy by far the most satisfactory. It should be done unless there is some special contraindication.

Finney's operation, introduced in 1902, probably was intended to take the place of the Heineke Mickulicz operation of pyloroplasty which was so popular from 1895 to 1900. The extremely bad afterresults brought this operation promptly into disfavor. Finney's operation, on sounder physiological and anatomical grounds, is a better operation, but still it has not found favor. Probably the afterresults are not so good as those of gastroenterostomy, and in the average surgeon's hands it has a greater mortality.

Finney thinks his gastroduodenostomy should replace gastroenterostomy. Moynihan (3) says: "I have rarely used Finney's operation, believing that the indications calling for its performance are better met by the operation of gastroenterostomy." Reidel first suggested transverse resection of the stomach. Rodman recommends the resection to include the ulcer bearing area and this procedure is known as the Rodman operation.

Rodman (4), in a masterly though unconvincing

article, believes that partial gastrectomy and pylorotomy are the operations of choice and should replace gastroenterostomy; however, there appears to be only one indication for pylorotomy and partial gastrectomy and that is cancer, either microscopical or macroscopical. When cancer presents, the Rodman operation should unhesitatingly be done, if conditions warrant. This view of the Rodman operation is, I believe, held by leading American and European surgeons. Rodman, however, asserts that the superiority of his operation over gastroenterostomy lies in the prevention of subsequent complications, such as hemorrhage, perforations, subphrenic abscess, hour glass stomach, malignant degeneration. If we analyze these, we shall find that they are infrequent complications; moreover, the mortality of the Rodman operation is from fifteen to twenty per cent., whereas in gastroenterostomy it is from one to five per cent. Mayo Robson (17) reports over 100 consecutive cases of gastroenterostomies with a mortality of 1.7 per cent.

Regarding hemorrhage, gastroenterostomy gives more complete relief than the Rodman operation. The hemorrhage from sewing would be of more frequent occurrence after the Rodman operation. If we have active bleeding from the ulcer during the operation, the logical thing would be resection or ligation of the bleeding area.

Rodman's assertion of cancer development from ulcer has been disputed by Kümmell (5), of Hamburg. Paterson (6), of London, considers simple excision of ulcer unnecessary, and malignant degeneration of ulcer after gastroenterostomy of rather rare occurrence. He also favors the non-occlusion of the pylorus.

Regarding perforation and hemorrhage, the indications are to control them surgically. The complications of infection and subphrenic abscess, it seems to me, are as liable in resection as in gastroenterostomy, and when resection is performed we have a stomach smaller in size with predisposing factors still patent without the benefits of drainage as we have in gastroenterostomy. Of all our gastroplastics of different kinds—gastroduodenostomies, gastrectomies—there is not one which in any way favorably compares with gastroenterostomy, either in ease and simplicity of technic, in the mortality, or in the favorable afterresults and relief to the patient. There are cases in which gastroenterostomy has been performed where no relief of symptoms has prevailed, but these cases will not bear close scrutiny; they are cases which have not had real indications for the operation. If the operations are performed with technical correctness in cases where we have real indications, we need have no fear as to the relief and outcome. Posterior gastroenterostomy, with its relief giving properties and its low mortality, puts this operation in a class by itself. Where we have sufficient indications and a real pathological basis, this operation brings a relief which makes it stand alone. There are still surgeons who prefer gastroduodenostomy and gastric resection as championed by Finney and Rodman, but these I believe to be in the very small minority.

The indications for gastroenterostomy may be tersely summarized into the following general principles:

1. All conditions producing or resulting in a permanently contracted or stenotic pylorus; this may be relative only.

2. Conditions in which we wish to shunt or switch the course of chyme or food.

3. Conditions in which we wish to drain the stomach. We may in these conditions have a dilated stomach, where the pylorus is insufficient—hour glass stomach.

Under the first heading we have pyloric stenosis resulting from conditions external to the bowel wall, internal to the bowel wall, or within the bowel wall. Among the external causes we have perigastric and duodenal adhesions, inflammatory processes associated with the bile passage and pancreas, or tumors pressing from without. It is always good surgery to relieve, where possible, any condition producing pyloric stenosis from external causes. This may be easy or impossible.

Among the internal causes are any obstruction, mechanical or other, filling the pyloric or duodenal lumen, such as neoplasms, kinks in the bowel, etc.

Within the bowel wall itself we have ulcers, growths, cicatricial contractions, spasms of musculature producing pylorospasm. Congenital pylorospasm comes under this heading. There are transient cases which should not be operated in and should be differentiated from congenital hypertrophic pylorospasm, where we have a real pathological lesion. The pathological condition consists of great enlargement and thickening of the pylorus, associated with hypertrophy of the pyloric sphincter. Hill (7) estimates one baby in 200 to indicate the frequency of this condition.

In symptomatic pylorospasm of infancy, children should not be subjected to operation, and experienced pediatricists inform us that they usually recover.

In conditions where we wish to shunt or switch the gastric current, come ulcers of the duodenum and pylorus; we may or may not have an associated stenosis. If ulcers are chronic we almost always have sufficient pathological tissue to produce some stenosis. We can readily see the opportunity a duodenal or pyloric ulcer has of healing if the acid chyme irritation which helps to produce the ulcer is withdrawn or shunted, and this is exactly what happens.

Paterson (8) has shown that the hyperacidity is reduced after gastroenterostomy. This is a great factor in ulcer, as gastric and duodenal ulcer are practically always associated with hyperacidity.

Von Eiselsberg, in 1895, was the first to introduce pyloric occlusion to our notice. This was done with the idea of, 1, complete use of the new stoma and, 2, the freedom of irritation of chyme over the ulcers in the duodenum. Then we developed the silk ligature, linen and woolen band methods, then auto-plastic band operations, and, finally, the aluminum band operation, as practised experimentally by Brewer (9) on dogs.

It is my belief that all methods of occlusion are not looked upon with favor at present by general surgeons. The switching of the gastric contents by a well performed gastroenterostomy is sufficient as a stomach drain; associated with the decrease in acidity of the gastric contents, this seems sufficient

to control symptoms and allow the patient to recover. Paterson (10) holds that gastroenterostomy produces a chemical and physiological change sufficient in the stomach to allow fundal ulcers to cure, and this is his clinical experience. He explains the good results after gastroenterostomy physiologically as well as mechanically.

The shunting of food, then, is a purely mechanical part of gastroenterostomy. The variations of the gastric contents after gastroenterostomy are physiological. We can readily conceive that those two factors may work jointly in the effects on gastric and duodenal ulcers.

We have, in conditions in which we wish to drain the stomach, a purely mechanical indication, in certain cases of acute dilatation, also in chronic gastrectasis. Where we have a persistent hyperacidity with excessive gastric hypersecretion (Reichmann's disease), I believe the operation to be indicated and to give exceptional results.

#### HISTORIES.

I present the following typical cases which were proved at operation; first, where indication of stenosis was met:

CASE I. Fred S., resident of Indiana, aged twenty-five years, occupation, clerk. Family history and family diseases, negative. Habits always moderate and regular. For past five years had pain in stomach beginning usually about two hours after eating. Pain was quite severe at times. From two to three hours after eating would always vomit with relief. No history of hematemesis. Had lost considerable weight over this period. Three years previous, had an appendicectomy without relief. Operated on March 20, 1914.

Findings at operation: A white hard, scar at the pylorus. This was of sufficient size to produce considerable stenosis. A posterior gastroenterostomy was performed and patient put to bed. His relief from vomiting was marvelous. He did not vomit once from the time of operation. He made a gradual and uneventful recovery, regaining his lost weight and strength and worked daily. Last examination was in January, 1915, ten months after operation, when patient reported himself to have entirely recovered.

CASE II (where indication to switch the course of food was met). Mrs. Lena K., aged thirty-eight years, past illnesses, diphtheria, scarlet fever, and pneumonia when a girl. Family history and family diseases negative.

Gastric history: For past twelve years had what patient called a pronounced stomach trouble, a typical dyspepsia, severe pains in the stomach, especially after eating. Usually these pains would be worse after large meals or what she termed indigestible food. Only occasional vomiting spells. She never remembered bringing up blood; gradually lost strength and weight until at the time of examination her weight was 70 pounds and she was practically bedridden. At the time I saw her, she was discouraged and disheartened and unable to care for her family or her household.

Physical examination: Presented an emaciated, anemic, and exhausted appearance, with a facial expression that clinicians sometimes associate with gastric involvement. The abdomen was scaphoid and exceptionally tender over the stomach area to the right. Bowel peristalsis was visible. Gastric analysis showed hyperacidity. An x ray was not taken. Operated on, August 24, 1909. Findings: Multiple ulcer, two large duodenal ulcers with one ulcer at pylorus. A posterior gastroenterostomy was performed with the idea of shunting the food; care being taken to make the stoma exceptionally large. For one week after the operation, patient was very low, then began to rally, and finally made a perfect recovery. She gained in the following three months some fifty-one pounds and her average weight was soon 130 pounds. I had the privilege of seeing this woman go back to the management of a household and to care for her large family. I saw her ten days ago, when she reported herself to be in perfect health,



having been so since her recovery from the operation, about six years ago.

CASE III (where indication to drain the stomach presented itself). Mrs. P., aged thirty-six years, mother of four children. Family history and family diseases negative. Gave history of gastric troubles for past six years. In August, 1912, during a fit of despondency, took about four ounces of lysol. Stomach was washed immediately and repeatedly. Was comatose for twelve hours. Urine was black, taking some three days to clear up. Kept in bed at hospital under observation for one week, during which time patient was unable to take anything. Physical findings and x ray indicated a gastrectasis. At end of week decided on a laparotomy and if necessary to drain the stomach. Operation, August 28, 1912, found a dilated stomach, an old duodenal ulcer with no apparent stenosis. Performed a typical posterior gastroenterostomy. Following operation there was relief of symptoms and patient could take liquid. Patient made a slow and gradual recovery and was soon attending to her household duties. I saw this patient in January, 1915, and she reported herself in good condition.

These are three representative cases of our different indications. During the past week I have had the opportunity of operating in two cases for gastroenterostomy, one in a young man with an inflammatory tumor mass, the result of a duodenal ulcer, in which almost complete obstruction had taken place with resulting persistent and almost constant vomiting, gastric dilatation, and great suffering. The operation has given entire relief from all symptoms, the patient not having vomited at all since operation, and at the present writing he is constantly hungry.

I operated in another case in which there was an hour glass stomach due to old ulcer on greater curvature, with its resulting cicatrices and contraction forming the typical saddlebag stomach. The proximal (larger pouch) was drained by gastroenterostomy, with perfect result. At present the patient has been relieved of gastric disturbances with no vomiting.

There are some who recommend this operation for gastroptosis, but it appears that this is insufficient unless there are other indications. There is, I believe, a symptomatic indication that in my judgment is a good rule to follow, and that is, "all patients suffering from stomach complaints for a period of three years or longer, in whom at times it is only possible to make a provisional diagnosis, even with gastric analysis, x ray, thorough physical examinations, etc.—these patients should be laparotomized and treated accordingly. The majority will, I think, be found suffering from gallstones and infections of gall passage or duodenal or stomach ulcer and the proper surgical treatment should be applied." This, I believe to be a good surgical rule.

Our ideas of the pathogenesis of gastric and duodenal ulcer are fast changing. Errors in diet and hygiene do not take as important a part as formerly. Rosenow, with his experimental gastric ulcer, has been able to produce gastric and duodenal ulcer repeatedly with certain strains of streptococci. These show a definite affinity toward the gastrointestinal mucosa. Rosenow has done some interesting, remarkable, and instructive work recently (Elective Localization of Streptococci, *Journal A. M. A.*, lxx, 20). Steinhart (11) has been able to produce gastric and duodenal ulcer by using colon bacilli. There seems to be no doubt that sepsis is one of the factors of ulcer production. We at present are aware that bacteriemia is of common occur-

rence, either with or without a discoverable atrium of infection. There is a great difference between the pathology of the living and of the dead, and in gastric ulcer we have especially the pathology of the living.

Mayo (12) states that there is a marked difference, pathologically, between gastric and duodenal ulcer, the gastric ulcer having a punched out appearance of the mucosa with a white scar tissue base; the duodenal ulcer may have the smooth, moth eaten base with a slight slit in the mucosa. We may get much more stenosis from duodenal ulcers than we ordinarily expect. The size of callus seems to have no relationship to the size of mucous membrane involvement. The duodenal ulcer on its posterior wall takes on the characteristics of the gastric ulcers.

In doing a posterior gastroenterostomy we must take into consideration the following technical points:

1. Position of stomach wall to be used.
2. What portion of gut to be used.
3. Size of opening.
4. Method of union—sewing or mechanical help, Murphy button, Robson's bobbin, etc.
5. Should one use pyloric occlusion?
6. Should we excise ulcer or treat it by other methods?
7. Care of other complications.

After the proper opening is made—and it should be sufficient for inspection and performance of good technic—the inspection and examination of liver and its annexa, stomach, and duodenum should be careful, for there is only one way of determining the nature and extent of diseased tissue, and that is by examination. I have done gastroenterostomies on patients who have been previously operated on for gallbladder disease, tumors, and appendicitis. We can readily see how an appendectomy would not relieve ulcerous conditions.

When it is decided that a gastroenterostomy should be done, the transverse colon with omentum should be held up and the mesocolon put on a stretch. An opening of about three inches should be made in the avascular portion of the mesocolon; this admits into the lesser peritoneal cavity and the posterior surface of the stomach is palpable. The stomach is lifted up with the left hand and that portion we wish to anastomose is pointed through the opening in the mesocolon. Ordinarily we choose where the fundal two thirds meet the pyloric one third and this, I believe, to be the general rule unless there is some contraindication. Moynihan (13) advises the anastomosis to be made in the same general direction that the jejunum naturally lies as it leaves the ligament of Treitz.

Robson (14) states that this factor makes no difference. The position of the stoma in the stomach relative to its highness or lowness is an important factor; when too high, it does not serve its purpose, when too low it drains the stomach too rapidly. Herz (15) reports twenty cases in which there was too rapid drainage of the stomach. This may be corrected by the position of the stoma in the stomach.

The size of the stoma or opening should never be less than two and a half inches. If the operation is technically correct we need not be afraid of contraction and closure. Early in the history of gastroenterostomy the anastomotic openings were too small and resulted in closures and recurrence.

Any portion of the jejunum may be utilized, from its beginning up to eight inches. The longer the portion of jejunum, the longer the loop and the more danger of a vicious circle being established. *The shorter the loop, the more safety.* Mayo (10) has devised a no loop operation by denuding the jejunum of its peritoneal fold as it comes under the ligament of Treitz and joining that portion of jejunum with the stomach. This leaves no loop nor mechanical dangers. The nearer the food from the stomach is emptied into the bowel, the more nearly physiologically correct are we, and the fewer are the peptic ulcers. Again, the higher up in the intestinal tract we go, the more resistant is the mucosa to the acid contents of the stomach. This is a true clinical condition.

The use of Murphy buttons, bobbins, etc., is practically out of consideration. There is an oblong Murphy button devised with a heavy side in the jejunum lumen so that its passage is assured, but I have had no experience with it. The straight sewing with linen should be used and when properly done it should give no trouble. Mayo has recently brought out the fact that the inner or mucosa stitching should be done with fine chromic gut, as linen or silk may give trouble later, as predisposing to nonhealing and a recurrence of ulcer. I have used the fine chromic gut recently, as it seems a very reasonable suggestion.

Pyloric occlusion may be practised by the use of ligatures around silk, wool, aluminum, autoplasic ligature, fascia, etc. Pyloric occlusion may be practised by exclusion, that is, cutting through part of the stomach and closing with sutures. Pyloric occlusion is practised by many surgeons, but I believe that the majority do not advocate it.

Excision of ulcer should be practised when for any reason we suspect a malignant condition, or in cases of perforations or hemorrhage.

If we have other complications, the proper operations may be performed at the same time, providing the condition of patient warrants. Complications are best classified as early or late. The early are those which develop while the patient is still under the surgeon's eye. These are hemorrhage, infection from any source, such as stitches, autoinfections, peritonitis, metastatic abscesses, etc.; vicious circle or regurgitant vomiting from ileus, paralytic bowel, kinking, etc.

The late complications are peptic ulcer, recurrence of gastric and duodenal ulcer associated with their resultant symptoms, carcinoma, diarrhea, closure of the stoma, and complications due to errors in size and position of stoma. Internal hernial complications may be early or late.

Modern gastroenterostomy aims to correct the stomach errors mechanically, physiologically, and anatomically. The mechanical results are perfect where the stoma is properly placed and of sufficient size to allow mechanical drainage and overcome mechanical pyloric stenosis.

Physiologically gastroenterostomy reestablishes the stomach function in many cases. We have the gastric secretion reverting to a more normal type. We have the time of stomach emptying more nearly normal. We therefore get a physiological effect on the intestines. Anatomically in posterior gastroenterostomy we find that the loose loop of duode-

num or fore part of the jejunum lies in close proximity to the posterior wall of the stomach. Thus an anastomosis can be performed without greatly altering the anatomical relationship and we get an almost perfect result anatomically.

The question of cancer of the stomach sums itself up as follows: In all cases where suspicion of cancer exists resection should be done, the condition of the patient permitting. However, in other cases the excess percentage of mortality of the resection operation over gastroenterostomy is so much greater than the percentage of ulcer cases which develop into cancer after gastroenterostomy, that there are only a few who take this added risk.

The mortality from gastric resection is, conservatively speaking, twenty per cent. greater than the mortality of gastroenterostomy. The proportion of cancer developing from ulcer following operations for gastroenterostomy is probably as low as one per cent.

Modern posterior gastroenterostomy performed where this operation is needed is a boon. Considered from all angles and compared with competing operations, as to ease of performance, its complications, early and late, low mortality, and its after-results, it remains the operation of choice of the vast majority of surgeons where the indications for its performance are met.

#### REFERENCES.

1. HOLY: *Diseases of Intestine and Childhood*, p. 316.
2. FEN WILK: *U. S. of the Stomach and Duodenum and Its Consequences*.
3. MOYNIHAN: *Burghard's System of Operative Surgery*.
4. RODMAN: *Surgery, Gynecology, and Obstetrics*, Jan., 1915.
5. KUMMELL: *Zentralblatt für Chirurgie*, 1913, p. 1994.
6. PATERSON: *Journal A. M. A.*, xli, p. 798.
7. ROLAND HILL: *Surg., Gyn. and Obs.*, May, 1914.
8. PATERSON: *Ibidem*, April, 1914.
9. GEORGE EMERSON BREWER: *Ibidem*, Feb., 1914.
10. PATERSON: *Ibidem*, April, 1914.
11. STEINHART: *Boston Med. and Surg. Jour.*, 1913, p. 81.
12. W. J. MAYO: *Annals of Surgery*, May, 1913.
13. MOYNIHAN: *Kelly and Noble's Gyn. and Obstet. Surg.*, ii.
14. ROBSON: *Keen's System of Surgery*, iii.
15. HERZ: *Annals of Surg.*, Oct., 1913.
16. MAYO: *Keen's System of Surgery*, vi.
17. MAYO ROBSON: *Ibidem*, iii.

5 EAST GARFIELD BOULEVARD.

**Treatment of Tinea tonsurans.**—A. Salinger, in *Münchener medizinische Wochenschrift* for May 11, 1915, reports good results in superficial cases of tinea tonsurans with tincture of iodine and the following ointment:

|                                    |                     |
|------------------------------------|---------------------|
| R. Acidi salicylici, .....         | 5iii (8 grams).     |
| Betanaphtholis, .....              | gr. lxxv (5 grams). |
| Resorcinolis, .....                | 5i (4 grams).       |
| Adipis lane hydrost. q. s. ad..... | 5iii (100 grams).   |
| Fiat unguentum.                    |                     |

Good results were even obtained with the tincture of iodine alone, this being applied to the diseased parts at least twice with the aid of a camel's hair brush. No unpleasant effects were noted where ringworm of the face was thus treated. Results more prompt than those obtained with the iodine were secured with the ointment already referred to. This was applied to a piece of gauze and the latter placed over the affected area and held with a bandage. The gauze was removed after twenty-four hours, and the blebs found under it opened. Some bland dusting powder was then used. By the next day a cure had generally been effected. In more deeply seated ringworm, in which the iodine treatment proved less effective, good results were obtained by softening the crusts with oil, then washing the area daily with a one in 2,000 solution of mercury bichloride in alcohol, and following this with the application of a parasiticide ointment.

## Our Prize Discussions.

QUESTIONS FOR DISCUSSION IN THIS DEPARTMENT are announced at frequent intervals. So far as they have been decided upon, the further questions are as follows:

CLXII.—How do you treat the anemia of pregnancy?

CLXIII.—How do you treat the constipation of sedentary men? (Answers due not later than December 15th.)

CLXIV.—How do you treat the anemia of pregnancy? (Answers due not later than January 15th.)

CLXV.—How do you treat the anemia of pregnancy? (Answers due not later than January 15th.)

Whoever answers one of these questions in the manner most satisfactory to the editors will receive a prize of \$25. No importance whatever will be attached to literary style, but the award will be based solely on the value of the substance of the answer. It is requested (but not required) that the answers be short, if practicable no answer to contain more than six hundred words; and our friends are urged to write on one side of the paper only.

All persons will be entitled to compete for the prize whether subscribers or not. This prize will not be awarded to any one person more than once within one year. Every answer must be accompanied by the writer's full name and address, both of which we must be at liberty to publish. All papers contributed become the property of the JOURNAL. OUR READERS ARE ASKED TO SUGGEST TOPICS FOR DISCUSSION.

The Prize of \$25 for the best paper submitted in answer to Question CLXIII has been awarded to Dr. Harold S. Gloster, of Wheeling, W. Va., whose article appears below.

### PRIZE QUESTION CLXIII.

#### THE TREATMENT OF PERNICIOUS ANEMIA.

By HAROLD S. GLOSTER, M. D.  
Wheeling, W. Va.

The treatment of this malady has for its object the correction of the causative factors; namely, excessive hemolysis and inadequate hematogenesis. While we have not arrived at an adequate solution of the cause of pernicious anemia, yet we have found that certain predisposing causes play an important part, viz., pregnancy, parturition, hemorrhage, degeneration, especially of the mucous membrane of the alimentary canal, starvation, and intestinal parasites. We must necessarily then begin by avoiding certain predisposing causes as much as possible, and of those which are inevitable we must watch the course with an ever watchful eye on a progressing anemia.

The treatment may be divided as follows:

1. Hygienic, which embraces such measures as the patient being kept in bed and in the open air, and such nutritious diet as is found best at regular intervals. No one particular diet I have found will do for all patients, but in each individual case must a suitable and nutritious diet be instituted. In general, fats form a suitable and nutritious diet for the patient as long as they can be borne. The patient should be given daily baths and alcohol rubs by a person competent in handling the sick.

2. As regards the medicinal treatment I have found that what iron is in chlorosis, quinine in malaria, arsenic in pernicious anemia. I always place a patient with pernicious anemia on liquor potassii arsenitis, starting with three drops well diluted four times a day, gradually increasing the amount by adding one drop to the dose each day after the sixth day until the physiological symptoms appear, e. g.,

gastrointestinal irritation. I then discontinue the drug temporarily and as soon as the symptoms subside I begin the administration again. I have found that I have found it best to give the drug to the point of tolerance. At times I have used strychnine arsenate, grain one thirtieth every four hours, but have not found uniform results. I have also used horse serum with fairly good results.

If the blood shows an oligemia, we must combat this with the injection of normal saline solution, one quart to be given high in the colon three to four times a day; or, if preferable, this may be given subcutaneously. I always deem it wise to give from three to five grains of salol right through the disease.

Anthelmintics should be given when the disease can be traced to intestinal parasites.

To summarize: The patient should be kept on a suitable diet, arsenic, and salol, with plenty of fresh air until repeated examinations of the blood show a decreased hemolysis and a more adequate hematogenesis. As a last resort, when the hemoglobin index has fallen below twenty-five per cent., transfusion may be tried with a possibility of averting death and establishing a period of well being, when with careful after treatment our patients may rally.

Dr. Samuel Axilbund, of Philadelphia, writes:

Particular attention should be given to the mouth, including the teeth and upper air passages. An x ray plate should be taken to rule out cryptogenic infection. The stools should be examined for intestinal parasites. Rest, absolute, mental and physical, and plenty of fresh air and sunlight, are the rule. Diet must be nutritious and easily digestible; milk, butter, and fresh vegetables. Nitrogenous foods should be somewhat limited.

As to drugs, Fowler's solution three minims daily, increase one minim per diem to obtain full physiological effect, then stop. When effects have worked off resume with sodium cacodylate one eighth grain and iron citrate two grains hypodermically every other day. For the achylia gastrica use acid nitrohydrochloric five minims, pepsin two grains, glycerin and elixir of calisaya enough to make one ounce, to be given after meals.

Antidiphtheritic serum 1,000 units every second or third week, in some cases gives good results in conjunction with extract of spleen and spinal cord. Of cholesterin three per cent. solution, three ounces may be administered daily. Benzol in small doses in conjunction with the foregoing is useful.

Thymol in high colonic flushes in case of intestinal parasites and blood transfusion in the more desperate cases have been used with variable effects.

All treatment is guided by the blood picture as examined from time to time.

Dr. R. Orlando Mordin, of Richmond, Va., remarks:

Pernicious anemia is a disease of the blood characterized by a great destruction of the red corpuscles and is generally fatal. Hygienic measures are of vast importance. Rest in bed with light nutritious food, together with salt water baths and systematic massage, are indicated first of all.



Medically, arsenic is the remedy *par excellence*. Fowler's solution (diluted) in five drop-doses three times daily should be given for about a week, adding thereafter one drop to the dose every day until the point of tolerance is reached. Watch for gastro-intestinal irritation and should that appear, discontinue or reduce the dose. Arsenous acid may be given in pill form, commencing with one fortieth grain or one thirtieth grain three times a day. Red bone marrow mixed with an equal quantity of glycerin (freshly prepared daily) has given satisfactory results in many cases. One or two ounces may be given daily. If there is a decrease in the quantity of the blood, weak saline solutions should be injected into the colon or into the subcutaneous tissue. Gastric lavage is of value when there is fermentation. Intestinal antiseptics should also be given when needed. In cases in which intestinal parasites are associated, anthelmintics must be used. If the digestion is impaired, diluted hydrochloric acid with bitter tonics is serviceable. Iron is useless, as there are enormous quantities of it in the liver, owing in all probability to what is the characteristic feature of the disease.

*Dr. C. C. Henin, of Springfield, Mass., observes:*

The treatment of this disease lies in hygienic measures such as rest in bed and light nutritious food given at short regular intervals. Salt water baths and gentle massage are useful. I use arsenic. The best action will be obtained by the administration of gradually ascending doses of Fowler's solution or of arsenous acid: beginning with two or three drops of the solution three times a day during the first week and adding one drop to the dose every day or two up to the point of tolerance as much as twenty or thirty drops, well diluted. Evidences of gastro-intestinal irritation should be watched for and the arsenic discontinued or reduced. Arsenous acid is given in pill form from one thirtieth to one fortieth grain. I also use bone marrow, about an ounce or two daily, also intestinal antiseptics such as thymol, guaiacol carbonate, salol, beta naphthol. If I have any suspicion of intestinal parasites, I use anthelmintics. I also use dilute hydrochloric acid and bitter tonics; at times I combine arsenous acid with the carbonate of iron in pill form, or Bland's pill. Treat the patient according to the symptoms.

### Therapeutic Notes.

**Administration of Emetine During Pregnancy and Menstruation.**—A. J. Chalmers and D. Papathodorou, in the *Journal of Tropical Medicine and Hygiene* for July 15, 1915, report clinical experience in relation to the possibility of treating amebic dysentery in pregnant and menstruating women with emetine hydrochloride, in view of its known uterotonoc effect. The conclusion reached was that a half grain (0.03 gram) daily dose of emetine is the maximum which can be given safely in pregnancy. Even the effect of these doses should be carefully watched and no more of the drug injected than is required to kill the amebas in the stools, all question of a complete cure being set aside until after delivery. It appears advisable to the authors, likewise, not to

administer emetine during the menstrual period, though if it is urgently required, it can be given without causing serious harm, and continued in the intermenstrual period. In one of the authors' cases, menstruation appeared during daily administration of half grain doses of emetine, but suddenly ceased on the second day, and did not reappear, though the injections were stopped. Subsequent periods, in the absence of the drug, proving quite normal, the previous menstrual arrest is ascribed to the simultaneous use of the remedy.

**Treatment of Sarcomatosis of the Skin.**—M. Scholtz, at a recent meeting of the Academy of Medicine of Cincinnati (*Lancet-Clinic*, October 16, 1915), reported the case of a patient aged seventy-eight years in whom had developed, in the course of two or three months, about thirty dark bluish, hemorrhagic tumors varying in size from a small coffee bean to a large plum, and diagnosed as multiple sarcomata. After a thorough trial of x ray treatment with the Coolidge tube, the case had been referred back as resistant and unsuitable for this form of treatment. During this time several new growths even had sprung up, and the patient began to complain of weakness. Arsenic treatment was resorted to, Fowler's solution in doses of from three to eight minims (0.2 to 0.5 c. c.) being given. Against all expectations, from the second week a change in the appearance of the tumors was noticed. The dark bluish appearance and tendency to ulceration and hemorrhage was lost, and in five weeks the patient's appearance markedly changed, some of the tumors shrinking by a half and the general condition being much improved. The results obtained, though incomplete at the time of the report, lead the author to conclude that arsenic may prove of greater value in skin sarcomatosis than is indicated by the literature.

**Treatment of Gangrenous Wounds with Heated Oxygen.**—Vignat, in *Bulletins et mémoires de la société médicale des hôpitaux de Paris*, January 28, 1915, states that while he has treated many cases of moist gangrene with heated air, as a rule with satisfactory results, the use of heated oxygen has proved even more effective. The measure is carried out by replacing the rotary air pump in the ordinary air heating apparatus by a tank of compressed oxygen. The antiseptic power of the stream of oxygen is much greater than that of the customary stream of air, for the former stream can be brought to a much higher temperature than the air, and at high temperatures oxygen yields ozone, with an alleged increase in the antiseptic effect. The oxygen stream may be employed either at high temperatures as a carbonizing agent, or at a moderate temperature, e. g., 50° to 60° C., as a more continuous current exerting a local stimulating, rubefacient, and disinfecting effect. As the projection of hot oxygen rather easily brings on tissue inflammation, the diseased area and the dressings situated in its vicinity should be kept moist during the application. With this procedure thorough exposure and opening up of the affected tissues is often required. Its effect, however, in sterilizing a gangrenous focus and preventing its extension is far greater than that of other measures commonly used.

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## EDITORS

CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.

CLAUDE L. WHEELER, A.B., M.D.

Address all communications to

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## PUBLISHERS' ANNOUNCEMENT.

It is gratifying to be able to report to our friends in the medical profession that the subscription list of the NEW YORK MEDICAL JOURNAL is constantly on the increase; there can be no manner of doubt that the JOURNAL is growing in favor with the leading men in the profession, who gladly contribute to its columns their best efforts. Any reader who cares to take the trouble will find, on looking through the tables of contents for the closing year, that the JOURNAL will have published over 500 original communications of the first rank, the great majority of which are of immediate practical importance to the general practitioner, "tools to work with," to use an expression which embodies our ideals of what our readers demand. On the other hand, we have occasionally published communications on major surgery, or on the more difficult aspects of laboratory technic, not only for the special benefit of certain readers, but to show the general practitioner what he really must know of the advances made on the strictly scientific side of medicine. Many carefully made abstracts of lectures, the publication in full of which has been promised elsewhere, have also been presented, in one instance at least with the warm thanks of the lecturer for our accuracy. The communications on Hemadenology speak for themselves as absolutely the last word by the leading American authority on a subject of rapidly growing importance to the therapist.

With the continued support of our friends, for which we are duly thankful, we hope to do even better during the coming year.

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## THE DEVELOPMENT OF HEREDITARY QUALITIES.

There is now little question of the important part played in the composition of future generations by the transmission of qualities—traits, immunities, susceptibilities, and in a few cases even diseases and diatheses. Yet it must not be understood that all the elements to be thus transmitted from immediate or remote ancestry are complete in the germinal layer of the future individual, and need only birth to make them as patent as the fetal form. While the germinal layer must have within itself the possibilities of all qualities not acquired in later life purely by accident, all of them are not present at birth immediately to play their part in the life of the individual; these qualities are being continually developed throughout life. On the other hand, some of the qualities already developed and having reached maturity, disappear from the organism and from the life of the individual. In this way there is a continuous interchange throughout life of appearing and disappearing qualities. Not all the qualities tangent to a certain family come out in every member of that family. Because of the length of life, or rather of the shortness of life, traits of very late acquirement have no opportunity to develop; but some of the traits thus prevented from coming into being find expression in generations quite removed from the first holder. Some very patent conditions of an ancestor will not appear in the immediate offspring, but will be manifest inexplicably in the latter's children.

Moreover, some individual traits are short lived, while others are long lived. If the short lived ones appear early in life they likewise soon disappear. If the short lived traits were the only undesirable ones, future generations would not be burdened with them. It is the long lived one, however, or the late appearing short lived one, which is continually finding expression in future generations. The ideal in heredity would be the early development of short lived undesirable traits, and their consequent early dissolution before the period of reproductive activity; even rather marked undesirable qualities would then arouse little concern.

It is this tendency to the maturity and dissolution of undesirable hereditary qualities which causes the return to the prevailing type, after some disease or other biological insult has thrown the species back. This same effect on Mendelian principles of evolution is brought about by the fact that wherever dominant or strong types cross with recessive or undesirable ones, there results a progressively increasing proportion of dominants until the type catches up or returns to the normal.

The question has frequently been asked, What

period of life brings forth children endowed with most of the hereditary qualities, the early or the late? If we are dealing with dominant individuals, it seems that it would be desirable for marriage and reproduction to wait until a period in life when most of the qualities have appeared in order to give the children the benefit of these. If, on the other hand, we are dealing with recessive types, perhaps early marriage would bring out children before many of the recessive qualities had had time to develop and operate. From this standpoint, likewise, children born after the parents' maturity, when most of the characteristic qualities of value had disappeared, would not be desirable.

### THE BOLLINGER BABY.

We present in another column a communication from Dr. H. J. Haiselden, of Chicago, giving the details of the case of the Bollinger baby, which has attracted so much attention in the public press during the last few weeks. The case presents no novelties from a purely medical standpoint. Defective children are born daily and each case must be judged individually by the physician under whose observation it comes. Doctor Haiselden in this case, however, has deliberately chosen to raise a question publicly which has heretofore been debated only in private, namely, the duty of the physician as to prolonging the life of monsters.

The primary duty of the physician is to save life. All his professional training is to that end. From the time of Hippocrates onward the teachers of medicine have reiterated this to be the chief aim of the calling. No difference of opinion exists among the members of the profession; the doctrine that it is permissible for a doctor to put an end to the life of apparently hopeless sufferers, a doctrine mistakenly known as euthanasia, has never had any support from the profession save in the pages of emotional fiction. Application of the principle, however, is not so simple as it seems. There is frequently a nice balance of argument for and against any particular procedure. While operation may promise relief, the danger of death from the anesthetic may be so great as to give the operator pause. In the case under discussion there seemed to be reason to fear the effect of an anesthetic. Moreover, the mere production of an artificial anus might not—in the light of the post mortem findings probably would not—have prolonged the life of the child for any great length of time.

We are confident that the high ethical standards of the medical profession will enable the conscientious physician to act as he should act when confronted with such a condition as that which came before Doctor Haiselden. It is a matter of regret

that this particular instance has received such wide publicity, but since this has happened we felt it our duty to ask of Doctor Haiselden an exact statement of the case, something obviously impossible of publication in a daily paper, for the information of his fellow practitioners.

### THE COMMUNITY LABORATORY.

As a result of the investigations in the laboratory, medicine is gradually becoming more of a science and less of an art. The estimation of the body temperature is no longer made by the laying on of hands, nor does the modern practitioner report cases of malaria unless the organism has been demonstrated in the blood. So it goes all through the practice of medicine; methods that are now in daily use were once revolutionary ideas advanced by some laboratory worker against the opposition of many in the field.

At present, particularly since the establishment of higher standards of medical education, physicians realize the great value to them in their daily work of laboratory examinations. Why then are they not more extensively employed?

There are several answers that must be considered. One of the first is the expense of a laboratory outfit. The cost of a microscope is a large item. Granting that the recent graduate can purchase the outfit, the chances are that, with the exception of a few very simple tests, he will not be competent to do the work that may arise. Then comes the time when practice grows sufficiently large to render laboratory work out of the question; one person cannot carry on both activities. Consequently such special work must be sent to a specialist, but, unfortunately, in many instances this is a recent graduate who as yet has not acquired a practice. Finally the aid of some established laboratory in a larger city is invoked, but there are many examinations that must be omitted as patients cannot be sent by parcel post. It may be that a few physicians will unite to send their work to one man, who is thus enabled to devote all his time to the laboratory. That is satisfactory for the men concerned, but not to the other practitioners.

There yet remains another method, one that has been adopted recently in Waterloo, Iowa, whence work in the past has been sent chiefly to a large city nearly three hundred miles away. The local medical society, acting as a unit, has established at its own expense a complete laboratory and has invited a laboratory specialist to take charge. The society pays all expenses and gives the director a guarantee of a minimum income. The members feel confident that the fees of the laboratory will not only pay all expenses, but also afford a quarterly dividend.



Such an arrangement makes it incumbent upon every member to do his best for the laboratory, because it is his own project that he is helping. He will also get as many men in the neighborhood as possible to send specimens, and with such a backing success would seem assured.

Such an undertaking seems not only feasible but advisable in any town large or small, where there is a medical society. The society's laboratory could become a regular depository for medical information. We know of the large amount of material that one famous clinic is accumulating, and we can imagine the results in a large city if the local societies would unite in such an enterprise. It seems to be a plan capable of great development.

### THE ILLNESS OF DOCTOR SAJOUS.

We regret to have to inform our readers that Doctor Sajous, senior editor of the *NEW YORK MEDICAL JOURNAL*, has been compelled to undergo a serious operation. The operation has been successful, and notwithstanding the suffering and shock to which Doctor Sajous has been subjected, he is now reported to be doing well. Our readers will join us in our regrets for the distress to which he has been exposed, in our congratulations upon the successful outcome of the operation, and in our earnest hope for his rapid and complete recovery. We understand that the department of Hemadenology will be only temporarily interrupted, and that our subscribers will soon be able to resume their study of this authoritative series.

### A BEGINNING REACTION AGAINST COLLEGE ATHLETICS.

President Foster, of Reed College, is apparently a brave man. In an article in the November *Atlantic Monthly*, he has dared reveal the genuine feeling and the real judgment of college presidents, or at least the great majority of them, on intercollegiate athletics. It is a highly entertaining article—entertaining because so full of long suppressed truth, let loose from headquarters. The same things have been said many times by those on the outside, and the notions of college presidents on the subject have long been understood by those in the secret, but here is the truth, at first hand and direct.

The first paragraph of this article contains the gist of the matter. It reads: "Intercollegiate athletics provide a costly, injurious, and expensive régime of physical training for a few students, especially those who need it least, instead of inexpensive, healthful, and moderate exercise for all students, especially those who need it most." Instead of being

conducted for education, "1, to develop all the students and faculty physically and to maintain health; 2, to promote moderate recreation, in the spirit of joy, as a preparation for study; and, 3, to form habits and inculcate ideals of right living," athletics are conducted for business, "the aims being, 1, to win games—to defeat another person or group being the chief end; 2, to make money—as it is impossible otherwise to carry on athletics as business; 3, to attain individual or group fame and notoriety."

President Foster voices the inner opinion of probably all college presidents and heads of secondary and high schools—the rest dare not be so candid. President Foster himself happens to be the head of a school on which, from its beginning, he could impress his ideas, and he is unhampered by school tradition, graduate or undergraduate. The less happily situated presidents voice their sentiments only cautiously, behind thick doors, for they "do not know what to do with the problem," as one of them admitted to us recently. The fact is that they know what to do, but do not know what they would do afterward.

What is not pointed out in President Foster's article is the reason why interscholastic sports, which were once comparatively harmless to all concerned, have become a nuisance to the best interests of education. It is due to the changed character of the student body. Fifty years ago and less, the men and women who attended high school and college did so because they desired education. Now, at least a fourth of them go because it is "the thing" to do, because a degree—alas, how little it may mean!—is required in order to secure certain jobs, or because they are compelled by parents.

The athletes, or at least their chief backers, are mostly recruited from those who are little interested in the essentials of college education. Enthusiasm for athletics is easily aroused in these men, who, in fact, are quite opposed to legitimate college exercises. It is also this class which is likely to foment disturbances, and the president and the faculty are apparently afraid of offending them. In consequence, they give in to almost anything asked for in the way of athletic privileges, and wink at much besides. New conditions and the evils that arise from them must be met by new methods, and the present unhealthy growth of intercollegiate sport, which has no place in real education, physical or mental, should be done away with by all institutions that wish to give the rank and file of students a square deal. Only thus will muscular exercise, play, and athletics, so essential to the youth of high school and college age, ever be done otherwise than under compulsion in a gymnasium, or by proxy in a stadium. If the flotsam and jetsam who go to

school to smoke cigarettes and shout for the team, choose to go elsewhere, it should be considered a good riddance.

### BEANS IN THE NOSTRIL.

Beans, remarks John Furse McMillan, in a communication to the *Lancet* for November 13, 1915, are generally removed with ease from the nostrils of children. In one case, however, a child, two years old, was brought to him with a bean firmly wedged into the right nostril, so high up that the exercise of any force whatever bid fair, on account of the sensitivity of the mucous membrane, to cause the onset of convulsions in the screaming child. One is told that soda water wire makes an efficient instrument; the necessary bottles may be lacking. The bean may be pushed backward into the gullet; in which case, however, we remember the opening into the air passages. A whiff of chloroform was administered; when, however, the operator came to use the forceps available, he found them ill adapted to seize the foreign body. With an ordinary director, however, and making a fulcrum of the resilient mesial cartilage, the point of the instrument passing behind the bean, the latter, by gentle forward pressure, was readily brought to light.

### News Items.

**Changes of Address.**—Dr. George Bolling Lee, to 19 East Sixty-first Street, New York.

Dr. J. Mendelovitz, to 279 South Second Street, Brooklyn, New York.

**The Nobel Prize.**—It is reported that the Nobel prize in medicine for 1914 is to be awarded to Dr. Robert Bárány, of the University of Vienna, for his work in the physiology and pathology of the ear.

**Militia Officers Should Abstain from Alcohol.**—In a general order issued recently by Major General John F. O'Ryan, of the National Guard of the State of New York, commissioned officers as an example to their men were urged to refrain from the use of alcoholic liquors. The order was posted in all the armories for ninety days.

**The American Society of Medicine** will hold a meeting at No. 12 Mount Morris Park West, near 121st Street, on Saturday evening, December 4th. Dr. H. J. Haiselden, of Chicago, will open the discussion of defective and abnormal babies with a report of the Bollinger case. Dr. William J. Robinson, president of the society, will also speak. The medical profession generally is invited to attend.

**American Association of Clinical Research.**—At the annual meeting of this association, held recently in Philadelphia under the presidency of Dr. Jefferson D. Gibson, of Denver, the following officers were elected: President, Doctor Coleman, of New York; first vice-president, Dr. William B. Snow, of New York; second vice-president, Dr. Leon T. Ashcraft, of Philadelphia. Dr. James Kraus, of Boston, is permanent secretary of the organization.

**The Evans Memorial for Clinical Research,** Boston, is desirous of coming into communication with as many physicians as possible who have used bacterial vaccines in the treatment of typhoid fever for the purpose of collecting statistics concerning the efficiency of the method as a therapeutic measure. If any who have done this, in a few cases or even in only one case, will supply their names and addresses, blank forms will be sent upon which uniform reports may be made. Due credit will be given to each in any reports that may be published. Kindly address communications to Dr. W. H. Watters, 80 East Concord Street, Boston, Mass.

**The Bronx County Pharmaceutical Association,** on December 7, 1915, will hold its first annual dinner and get together reception at Ebling's Casino, 156th Street and St. Ann's Avenue. The novel feature of this affair is that each member of the association is bringing a physician as his guest. The speaker's list includes, among others, Hon. Douglas Mathewson, Hon. Louis D. Gibbs, Hon. William S. Bennett, Hon. Henry Bruckner, Dr. Haven Emerson, Dr. Lucius F. Brown, Hon. Jacob Weil, Dr. Jacob Diner, Dr. George C. Diekmann, Dr. William C. Anderson, Dr. William Kahrs, Mr. Albert H. Bischoff, Dr. W. Eynon, and Mr. Charles A. Affenkraut. Dr. J. Leon Lascoff, president of the Board of Pharmacy, has arranged an exhibit of the U. S. P. and N. F. preparations concerning which he will talk.

H. M. GOROWITZ, Chairman.

**The American Society for the Study of Alcohol and Other Narcotics** will hold its forty-fifth annual meeting in the parlors of the Raleigh Hotel, Washington, D. C., December 15 and 16, 1915. This was the first society of medical men in the world to take up the scientific study of alcohol and other narcotics. Its papers and transactions have been published in the *Journal of Inebriety* and comprise the first scientific literature on this subject.

Thirty-two papers on different phases of the subject will be read at this meeting by specialists and distinguished scientific and medical men. These studies will be confined exclusively to the facts and conclusions from laboratory and clinical experience and observations. The public are cordially invited to be present. Programs can be had by addressing the secretary, T. D. Crothers, M. D., Hartford, Conn.

**Dengué and Seven Day Fever at San Juan, P. R.**—On October 4th the representative of the Public Health Service at San Juan, P. R., reported by telegraph that there were rumors of the presence of yellow fever in San Juan, but that he had seen the cases and did not believe the diagnosis to be justified. Neither the Insular Board of Health of Porto Rico, after investigation, believe the cases to be yellow fever. That the disease was not yellow fever was concurred in by Surgeon King, of the Public Health Service, who arrived at San Juan, October 14th. Later Doctor King reported that the supposed yellow fever cases were in part dengué, which was probably epidemic, and in part cases of similar fevers.

Assistant Surgeon General Carter, of the Public Health Service, who has been associated with the diagnosis and control of yellow fever over a period of many years, was sent to San Juan. On November 5th, immediately after his arrival, he cabled that he did not believe the disease was yellow fever, and on November 9th, after making a most complete examination, he telegraphed that there was no yellow fever in San Juan, but that there were a number of cases of dengué and seven day fever.

**Changes at the Philadelphia General Hospital.**—The following changes at the Philadelphia General Hospital have been announced: Dr. George M. Boyd and Dr. Wilmer Krusen have resigned as obstetricians and Dr. Frank C. Hammond and Dr. John A. McGinn have been appointed their successors. Dr. Henry W. Stelwagon has resigned as dermatologist and Dr. Henry K. Gaskill has been appointed his successor. Dr. Isaac H. Jones has been appointed laryngologist. Dr. James K. Young orthopedic surgeon, Dr. Alexander Uhle genitourinary surgeon, Dr. William J. McKinley oral surgeon, Dr. Robert J. Hunter laryngologist to the tuberculosis department, Dr. Cornelius T. McCarthy assistant laryngologist to the tuberculosis department, Dr. George Wilson assistant physician. Dr. G. S. Crampton has resigned as assistant ophthalmologist and Dr. B. F. Baer, Jr., has been appointed his successor. Dr. Theodore Le-Boutillier has resigned as assistant pediatrician and Dr. Charles V. Dorwarth has been appointed his successor. Dr. Harry C. Fish has resigned as assistant physician to the tuberculosis department and Dr. Thomas Kline has been appointed his successor. Dr. John F. X. Jones has resigned as assistant surgeon and Dr. Henry Winsor and Dr. Thomas Shallow have been appointed his successors. Dr. Thomas G. Aller and Dr. David Budin have resigned as assistant oral surgeons. Dr. George Wilson and Dr. Wilson G. Wood have resigned as registrars and they have been succeeded by Dr. Leon Solis-Cohen, Dr. J. Morton Boice, Dr. Clarence N. Smith, Dr. J. Ralston Wells, Dr. David W. Kramer and Dr. Russell S. Boles.

**Gifts and Bequests to Hospitals.**—The will of the late August B. Loeb included a bequest of \$10,000 to the Jewish Hospital, Philadelphia.

The Philadelphia Home for Incurables will receive \$5,124, and the Kensington Dispensary for Tuberculosis \$1,000, by the will of the late E. R. Artman.

By the will of Caroline E. Davis, of Andover, Mass., Salem Hospital will receive \$5,000 to maintain a child's free bed to be known as the Arthur Curwen Davis free bed, and the Massachusetts General Hospital and Salem Hospital become residuary legatees.

The late Dr. Eugene L. Santee bequeathed \$5,000 to the Aid Association of Philadelphia County Medical Society.

**Philadelphia Civil Service Examinations.**—Among the positions for which the Philadelphia Civil Service Commission has issued notice of examinations, are the following: Resident physician, salary, \$600 to \$900, January 18th; assistant bacteriologist, salary \$1,400 to \$1,500, January 19th; first assistant bacteriologist, salary, \$2,000, January 19th; fourth assistant bacteriologist, salary, \$1,000, January 19th; assistant in the pathological and bacteriological laboratory, Bureau of Charities, salary, \$720, January 13th; assistant in the antitoxin laboratory (men and women), Bureau of Health, salary, \$1,000. Detailed information as to the requirements for any of these examinations may be secured upon either verbal or written request to the Philadelphia Civil Service Commission, Room 875, Phila.

**The Week's Death Rate.**—According to Dr. William H. Guilfoyle, registrar of the department of health, the past week has been one of the healthiest in the history of the city, especially so far as the prevalence of infectious diseases is concerned, as shown in the number of deaths reported from these causes. There was one death reported from scarlet fever, three from measles, and eighteen from diphtheria and croup in the entire city, these figures being much lower than at any previous corresponding week of which we have records. The number of deaths reported from bronchopneumonia, a disease chiefly of childhood, was sixty-seven, compared with ninety-four during the corresponding week of 1914. The adult population was correspondingly healthy; in other words, at all the age groupings of the population there was a decline in the number of deaths compared with the corresponding week of 1914. There were two causes of mortality that showed an increase, organic heart disease and pulmonary tuberculosis.

The number of deaths reported in the entire city during the week was 1,318, with a death rate of 11.84 per 1,000 of the population, against 1,389 deaths in a rate of 12.98 during the corresponding week in 1914, a decrease in the absolute number of deaths of 71 and a decrease in the rate of 1.14. The death rate for the first forty-eight weeks of 1915 was 13.54 per 1,000 of the population, against a rate of 13.71 for the corresponding period in 1914, a decrease of 0.17 point.

#### Resolutions on Preparedness Passed by the Southern Medical Association, at Dallas, Texas., November 8-11, 1915.—

**WHEREAS**, The President and the Honorable Secretary of War have announced in the public press that a solution to the reorganization of the army will be presented to Congress in the coming session, which will materially increase the military establishment, and

**WHEREAS**, We recall the indignant protests and criticisms of the Nation at the failure to provide adequately for the sick and wounded at the beginning of the civil war and the Spanish-American war, and

**WHEREAS**, It is known that this failure was due to the lack of a sufficient number of medical officers in the regular army and a means for increasing the medical establishment at the outbreak of war, and

**WHEREAS**, In spite of the lessons of the Spanish-American war which were fresh in mind in the reorganization of the army in 1901, the medical department was not properly increased and no provision was made for its expansion in time of emergency, and

**WHEREAS**, To correct the defects in the 1901 legislation, subsequent legislation was necessary in which the medical profession of the United States was called on to assist. Therefore, be it

**Resolved**, By the Southern Medical Association, in session at Dallas, Texas, that the Secretary of War be petitioned to make adequate provision in the reorganization of the army about to be presented to Congress for a sufficient number of medical officers for the regular establishment, which provision should aggregate a proportion of medical officers of, at least, seventy-five hundredths of one per cent. of the enlisted strength of the army, or such number as the surgeon general of the army may deem necessary, and be it further

**Resolved**, That the secretary be petitioned to make provision in this reorganization for the expansion of the medical department at the beginning of war, by calling into service in the medical reserve corps physicians from civil life who have been instructed in their special duties as medical officers in our summer camps, and otherwise as the war department may see fit.

**The Late Dr. E. L. Trudeau.**—The following resolutions were drawn up by the Workmen's Circle Sanatorium, of Liberty, N. Y.:

**BE IT REMEMBERED** That on the 11th day of November, 1915, the Workmen's Circle Sanatorium, of Liberty, N. Y., in session at the Hotel Trenton, and in accordance with its constitution, adopted the following resolutions:

**WHEREAS**, The medical staff from the late Dr. E. L. Trudeau, of Trenton, Trudeau the medical profession has been deprived of a great scientist, pathfinder, and pioneer in the sanatorium treatment of tuberculosis, and

**WHEREAS**, The patients and medical staff deeply regret the loss of a great physician to whom an innumerable host of afflicted owe their usefulness, and

**WHEREAS**, The patients and medical staff deem it their duty to honor the name of the great philanthropist and humanitarian, one who, though himself tuberculous, had for thirty-one years worked untiringly and unselfishly in the interests of the consumptive working men and working women, be it

**Resolved**, That we express our appreciation of his great work by conferring upon our hospital building the name TRUDEAU, and be it further

**Resolved**, That copies of the resolutions be sent to the medical press and a copy also to the family of the deceased.

W. S. ALEXANDER, M. D., Secretary of the Workmen's Circle Sanatorium, Liberty, N. Y.

**Activities of the Public Health Committee of the Academy of Medicine.**—Among the main activities of this committee during the summer were the following:

**Problem of Drug Addiction.**—The State and Federal laws providing stringent checks to the illicit traffic in habit forming drugs have created a problem of providing adequate facilities for the treatment of drug habitues. The matter received the careful attention of the committee and a number of conferences on the subject were held with representatives of the Courts of General and Special Sessions, District Attorney's Office, Magistrates, Board of Inebriety, and the City Departments of Public Charities, Correction and Bellevue and Allied Hospitals. In the course of the study of the situation made by the committee it became apparent that there is a lack of constructive social policy dealing with the problem of drug addiction. The committee recommended the development of the Farm Colony for Inebriates at Warwick, New York, bought by the city of New York several years ago, to enable that institution to care adequately for the cases of drug addiction committed to it. The committee also recommended changes in the present court procedure with reference to commitments and the establishment of a colony for female cases, and social follow-up service for patients discharged from the Farm Colony, to guide them in procuring employment and from falling again into associations or conditions which were responsible for the development of their drug habit.

**Sewage Disposal Into Mohansic Lake.**—At the request of the City Commission of the Department of Water Supply, Gas, and Electricity, the committee gave careful consideration to the matter of discharging sewage from the two recently built institutions (State Hospital for the Insane and the Yorktown Training School for Boys) into Mohansic Lake. After carefully weighing the arguments for and against such a procedure, the committee took the stand that inasmuch as doubt exists as to the certainty of rendering sewage effluent harmless, it would be unwise to add a possible source of pollution to the Croton Water Supply, and recommended the alternative of draining the sewage into the Hudson River which, according to the estimates of the Department of Water Supply, Gas, and Electricity, could be done at a cost of \$120,000. The committee felt that such a relatively small expenditure of money should not stand in the way of an absolutely safe method of sewage disposal.

**Quarantine.**—Following the meeting on quarantine arranged at the New York Academy of Medicine at which Hon. William H. Taft, Dr. William C. Woodward, health officer of Washington, D. C., and Mr. Henry James, Jr., spoke, the resolutions of the committee urging the transfer of the control of quarantine at the Port of New York from State to Federal control were sent to a great number of scientific, public health, civic, and medical organizations and commercial bodies, such as chambers of commerce and merchants' associations, and also to a number of prominent leaders in the political, economic, and scientific world. Over eight hundred replies endorsing the resolutions of the committee were received from all over the country. With few exceptions the transfer of the control of the quarantine was strongly favored.



## Pith of Current Literature.

## PARIS MÉDICAL.

July 31, 1915.

**Treatment of Nerve Wounds, by O. Laurent.**

The technique of liberation of nerve trunks constricted by cicatricial tissue or in which foreign bodies are imbedded is, in particular, discussed. In fibrous neuromas of nerve trunks the author recommends, as a relatively conservative procedure, repeated punctures of the neuroma with a needle or a sharp pointed bistoury, followed by pressure on the neuroma between the fingers covered with gauze. The neuroma is thus softened, but remains a conductor of the faradic current. This species of acupuncture is contraindicated where electric conduction of the nerve is reduced.

August 10, 1915.

**Use of Sheaths of Peritoneum for the Isolation of Nerves and Tendons, by L. C. Bailleul.**—Peritoneal sacs removed in the radical cure of hernias may be advantageously used to make isolating sheaths for nerves and tendons for the purpose of preventing their adhesion to surrounding tissues. The section of peritoneum employed is placed with its serous surface in contact with the nerve or tendon. One of its longitudinal borders is first sutured to the underlying tissues with interrupted fine catgut, the peritoneum then folded round the nerve or tendon, and the free border sutured to the attached border and finally to the underlying tissues also, the same sutures being used throughout. Cases are reported illustrating how well such peritoneal transplants are borne in their new situations, even where the overlying soft tissues are thin, e. g., on the dorsal aspect of the lower forearm. The peritoneum preserves its serous characteristics and permits play of a tendon as in a normal tendon sheath.

## PRESSE MÉDICALE.

September 3, 1915.

**Sodium Hypochlorite in the Treatment of Infected Wounds, by Henry D. Dakin.**—A preliminary comparative investigation of various antiseptics was made, the concentration required to kill staphylococci suspended in water, with or without the addition of blood serum. Sodium hypochlorite proved highly efficient, and is preferred by Dakin to such standard antiseptics as iodine, mercury bichloride, and silver nitrate for a variety of reasons, especially its relative lack of irritant power when suitably prepared. As commercial sodium hypochlorite shows great variation, Dakin prepares it himself by a definite procedure. In ten litres of tap water are dissolved 140 grams of dry sodium carbonate (or 400 grams of the crystalline salt) and 200 grams of good quality chloride of calcium. The mixture is well shaken up and after half an hour the clear liquid separated by siphonage from the precipitated calcium carbonate and filtered through cotton. To the clear filtrate, forty grams of boric acid are added, and the solution thus obtained is ready for use. The solution should not be kept longer than a week. The object of the boric acid is to keep the solution neutral and nonirritating by neutralizing the alkali normally liberated by dissocia-

tion in the pure hypochlorite solution. Stronger solutions, to be diluted before use, may also be made, phenolphthalein and litmus being employed as indicators of the amount of boric acid to be added. The solution appears to sterilize the wounded tissues with which it comes in contact, assists in the solution of necrosed tissue, exerts a slight hemostatic effect, and has no noxious action. Simultaneous use of other antiseptics, as well as of alcohol or ether, is to be avoided.

## BULLETIN DE L'ACADÉMIE DE MÉDECINE.

September 21, 1915.

**Early Disinfection of Wounds, by Tuffier.**—All wounds must, in military practice, be considered infected, and to this circumstance chiefly are due their serious nature, the protracted period of treatment required, and complications such as neuritis, osteitis, troublesome cicatrices, etc. Stress is laid on early disinfection as the most efficient means available of lowering mortality in these cases. This disinfection should be effected as a first aid measure behind the firing line. After application of tincture of iodine to the skin surrounding the wound, the surgeon, wearing sterile gloves, should irrigate the wound, superficially as well as deeply, with Dakin's sodium hypochlorite solution, explore the wound very cautiously for foreign bodies, open up the wound further, if necessary, and excise dead tissues. The dressing should be that recommended by Carrel, which has for its purpose to keep Dakin's fluid constantly in contact with all parts of the wound. One or more rubber tubes, six mm. in diameter, and long enough to pass entirely through the dressing, are inserted in the deepest recess of the wound. A compress previously dipped in the solution is rolled around the tube, if distention of the wound is required. A layer of sterile cotton is placed over the wound and around the limb, and the whole maintained with a loose bandage. Into the tube, which projects by five or six cm. through a small hole in the cotton, five or ten c. c. of Dakin's fluid, according to the size of the wound, is injected with a small rubber bulb every hour. The cotton is carefully changed each day. Under this treatment, discharge is limited to a clear, gummy liquid. There is no suppuration or odor, and the temperature rises little or not at all above normal. When the temperature has been normal a few days and the wound is in perfect condition, it is partially closed with an adhesive and healing follows. Results better than any previously noted were obtained with this treatment.

## MONDE MÉDICAL.

October, 1915.

**Question of Sex in Infantile Medicine, by E. Apert.**—Certain diseases are peculiar to, or very predominant in, one sex. Such, in respect of females, are chlorosis, goitre, seventy per cent.; chorea, seventy-five per cent.; Graves's disease; simple ulcer of the stomach, seventy per cent.; rheumatoid arthritis and renal ectopia, twenty-five per cent. In males, on the other hand, we get gout, progressive muscular atrophy, eighty per cent., and a number of familial diseases such as hemophilia, Daltonism and atrophy of the retina, only to mention a few of the best known. Men and women react differently

to the same disease. Women support chronic diseases better, they are less robust but have more resistance and react less powerfully but often more effectually. It is not only after puberty that these differences manifest themselves. They are present from earliest childhood, possibly less pronounced but still obvious. The phase of well marked sexual differentiation which begins at puberty merely emphasizes differences which are already existent. Doubtless these sexual differences are, so to speak, latent in the child, but this is due to the quiescence of the sexual organs. This quiescence, however, is not quite complete. The genital outburst of the newly born is curious; within the first few hours that follow the establishment of aerial life the ovary presents an increase of size with vascular congestion. The cells of Graefe's follicles undergo active proliferation and we can even detect the beginning of ovular formation going, it may be, as far as dehiscence of the follicles and shedding of ova. In less marked cases the follicle does not rupture and after the period of increase comes a period of retrogression and atresia. Sometimes several follicles undergo these changes at the same time but at different degrees of maturity. The uterus is hyperemic, the mucosa is congested, and this congestion often culminates in an effusion of blood into the cavity of the uterus. Sometimes there is actual metrorrhagia, and when the child is undressed we find on the linen a brownish stain the size of a florin or a crown piece or possibly some blood clot with blood still oozing from the vulva. This sanguineous discharge may persist for thirty-six or forty-eight hours. In boys the testicle is the seat of similar changes; it is intensely congested; the cells of the seminiferous tubules undergo proliferation shown by figures of Caryocinesis. The prostate increases in size and its cavities are filled with viscid secretion. Clinically, the testicular congestion is accompanied by increase in size of the organ and effusion of serum into the tunica vaginalis. This may be small or considerable in amount, constituting what is known as vaginal hydrocele of the newly born. This hydrocele attains its maximum between the tenth and the twentieth days and, as a rule, disappears in the course of a few weeks. This genital outburst is accompanied by constitutional phenomena suggestive of puberty. In respect of the skin, there is exaggerated secretion of sebaceous matter, which forms a greasy white deposit in the cutaneous folds. On the face, especially on the *alæ nasi*, the glands become filled with sebaceous matter forming little white spots imbedded in the epidermis (sebaceous miliaria of the newly born). At the same time a fine down comes out all over the body, known as lanugo, more particularly on the extensor surfaces of the limbs and on the trunk, in the middle of the back along the spinal column. This very fine down, as a rule lighter in color than the hair, is shed in the course of a few weeks. The forehead sometimes becomes covered with short fine bristles, darker, coarser and stiffer than the down. These also disappear in three or four weeks. Lastly, in the infant girl as well as in the infant boy, we witness a swelling of the breasts, which is only lacking in very tiny or very debile newly born infants.

## BERLINER KLINISCHE WOCHENSCHRIFT.

**Dermatological Aphorisms, by P. G. Unna.**—In order to prepare a satisfactory mercurial powder it is not only necessary to bring about the finest possible subdivision of the metal, but also there must be formed a layer of the metallic oxide about each minute particle. This can be accomplished by the use of lycopodium, which holds a large amount of air, and by moistening with oil of turpentine to act as a catalyzer. The lycopodium should be moistened with the turpentine and the mercury then rubbed with it thoroughly. Within two minutes the mercury will have completely disappeared and a homogeneous yellowish gray powder will be produced. One can use two, four, or nine times as much lycopodium by weight as of mercury and secure a thirty-three, twenty, or ten per cent. mercurial powder. The last is the most satisfactory strength. The finished powder will contain a small amount of turpentine, but this is rather an advantage as it serves to hasten the absorption of mercury through the production of a slight cutaneous irritation. This powder is specially useful as a dusting powder for the destruction of body lice in clothing and on the person.—Cutaneous syphilides can be readily treated without mercurial injections or the use of salvarsan. One of the most satisfactory methods is the application of a zinc oxide mercury plaster to large areas of the trunk or extremities. Each week a fresh region of the skin should be covered with the plaster to the extent of a quarter of a square metre, and the old plaster should be removed at intervals of eight to fourteen days. After removal of the plaster the skin can be cleaned with benzoin and oil. The method is clean, effective, and lends itself specially to the treatment of ambulatory cases. When an injection is desired fifteen minims of the following solution, containing one sixth of a grain of bichloride of mercury, can be given daily or every other day: Mercuric chloride, ten grains; sodium chloride, ten grains; distilled water, two ounces. This does not produce the discomfort and pain which is usual with the insoluble mercurial injections. If administration by mouth is preferred, a very serviceable pill can be made according to the following formula: Unguenti hydrargyri, dram one; magnesiæ oxidi, dram one half; pulveris althææ, dram one. Sixty pills should be made. Each pill will thus contain half a grain of metallic mercury and the daily dose may be two to four pills.

## REVISTA DE MEDICINA Y CIRUGIA PRÁCTICAS

**Treatment of Fibrinous Pneumonia by Auto-microbine, by Martinez Vargas.**—Vargas insists that preparations of dead bacteria should not be called vaccines but rather microbines. He describes a case of lobar pneumonia in a boy of three years in whom a very favorable and apparently curative influence was exerted by the injection of an autogenous vaccine or microbine. The injection of 500,000 dead pneumococci on the fourth day of the disease resulted in a drop in temperature of 2° C., and a reduction of the respiration rate from eighty to fifty a minute. The day after, the injection was repeated, one million cocci being given, with steady

improvement in the patient's condition; no further injections were needed.

**Xerosis Treated with Autovaccine**, by D. J. Rovirosa.—Xerosis, xerophthalmos or keratosis is one of the most serious ocular affections; it consists clinically of desiccation of the bulbar conjunctiva. In most cases there is permanent impairment or destruction of function from the extension of the process to all of the cornea. True xerosis consists of fatty degeneration of the epithelium. A case in a man of thirty-two years treated with an autogenous vaccine resulted in almost complete vision with only a slight infiltration in the upper and lower parts of the cornea. The vaccine was made with one hundred millions of the bacilli to the c. c. The doses injected began with 0.3 c. c. and went up to two c. c. This method seems to be innocuous, and its success in this case certainly justifies its trial in all such cases.

#### BRITISH JOURNAL OF CHILDREN'S DISEASES.

October, 1915.

**Extensive Pigmented and Hairy Nevus with Molluscous Tumors**, by W. Mitchell Smith.—The patient, a girl aged eight years, having a negative family history, was born with her face, trunk and limbs covered with dark, reddish brown marks, which have grown in proportion to the growth of the child. Almost the entire cutaneous surface is covered with pigmented patches, which vary from reddish brown to dark, blackish brown. They are in part abundantly covered with hair, while, in other places, the surface is smoother and the hair shorter. The left arm and leg show the condition most markedly. Several molluscous tumors, the largest of which is four inches in length, are also present, attached to the inner side of the left buttock and perineum. Extensive treatment of cases of this sort is impossible. Fox has suggested that some improvement may be obtained in the lesions in the face and hands by the use of nitric acid, phenol or carbon dioxide snow.

**Extragenital Primary Chancre of the Wrist**, by George Pernet.—This location is unusual, as in children extragenital primary chancres usually occur about the mouth or lips, occasioned by promiscuous kissing or sexual aberrations. The case in question, in a boy of fifteen years, came under observation as a widespread papulolenticular rash which affected the face, trunk and limbs. Multiple adenitis and also typical syphilitic ulceration of the throat were present and the boy looked ill. There was no sign of a primary sore about the genitalia. A raised convex lesion, situated on the radial side of the flexor surface of the right wrist, attracted the examiner's attention. The lesion was indurated and the corresponding axillary glands were greatly enlarged and hard. The original injury was a slight scratch from a piece of wire which had festered. This had taken place three months before the patient was first seen, at which time he gave about two weeks as the duration of the rash. The only clue to the origin of the syphilis was the statement that a man with a bad skin rash had lodged in the same house. The wound had not been sucked, so infection could not have taken place from another mouth. The treatment consisted in the injection of 0.15

gram neosalvarsan, the drug being of English make. Its administration was followed by a smart reaction, the temperature reaching 104° F. The Wassermann test was positive.

**Education of Children with Defective Vision**, by N. Bishop Harman.—Children are divided into three groups according to age and attainment: Children of the first group perform such work as stringing beads and working simple designs. Lessons in arithmetic are also given in connection with the work, and lessons in paper folding, cutting, modeling, modeling in clay and plasticine, toy making, drawing, other handicraft work of purely utilitarian character, knitting, string bag making, etc. Children of the second group perform card board modeling, modeling in clay and plasticine, toy making, drawing and utilitarian crafts. In group three, paper folding is practised on occupational lines, as well as envelope folding, show card making and box making. Modeling is now confined to the use of paper pulp. Toy making, including all the carpentry these children can undertake, is also included in this group. Drawing and design are developed in the bent iron work. Knitting is continued by the girls.

#### MEDICAL PRESS AND CIRCULAR.

November 17, 1915.

**Garlic Juice in Wound Treatment**, by A. D. Serrell Cooke.—In a recent issue of the *Lancet*, September 11, 1915, Mr. V. Gabriel and the author recorded their experience with garlic juice in suppurating wounds in twenty cases, and gave details of six of the cases treated. It was stated that after establishing efficient drainage and washing out carefully the infected wound twice daily with a lotion of garlic juice and distilled water, in a strength of one to three or one to four, a noticeable improvement occurred in twenty-four hours and a decided improvement within forty-eight hours. During this period of time the purulent discharge not only became markedly diminished, but also the pain and surrounding inflammation were either much relieved or had disappeared. Since the publication of the article referred to above, there have been treated at Paddington Infirmary more than a hundred cases of wounds of all kinds, and the results, provided that efficient drainage has been maintained, continue to be very satisfactory. The kind of wounds treated have been recent dirty wounds, in which suppuration had not occurred; foul, lacerated suppurating wounds of the face, scalp, thigh, etc.; extensive superficial burns of the face, scalp, chest, limbs and abdomen in children; suppurating bursæ about the knee; cases of empyema; foul ulcers of the leg; infected and suppurating wounds in connection with compound fractures; carbuncle; one particularly interesting case of moist spreading gangrene of the leg in an old woman of seventy-one years. In many cases in addition to washing out the wounds twice daily with garlic juice lotion, compresses formed by soaking gauze in a weak lotion, from one to six up to one to ten, have also been applied continuously at the outset. The object of the present paper is to give the result of observations of the action of garlic juice both on the skin and wound tissues, and perhaps also to add a few



notes in further relation to the wounds already referred to. The good effects of garlic juice have been ascribed to the active principles contained in the essential oil derived from it; and *oleum allii* is stated to contain allyl sulphide, in addition to certain volatile terpenes. As the red skinned varieties of *allium sativum* are said to contain more of the essential oil than the white skinned, the juice derived from the red skinned varieties has consequently been employed. With regard to *oleum allii*, the action on the skin is that of an intense rubefacient which may go on to vesication. Its carbolic acid coefficient is nearly two. With regard to the succus *allii*, the appearance and smell are striking according as to whether the juice has been treated or not, soon after extraction, with alcohol or other preservative. The fresh untreated juice is of a pale straw color, having a flocculent deposit, which when stirred up gives a clouded appearance to the fluid; while the odor is very strong and characteristic. The treated juice, on the other hand, is a clear fluid, pale straw in color, and the odor is distinctly masked. While the fresh untreated juice deteriorates rapidly, the treated juice may be kept indefinitely under proper conditions. Recently wounds have been treated with some juice which had been kept in a cellar for more than a year, and the results have been quite as effective as when the more recently expressed garlic juice has been employed. Within wounds a lotion of one of garlic juice to two of distilled water often causes decided pain. While lotions of one to three and one to four have usually sedative effects. (See this JOURNAL for May 22, 1909.)

**Functional Palsies**, by Frederick S. Palmer.—The author considers them in detail. The term paralysis is loosely applied, as a convenient synonym for such commonplace expressions as stagnation, arrest, and even destruction; this may possibly be responsible for part of the horror with which the word is regarded by the laity. If we turn to its Greek derivation, we find it inadequate to meet the requirements of present day knowledge. It would be impossible to describe such well known paralytic disorders as congenital spastic diplegia or spastic paraplegia as examples of loosening by the side. We must look elsewhere for a definition. It is limited to the failure of control, which the motor centres exert over the movements of the muscles, but it means the loss of voluntary motion, sensation, or function in any part of the body. We must now consider what special significance is attached to the prefixes hysterical or functional applied to the group. Palsies and anesthetics are some of its most common and striking manifestations; as a rule, both occur together, but one may be present alone. Those of Babinski, Janet, and Freud have been dealt with elsewhere by Ormerod and Kinnier Wilson in a masterly way. It is sufficient to say that no hypothesis yet presented can be accepted as convincing, and to the future we must look for light and inspiration. They are identical in one essential feature—the absence of visible gross lesions in the central nervous, peripheral, and muscular systems, so they are still called hysterical and described under the head of the general disease.

By no local condition such as tonic spasm, nor in any other way, can the sudden recoveries, which by no means infrequently take place in some cases of long standing paralysis, be satisfactorily explained. It is true that Bastian draws a distinction. He refuses to accept as hysterical cases of functional paralysis unaccompanied by other stigmata, but if he includes the minor signs they are not usually far to seek. Presumably we should all agree with him that the epithet functional is at best but a half diagnosis and may be a positive error, but the same may be said of many other morbid conditions to which we are called upon to give a name. In the nervous system, especially, it is often impossible at a first examination, and in the absence of objective signs, to determine the class to which a particular case belongs. We can only make an approximate or provisional diagnosis, subject to revision on reexamination and the evolution of more definite symptoms. Hysterical manifestations and organic disease may coexist, as we find in some cases of cerebral tumor. Many serious diseases develop on so called "functional" lines, and it may be weeks or longer, perhaps, before the underlying organic cause is discovered. There are few distinctions more puzzling to an experienced eye than functional disorder, and the early stages of that protean disease disseminated sclerosis. The irregular forms, or *formes frustes*, masquerade in so many disguises that they should never be lost sight of. Twelve years' experience in a special hospital has long since led to the conclusion that insular sclerosis is one of, if not the commonest organic nervous disease which confronts physicians, and in its early stages it is sometimes indistinguishable. Although no line of demarcation can be drawn between hysterical and functional palsies, it would be wise to discard, as far as possible, the use of the apparently objectionable word hysterical in speaking to patients and their friends. The narrow borderland which separates some cases of genuine hysteria from shamming is not understood by the public, and it may be purposefully manipulated or exploited for unworthy motives. As a substitute, the adjective functional possesses many advantages. It is true, it does not provoke anger, and in the event of an unfortunate error of judgment, to which all are liable, it is more likely to be forgiven when the diagnostic difficulties are explained. Hysterical aphonia is by far the commonest form of functional paralysis encountered; the adductors are at fault. It occurs most frequently after some psychic excitement, but it may also be the sequel to an ordinary catarrh. The voice is reduced to a whisper, but coughing is usually accompanied by vocal sounds. It is always bilateral. The cords are either in a state of abduction or can only be partially approximated. It may disappear spontaneously or under treatment, but it remits very easily, and may persist for years. One of Palmer's cases lasted four years, and then ended in spontaneous recovery. The condition is decided by inspection of the larynx, and the recognition of hysterical personality. Care must be taken to exclude bulbar paralysis, indicated by paralysis of the lips, tongue, and pharynx; with difficulty in mastication and deglutition.

## PRACTITIONER.

**Gastric Radioscopy in Children**, by Leonard Willox.—The shape of the stomach with contents in children is not fixed, but presents many differences during the process of digestion. As a rule it is more or less globular, becoming elongated as the child grows older, but may show different forms at different times. The food stuff does not seem to have much if any effect on gastric motility; the important thing is the fluidity of the meal. Barium meals pass out of the stomach more quickly than similar meals containing bismuth. Equal parts of milk and lime water are evacuated more quickly than an equal volume of milk alone. Citrated milk goes through more rapidly than plain milk. The stomachs of older children empty quite as quickly, on an average, as those of younger children if a meal similar in bulk and consistence is given. Some stomachs show a slowing in the rate of contraction when nearly empty, while others display an increased activity. In some, the food begins to pass through the pylorus practically as soon as the meal has been taken, while in others there seems to be a resting stage before peristalsis begins. If a second meal is taken before all of the first has left the stomach, there may or may not be a mixing of the residue of the first with the second meal, but when it occurs it is not an intimate one. The residue may be pushed to the pylorus and evacuated sooner than if the second meal had not been taken.

**A New Operation for the Relief of Pruritus ani**, by Ivor Back.—The operation is to cut down beside the anus into the ischiorectal fossa until the inferior hemorrhoidal artery is found. This is cut across and its ends are ligated. The edges of the wound are then brought together and secured with Michel's clips, which do not pierce the skin and are therefore preferable to sutures. The first dozen cases have been successful.

## MEDICAL RECORD.

**Prognosis in Cardiovascular Disease**, by Thomas E. Satterthwaite.—In valvular disease the state of the vessels has an important bearing on the prognosis. The most important points are the character of the disease, its location, variety, extent, duration, and complications; the degree of myocardial implication; associated constitutional disease; patient's age, sex, status in life, habits, occupation. Only partial recovery can be looked for in organic cases, although the function may be restored almost completely. In infants under one year the outlook is particularly unfavorable in any form of heart disease. Women apart from the special risk in pregnancy and parturition have a better expectation of life. In men the prognosis is most unfavorable where the occupation calls for physical strain or exposure to inclement weather. The outlook is more favorable in mitral insufficiency than in any other form of valvular disease and it is not incompatible with a long life. Mitral obstruction is more serious and seems to be more liable to the occurrence of embolism. The danger in aortic insufficiency depends

on the presence or absence of arteriosclerosis or angina. Pulmonary valve disease is grave when congenital, while tricuspid affections are rarely congenital. Congenital tricuspid obstructions are the most dangerous of all valvular diseases and the patients seldom live long. The intensity of a cardiac murmur is not a measure of the gravity or the extent of the disease process. Systolic murmurs are of less grave significance than diastolic. Heart cases are benefited by a suitable climate and the elevation should not be over 1,500 feet. Rest and avoidance of overdosing with drugs of the digitalis group are of great importance, while high blood pressure is always a bad sign even in the absence of interstitial nephritis. The diet should be carefully regulated and there should be no mental or physical strain and no overeating or overdrinking. Ascites is always an unfavorable sign, while kidney involvement usually hastens the end.

**Acidfast Bacilli in the Feces of Patients with Joint Disease**, by Henry Keller and A. J. Moradek.—One year's careful experimental and clinical observation results in a belief that an acidfast bacillus in the feces, resisting twenty-five per cent. nitric acid followed by alcohol eighty per cent., is the tubercle bacillus; this same bacillus can be grown on culture media, and, thirdly, these cultures when injected into guineapigs produce tuberculosis. Patients suffering from joint tuberculosis keep on discharging tubercle bacilli for years so long as the disease lasts and these bacilli are alive and can produce tuberculosis in others. In obscure joint conditions tubercle bacilli should be looked for and patients with joint tuberculosis should never be discharged as cured without a negative search for the bacilli in the feces. The smegma bacillus is not found in the feces.

**Symptomatic Psychosis of Renal Type**, by Emanuel S. Brodsky.—Two cases both in women, one fifty-eight years and the other thirty-eight years of age, illustrate the association of fear psychoses with functional disturbances of the kidneys.

**Subdeltoid Bursitis**, by S. Kleinberg.—This condition is frequently mistaken for rheumatism and the patient put on rheumatic remedies for weeks when a few days' splinting would relieve and cure. From its situation the subdeltoid bursa is subject to an unusual variety of injuries. Many important conditions must be considered in making a diagnosis. These are tuberculous arthritis, fracture of the humerus, axillary abscess, muscular rheumatism, acromioclavicular arthritis, circumflex paralysis, tenosynovitis of the biceps, brachial neuritis, tumors and peri-arthritis of the shoulder. In the acute or painful stage rest is all important and abduction of the arm is the ideal position when practicable, although binding of the arm to the body is next best. During the second stage when disability is a prominent feature there should be instituted gradual stretching of bursal adhesions by proper exercise. Operation is indicated only to shorten the period of convalescence where time is an important factor, or in chronic cases where relief has not been obtained by conservative methods.

## AMERICAN JOURNAL OF THE MEDICAL SCIENCES.

November, 1935.

**Röntgen Diagnosis of Gastric Cancer**, by R. D. Carman. The records of the Mayo clinic show that in a large series of cases confirmed by operation, sixty-seven per cent. of the patients had palpable tumors and 53.3 per cent. had food remnants. In other words, thirty-three per cent. had no palpable tumors and 46.7 per cent. no food remnants. It is in the cases which show neither tumor nor food remnants that the Röntgen rays have their greatest field of usefulness, and it is stated that in this clinic ninety-five per cent. of gastric carcinomas are discovered by this means. Since nearly one third of all cancers occur in the stomach, and since early recognition and operation alone afford a chance of cure, any measure which will increase the number of correct and early diagnoses is of the highest importance. The clinical data should always be known to the röntgenologist to stimulate his search or restrain the interpretation of his findings, and the diagnosis should be compatible with all findings. Occasionally the diagnosis can be made only through their correlation. The röntgenological signs in the order of their relative importance are: Filling defects, occasioned by the projection of the tumor into the barium filled lumen of the stomach producing irregularity of contour; alterations of pyloric function; perversion of peristalsis; altered motility; lessened flexibility; lessened mobility; diminished size; displacement. These are considered by the author in turn, with considerable attention to filling defects. The pictures produced by the different forms of cancer, fungous, scirrhus, mucoid, and carcinomatous ulcer are discussed. The experience of the examiner and his ability to see and interpret slight departures from the normal have some importance in the diagnosis of early cancers. One no larger than a cherry has been found and the discovery of smaller ones is possible. The cases reported illustrate the marked degree to which the indications and their combinations vary.

**Studies of Nephritis**, by Henry A. Christian, Channing Frothingham, Jr., James P. O'Hare, and Alan C. Woods.—The von Monakow standard diet with days of added salt or urea requires about ten days of hospital treatment, the Hedinger and Schlayer test day on a mixed diet about three days. Similar though not quantitatively identical results were obtained by each. For the latter test there is no constant normal curve of excretion. Normality consists in the ability to vary from period to period the amounts and concentration of the substances quantitated. Abnormality consists in a more or less marked degree of fixation in all of these values from period to period. In most cases fixation in excretion of nitrogen seems to develop later than for water and salt. Urea nitrogen averaged 63.4 per cent. of the total nonprotein nitrogen of the blood, and the increase of the two was usually proportionate. Ammonia nitrogen, uric acid, and aminoacid nitrogen increased slightly but not proportionately. Creatinine showed roughly a proportionate increase. The difference between determined forms of nitrogen and total nonprotein nitrogen was greatest when the clinical symptoms were most severe. The increase

of nitrogen in the spinal fluid is almost solely in urea nitrogen except in cases of anuria. No relationship was found between the amount of nonprotein nitrogen in the blood and changes in the retina. Diuresis is relatively infrequent and bears an inconstant relation to diuretic drugs, except digitalis in cardiac cases. Diuretics often fail to produce diuresis in cases of nephritis with or without edema and without cardiac decompensation, but are often effective in cardiorenal cases. In eighteen cases of chronic nephritis that came to autopsy no constant relations were found between the anatomical lesions and the renal function so far as excretion of phenolsulphonephthalein, albumin in the urine, casts, presence or absence of edema, and blood pressure determinations were concerned.

**Occurrence of Sprue in the United States**, by Edward J. Wood.—Tropical sprue occurs in the southern States, where it is frequently confounded with pellagra. The only certain means of differentiation is through a study of the feces. Fatty stools with great fat and nitrogen loss are characteristic of sprue, while in pellagra the fat and nitrogen absorption are about normal in spite of the diarrhea.

**Luetin Reaction in the Diagnosis of Tertiary and Latent Syphilis**, by Frederic M. Hanes.—The luetin reaction when positive is specific, but it is of limited value in other than cases of latent and tertiary syphilis, for which it is a more delicate test than the Wassermann. Patients with visceral syphilis give positive luetin reactions with great constancy.

## JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

November 20, 1935.

**Urinary Antisepsis**, by Frank Hinman.—Over half of all the deaths in urological cases are due to infection. There is no specific treatment for such infections, but proper use in each case of antiseptic, bacteriological, and clinical facts affords a rational and scientific method. In each case the infecting agent, the source, entry, extent, and accessory conditions which tend to prolong or spread the infection, should be determined. More than ninety per cent. of infections are caused by one of five organisms—the colon bacillus, staphylococcus, streptococcus, proteus and tubercle bacillus. Most external disinfectants are irritant and toxic; many are so rapidly weakened by chemical changes in contact with body fluids as to render them almost useless; most of them penetrate but poorly; few can be used in germicidal strength. The most satisfactory are iodine, permanganate of potassium, silver nitrate and formaldehyde. Protargol, alcohol, etc., are often quite as good in practice. Internal antiseptics, substances excreted in the urine, offer great possibilities; but so far no substance has been found which is entirely satisfactory. Hexamethylenamine is the most efficacious in the greatest number of cases; it has limitations which render it unsuitable for routine use. It is effective only after decomposition, with the liberation of formaldehyde, which takes place only in an acid medium. As many bladder or other urinary infections are associated with an alkaline urine which cannot be rendered acid with certainty, this drug is much restricted in its field of usefulness. Further, it must be present in sufficient concentra-



time to exert its effects, and its action must continue for some time to give good results, both of which conditions are excluded in cases with increased frequency of micturition.

**Analysis of 400 Cases of Lobar Pneumonia, by J. G. Gross.**—Lobar pneumonia is more fatal than it was formerly. Hospital records give less favorable results than those obtained from private practice, because among hospital patients there is less intelligent cooperation, there is a greater incidence of acute and chronic alcoholism, and the patients are less well nourished in general. Not only does the frequency of the disease vary in different seasons and in the corresponding seasons in different years, but the mortality is much greater at some times than at others from factors not yet understood. The mortality in patients under five years of age is about four times as great as in those between five and ten years old, which period marks the lowest mortality of all. After this each decade of age shows an increase in mortality over the preceding. In 125 cases in which the exact date of onset was known, it was found that there was no regularity in the day on which the crisis occurred, although it occurred by the tenth day in eighty per cent. In the remaining twenty per cent. it occurred on some later day up to one month after onset. In forty-six per cent. of the cases the first symptom was a chill, fourteen per cent. began with pain in the chest, side or back, and in twelve per cent. cough was the initial symptom. In sixty-three per cent. of 369 cases both albumin and casts were present in the urine. In 333 cases the site of the lesion was determined. The right upper lobe was affected in nine per cent., the right lower in twenty-nine per cent., the right middle in two per cent., the left upper in six, and the left lower in twenty-six per cent. With leucocyte counts below 10,000, the death rate was high; between 10,000 and 15,000 and between 20,000 and 25,000 the mortality was average, and between 15,000 and 20,000 there was an unexplained fall in the death rate. Counts above 25,000 gave a very low mortality. With counts up to 20,000 the proportion of terminations by crisis and lysis was fairly uniform, between 20,000 and 25,000 the two terminations were about equal, and counts from 25,000 to 30,000 showed a preponderance of one to two in favor of lysis.

AMERICAN JOURNAL OF OBSTETRICS AND DISEASES  
OF WOMEN AND CHILDREN

October, 1915

**Intranasal Treatment of Dysmenorrhea, by C. A. O'Reilly.**—Good results from this treatment in four cases are reported. The so called genital spots, to be cauterized, are situated, one on the tuberculum septi directly opposite the middle part of the middle turbinate, and the others on the anterior portion of the inferior turbinate, one on either side of the nose. During menstruation these spots are slightly cyanotic, very sensitive, and somewhat swollen; they tend to bleed easily. The treatment consists in anesthetizing them with a twenty per cent. solution of cocaine containing epinephrine allowed to remain in contact three minutes. If at the end of this time they are still sensitive to the probe, the application is repeated. A crystal of

trichloroacetic acid is then applied to each genital spot. The slough that forms disappears in about five days, when the procedure should be repeated, and so on until four applications have been made between successive periods. If the report as to the patient's next menstruation is favorable, the treatment is discontinued; two more reports at succeeding menstruations are, however, requested, and if these are favorable the patient is discharged. Where relief is slight or nil, four more applications are made.

**Tuffier's Ovarian Graft, by W. A. Norton.**—Removal and transplantation of the ovary between the rectus muscle and the peritoneum is indicated in septic processes of the uterus and annexa, cystic and sclerotic ovaries, and fibroids of the uterus not suitable for enucleation. In salpingitis the uterus is left in place, adhesions are broken up, the annexa removed, and one or both ovaries grafted. Where cystic ovaries are found, the cysts are shelled away. In fibroids at least a third of the uterine mucosa is saved and covered with a shell of uterine tissue; upon transplantation of one or both ovaries, in whole or in part, restoration of menstruation is assured. An ovary to be transplanted is split and placed in a small pocket over the peritoneum, with its split surface in contact with the latter. Menstruation returns in five months. Norton has practised the method in numerous cases and has been highly gratified with the results, even where apparently hopelessly diseased ovaries were transplanted. He recommends the procedure as a substitute for double oophorectomy in idiots, defectives, and criminals. It may also be availed of where one wishes to sterilize because of a contracted pelvis or other condition rendering childbearing impossible. In gonococcal cases, the ovary is placed in a clean, healthy bed, completely protected from subsequent attacks of the infection. Where a removed ovary is not aseptic it may be run through an alcohol flame before implantation; this sterilizes it sufficiently to make it take.

BOSTON MEDICAL AND SURGICAL JOURNAL.

November 18, 1915.

**The Midwife Problem, by A. K. Paine.**—Education in obstetrics in the various medical institutions of this country is considerably below the standards achieved in other branches of medicine, and its practice generally is materially below the standards of general medicine and surgery. The circumstance is due first to the educational deficiency on this subject; second to a low type of midwife service, the result of a practical absence of regulation; third to the fact that the general attitude of the public at large toward the practice of obstetrics is not in keeping with the dignity of that subject. No comprehensive and far seeing plan is being developed to cope with the situation. There is a distinct tendency in many quarters to adopt the midwife as an institution after the manner of European countries. While the whole subject of the proper obstetrical care of patients is one of great economic importance, the State is making practically no attempt to meet the situation. It should assume the management and control of this work, but it seems

as though our method of government is not adapted to rigid requirements.

**Clinical Records in Relation to Teaching and Research.** by Eugene S. Kilgore.—The hope of having anything but haphazard and fragmentary clinical records should be abandoned by any institution whose visiting staff will not give time and energy to the undertaking. An essential element is standardization of the general form of records and method of filing; and to this end by far the most businesslike and effective plan is to give over the direction of the record system to some one member of the staff who has the requisite insight and abundant interest in the undertaking and the patience to carry it out. He will encounter a large number of details and for a long time will have to educate other members of the staff, as well as the interns and nurses. A common defect of clinical records is that they do not make clear to one who reads them several years later the exact nature of the procedures mentioned; the reports should be complete and ambiguity should be avoided. The methods followed in the University of California Hospital are given in detail.

**Local Anesthesia in the Radical Cure of Hernia.** by Albert Ehrenfried.—Novocaine offers a simple and satisfactory means of inducing anesthesia for the radical cure of inguinal hernia, even in complicated cases. The technic adds something in the way of difficulty to the surgeon who is not accustomed to the use of local anesthesia, but the advantages to the patient are sufficient to compensate for any extra care or effort required. It should be the method of choice in cases where contraindications to general anesthesia exist, and it should be used in any ordinary case if the patient desires it.

#### JOURNAL OF TROPICAL MEDICINE AND HYGIENE

Vol. 25, 1919

**Trypanosomiasis**, by C. W. Daniels.—From observation of cases of sleeping sickness treated in Africa and then brought to temperate climates, the suspicion was aroused that in this disease late manifestations corresponding to the parasymphiles may occur. Iridocyclitis was the chief secondary condition witnessed. Toxic effects shown by fever, a rash, and irregular cardiac disturbances, sometimes fatal, were found most marked in the early stages. Stress is laid on early diagnosis for reducing the chances of permanent visceral lesions, and since the parasites are in many instances very scanty, a careful watch for suspicious signs and symptoms is urged. Continued irregular fever not yielding to quinine is one of these, and has led to detection of the parasites in the blood, often a procedure requiring prolonged examination before success is attained. The rash may not appear till late, but glandular enlargement, particularly cervical, is a useful clinical sign. Sometimes fluid obtained by gland puncture shows the parasites more readily than blood examination. As regards treatment, Daniels, in all but the severe cases originating in Rhodesia, has been satisfied with prolonged use of atoxyl or soamin in doses of three to four grains on alternate days. With these he combines antimony in the form of antiluin, which is taken in one half to one grain doses daily, usually without objectionable symptoms. A satisfac-

tory antimonial or other drug for use where atoxyl fails is still lacking.

**Treatment of Parangi.** by E. C. Ford.—Three cases of parangi, with frambesiform ulcers on various parts of the body were treated with Castellani's mixture, consisting of tartar emetic, one grain; sodium salicylate, ten grains; potassium iodide, one dram, and sodium bicarbonate, fifteen grains, in one ounce of water. Three doses were given daily, diluted in four times the amount of water, to adults and others over fourteen years of age; half doses to children of eight to fourteen years, and one third or less to younger children. Excellent results were obtained, improvement taking place within a few days after the start of treatment and all cases being discharged cured in from two to three weeks.

#### SOUTHERN MEDICAL JOURNAL

**Importance of Cerebrospinal Fluid Examinations in Syphilis of the Central Nervous System.** by Sydney R. Miller.—The value and interpretation of any laboratory method should be based upon the most careful clinical study of the cases in which these tests are applied. Studies of the spinal fluid have shown that the central nervous system is not infrequently invaded by spirochete in the primary and secondary stages of syphilis, although only a small proportion of the patients thus affected develop syphilis of the brain or cord. There is no danger and much wisdom in making periodical spinal fluid examinations in all cases known to be infected with syphilis, regardless of the treatment instituted. Such a procedure is essentially one of protective therapy, as it is calculated to meet the need of diagnosing syphilis of the nervous system before the causative organism has been able to construct its impenetrable and destructive defensive mechanism. Certain reactions occur in the cerebrospinal fluid with a regularity characteristic enough to make them very useful in the diagnosis of syphilis of the brain and spinal cord, but no one is pathognomonic of any condition except in connection with clinical symptoms.

**Neglected Eyes**, by John F. Woodward.—Many of the millions of babies born every year do not reach maturity with perfect eyesight, a few because of heredity, but most because of neglect. The Massachusetts commission for the blind is quoted as saying that twenty-five per cent. of the estimated blind are blind from three causes, neglect by physicians, by business, and by the State. The writer analyzes two thousand cases taken from his case book. By blindness he means no useful vision. Thirty patients were blind in one eye from disease, twenty-six from injury; six were blind in both eyes from disease and one from injury; forty-two had useless vision of one eye from neglect in early childhood; twenty-three had practically useless vision of one eye from disease. Ten of these could never get good eyesight from any kind of glass. One hundred and twelve always had trouble with their eyes. Many of these patients followed their daily occupations with difficulty at a cost to those who employed them and at a greater cost to their own physical condition. One hundred and seventy-six were children

from six to twelve years of age who had never before consulted an oculist. Fifty-seven adults likewise had never consulted a specialist, though they had been treated for years with drugs for headaches and neuralgias; twenty-six had cataract and eighteen suffered from reflex asthenopia from troubles in the nose. The remaining 1,592 had muscular errors only eight of which needed operation. Why do refractive errors seem to be increasing? Is it faulty curriculum, bad light, imperfect print, or is the human eye unable to cope with the progress of the time? The estimated cost in dollars of the blindness in these cases is computed.

### Proceedings of Societies.

#### ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES.

*Twenty-fourth Annual Meeting, Held at the Hotel  
Venezuela, Washington, D. C., September  
12 to 15, 1915.*

The President, Colonel JEFFERSON R. KEAN, M. C., United States Army, in the Chair.

(Continued from page 118.)

**The Prevalence of Bubonic Plague and Its Control.**—DR. R. H. CREEL, surgeon U. S. P. H. S., stated that bubonic plague was transmitted through practically no other agents than rats and fleas, and that the effectual separation of man from these carriers could prevent only human cases and would not destroy the reservoir of infection. During the past nine years plague had been spreading and existed in all Asiatic countries, in Africa, Russia, Greece, Brazil, Ecuador, Peru, and Cuba, and to some extent was carried by California squirrels. Plague existed in a dormant form continually as was shown by the outbreak of 1914 in Havana, two years after it was thought the plague had been wiped out. The error in antiplague work had been eradication on the status of human case incidence instead of rodent case incidence. This was because the former was more easily ascertainable and the latter too expensive. The United States was one of the four countries that had made a conscientious systematic effort to ascertain the status of rodent plague. According to international convention a port was considered "clean" seven days after the appearance of the last human case. This was absurd, because human dissemination of plague was of questionable importance. Suppression of human plague was very easy in comparison to suppression of rodent plague. In San Francisco rodent plague was found eight months after the last human case. As long as the Orient was indifferent to sanitation, it would be a gigantic reservoir of plague infection and a menace to countries having connecting trade routes. Natural causes would not free Asiatic countries of the plague as they had in Europe. The necessity for protecting troops quartered in an infected city make this a matter of serious consideration for the medical officers responsible for sanitation in camps under military authority. The

United States Public Health Service, in its campaign of extermination, destroyed the rats and separated rodent from human habitations by systematic rat proofing. The service had never considered the flea important enough to eradicate—the rat was the base of infection. Man was attacked by the plague in the near proximity of an infected rodent. Transportation of fleas was of minor importance unless done by a rodent host. However, the Indian and Cuban authorities laid stress on the flea. Signal success had been shown by the Public Health Service attack on rats and this was not so true in countries where the campaign had been against fleas. In New Orleans the campaign included trapping, poisoning, and rat proofing (thus depriving the rodent of food and shelter). Fumigation of buildings was done more for protection of inmates than to stop the spread of disease. Surgeon Creel believed that if the rodent population were reduced fifty to eighty per cent. and the remaining rats were well scattered, plague would naturally disappear. Successfully to cope with plague infection in a city, a maximum number of employees must be had on the assumption that the whole city was infected, for excursions of rodent population were extensive. In New Orleans one rat traveled a mile by air line in three days and numbers were caught more than four miles away from their first point of capture within two weeks. This proved that a campaign could not be conducted in a limited area. Surgeon Creel outlined the general measures of a campaign according to, 1, survey, 2, eradication, and, 3, restriction. The survey included work in the laboratory and delineation of the infected area. The eradication and restriction was rodent destruction and rat proofing. The special measures included evacuation, intensive rodent destruction, and flea destruction. To carry out a reliable survey a well equipped laboratory should be installed and should be used exclusively for plague diagnosis. All rodents collected by the field force should be brought to the laboratory for examination. Infected rats were then reported to headquarters and instructions were transmitted to the field force. By means of widespread trapping the infected area could be easily determined. In addition to the examination of captured rodents, the epidemiologic factors surrounding a human case would not infrequently point out the source of rodent infection. Another important aid in locating rodent plague infection was the guineapig "control," for if there was infection in a building a guineapig left there a day or two would catch it. Trapping was the best means of extermination and also allowed examination of rats. Poison was not efficacious and did not allow quantity examination, for most poisoned rats died in secret places. Of all eradication measures the immediate destruction of rodent harborage was most valuable, provided that it was attended by the capture of all the rats. In a building the removal of plank floorings and opening of hollow walls and ceilings would suffice without extensive damage to the structure. This work should all be done at one time, preferably between sunrise and sunset. Wrecking crews in New Orleans were greatly assisted by trained rat terriers. Natural enemies of rats were effective unless guided and directed by men in such a manner. The high



rodent population in cities evidenced that cats and dogs were not a success along this line. The creation of an epizootic of rat typhoid by distributing cultures of *Bacillus typhosus* had been repeatedly tried, but without marked success, for however pathogenic the organisms might be when first used, they rapidly became attenuated in virulence and the rodents acquired a resistance to the infection. Dany's virus was not effective in San Francisco in 1907-1908. Rat proofing was not only of immediate benefit, but also maintained a future low rodent infestation. It was very probable that the most potent factor that had operated toward preventing any serious plague epidemic in the Philippines had been the rat proof construction of the native Filipino shack, which was elevated three or four feet, with the ground exposed and bare, bamboo floors, and single walls, which afforded but little opportunity for rat harborage. Western European countries built with more substantial rat proof construction of stone and solid masonry than many other regions. The country tile roofing and dirt floors of India and southeastern Asia, the soft mud masonry and tiles of Latin America, and frame construction in this country were very prone to rat infestation. In protecting a building, the floor space, walls, ceiling, roof, and interior construction all required consideration. Rodent harborage beneath a building might be prevented either by elevating the structure to a height that would leave the ground area open and exposed, or by constructing an impenetrable masonry wall at the margin of the building, extending at least two feet below the surface of the earth and upward, meeting the floor flush. Concrete floors were ideally rat proof and should be required in business establishments where foodstuffs were stored. Elevation created a rat proof condition only so long as the space was kept open and exposed. Double walls could be protected by metallic flashing at the junction of the floor and wall, for it was at this angle that rats generally attempted to gnaw. An obliteration of the wall space could be obtained by a concrete or brick "fill," extending upward one foot from the floor level. In the United States roofs did not furnish rat harborage as in Porto Rico, where it was necessary to remove the tiles and use galvanized iron. Loose material about buildings should be kept well elevated on firmly constructed platforms or trestles. Metallic garbage cans with tight fitting covers should be used and incineration was preferable. The rat proofing laws of San Francisco, New Orleans, and Porto Rico embodied all these principles. Ships should have lines rat guarded and breasting off, and all closed spaces about a vessel should be treated with a gas lethal to rodent life—sulphur dioxide, carbon monoxide (funnel gas), or hydrocyanic gas. If the ship was in ballast sulphur dioxide, four per cent., was effective, but if holds were filled, hydrocyanic gas or carbon monoxide was preferable. Loading for vessels and overland freight should be done in daylight. Cars should be constructed so as to prevent a rat entering after the doors were closed. Double walls in box cars should be inspected. No known spread of plague ever resulted from fleas in old clothing or bedding.

**Systematic Training of National Guard Medical Officers.**—Dr. GUSTAVUS M. BLECH, major,

M. C., Illinois National Guard, read a paper on instruction which showed unusual insight into military problems. He set forth simply and clearly the method of instruction which in his hands had proved eminently successful for the past two years. Beginning with the newly appointed officer, he stated that his experiences had been that it was a great mistake to commission physicians directly in the medical corps; in his opinion it would be better to give no one a permanent commission until after he had demonstrated his fitness for the military service, and that a temporary commission and special insignia would prove valuable from a disciplinary point of view. In his outline of a graded course of instruction for first year medical officers, two things stood out prominently, the great importance of the personal equation between the commander and the subalterns, and the clear insight and rare teaching ability with which the author made use of homely devices and simple opportunities always at hand. The personal relation established at the outset on a friendly basis by an extended private interview in which the neophyte was made acquainted with the character of his organization, his prospective duties, his needed field equipment, his relation to the rest of the enlisted personnel, and the military etiquette, was continued in a series of informal talks when the company met for refreshments after the regular drills. Practical instruction began automatically by the presence of the officers at all company or detachment drills, where they learned of formations and how to command at the same time. After a junior showed his fitness by giving and executing commands with wooden figures, he was allowed to drill the company. All orders and requests to superior officers must be in writing. Every drill night there was an officer of the day so that every officer could become familiar with the paper work. There was also a thorough drill in map reading in which the contour principle was dwelt on and clarified. Major Blech gave a demonstration of how he cut pieces of paper according to the contours and then set them on spindles to give an idea of the configuration of the ground. Then there was the instruction in map making, wherein a person must become familiar with the compass, clinometer, and elementary trigonometry. Attention was given to symbols and stress laid on the water supply. Instruction in tactics was begun by a practice march with utilization of terrain. This familiarized the men with shelter tents, individual cooking, and extended order drill. During the winter medicomilitary problems were worked out in a huge sand box, which showed all kinds of configurations—blue ribbons represented rivers, twine was used for railroads, etc. It was harder to get physicians to give the necessary time to the guard than to get business men, for physicians had, very often, office hours in the evening, but they could always find some few loyal enough to stand by and give the necessary time and attention out of love for their country.

**An Army Motor Ambulance.**—Dr. KENT NELSON, major, M. C., United States army, called attention to the fact that the handling of sick and wounded was very different from transporting supplies and munitions. A motor ambulance must be able to go over fields and bad roads, must be light

and on short wheel base. His plan was for two parts, 1, an ambulance and, 2, a trailer. Two pieces reduced upkeep and allowed elasticity and expansion. The ambulance itself was designed to carry two litter patients and one semirecumbent or sitting patient. This meant a total weight of 2,350 pounds. The actual weight of the machine was only 1,700 pounds. Broad four inch tires should be used. The limit of three patients might seem small, but when the trailer was considered, there was room for seven. Over bad roads the ambulance could carry three patients where a heavier machine could not even proceed empty. This system of trailer and short engine body allowed quicker turning, especially on narrow roads, than any other type of ambulance, especially since the trailer was designed to be pulled at either end. A fifth wheel was carried in each axle so that the trailer followed accurately the rear wheels of the motor ambulance and would dodge any rocks or stumps that the ambulance did. It was of low initial and upkeep cost. The differential had been removed and a worm gear patent locking differential, driving both wheels, had been installed which gave added power. The car was always well balanced and was two feet lower than the horse drawn type. Furthermore, a chauffeur did not have constantly to watch his power of locomotion as a driver of a team did. Roads bad enough to stop this car would stop all movements of troops. By not having a sliding gear there was no risk of stripped gears and other breaks when a number of people were driving it. If properly cared for, depreciation was practically nil. A two wheel trailer was not practical because, 1, it would not track, which meant more power necessary on mud or sand roads, and, 2, it would not even carry a reasonable load, and the constant side lash threw an excessive strain upon the rear end of the motor ambulance. The total cost of the motor equipment with trailer was \$1,146.20, while a four mule ambulance cost \$1,147.40. A mule ambulance could cover only thirty miles a day and cost just as much whether in operation or not moving. Two hundred miles a day was nothing for an automobile and it could be kept up continuously, and when not moving there was no cost.

**Has Our Propaganda for Venereal Prophylaxis Failed?**—DR. RICHMOND C. HOLCOMB, surgeon, U. S. navy, stated that the bulk of mortality from venereal disease was a closed book. This was because of the "sacred confidences" which tended to masquerade diseases under other, but applicable names. In the military services where it was necessary to give accurate statistics, the importance of venereal diseases was appalling. This problem was both social and medical. Prophylaxis fell under the heads of moral, medical, and punitive. Chastity to the married man was not only a moral, but a legal duty. Man had always recognized the influence of the sex glands on development and structure of the body. Man had made practical use of his knowledge of sex glands in taming the ox for food, cultivating a voice (Sistine choir), and broadening the conception of the internal secretions. Many believed that sexual perversion resulted from suppression of the sex appetite, but Surgeon Holcomb did not agree. There was a long way to go

before we could trust in moral prophylaxis alone. Boys who had had the benefit of good homes to teach them high moral principles, were fortunate, while those who had had no instruction were at a disadvantage in the midst of temptation. Moral prophylaxis had fallen short of its aim, and a more practical propaganda was needed both for moral teaching and for the encouragement of healthful pastimes that scorned idleness. Punitive prophylaxis was not new, for back in 1778 there were fines imposed on soldiers and officers contracting venereal disease. At present there was a law which provided for the deduction of pay of a man absent from duty on account of disease resulting from his own "misconduct." The weak points here were the words "disease" and "misconduct." This should include "injury" and "venereal disease." In 1909, the first medicomilitary circulars came out urging the necessity of combating the belief that continence was not compatible with a condition of perfect health. Commanding officers were directed to require that a proper space be provided for administration of prophylactic treatment to men who had exposed themselves. Tables 1, 2, 3, and 4 and 5 from the *Report of the Surgeon General of the Navy* were given, showing the admission and damage rates per 1,000 men for the primary venereal infections, gonorrhea, chancroid, and syphilis.

**The Camp McCoy School for Sanitary Troops.**—DR. J. M. PHALEN, major, M. C., U. S. army, told how the recent camps, although not new, were the most ambitious in scope of any that had yet been made. Camp McCoy was one of the largest of these six camps and was located at Sparta, Wis., covering a terrain approximately eight miles long and four miles wide, with hills as high as 1,400 feet above sea level and 600 feet above the general level. The soil was generally sandy, well covered with trees, and was ideal from a sanitary standpoint. The nucleus of the camp consisted of Field Hospital Company No. 1 and Ambulance Company No. 1 of the army, assisted by Major Shockley, Major Phalen, and Major Gilchrist. The first week was devoted to unattached officers and noncommissioned officers of the militia, the second week to the Medical Reserve Corps, and then five periods of ten days each to militia field hospitals and ambulance companies. The total attendance was 155 medical officers, 159 noncommissioned officers, and 518 privates and privates first class. Major Phalen then gave the schedule of instruction, which included everything from tent pitching to map reading. The program was carried through without allowance for the fact that a large majority of the student officers were novices in medicomilitary matters, and this added much to the attractiveness of the instructions in their minds. These men carried out drills and regulations much better than the average recruit because of their more alert minds. The field hospitals and ambulance companies came with their own personnel and equipment. Once during each period a medicomilitary problem was given and this was a much appreciated feature. In such instances the instructors became umpires. A formal guard mount was maintained throughout the encampment. The regimental medical officers were unanimous in the opinion that the instruction was more satisfactory

than was possible in State camps. The results of these camps had been so gratifying that there should be no doubt as to their continuance. Every encouragement possible for the permanent establishment of these camps by the War Department should be given.

**Surgeon General Samuel Preston Moore and the Officers of the Medical Departments of the Confederate States.**—Dr. SAMUEL E. LEWIS, assistant surgeon U. S. army, told of the work of Surgeon General Moore and the Association of Military Surgeons during the Civil war. He had retired in 1860, but was recalled by President Davis early in 1861 to become surgeon general, which position he held till the fall of the Confederacy in 1865. The great fire of evacuation on April 2, 1865, destroyed many of the records of his office. In 1874, there assembled in Atlanta a number of surgeons who had been members of the Association of Military Surgeons during the war and they organized the Association of Army and Navy Surgeons of the Confederate States with Doctor Moore as president and Dr. Hunter McGuire, medical director of the army of General Stonewall Jackson, as vice-president. This association existed only two years, but was re-born, in 1898, in Atlanta as The Association of Medical Officers of the Army and Navy of the Confederacy. In June, 1915, this association was reorganized for historical purposes and admitted Confederate veterans who became regular practitioners after the war and the sons of Confederate veterans who were regular practitioners, and the sons of both these classes who were now regular practitioners. The purpose was, 1, to prepare a complete roster of all surgeons and assistant surgeons of the Confederate army and navy; 2, to locate and secure the hospital records of Medical Director Samuel H. Stout, of Tennessee, which consisted of over a ton of matter in perfect condition; 3, the records preserved by Medical Director A. J. Foard of Tennessee; 4, such records as were in the Confederate archives at Washington, and, 5, to erect a monument to Surgeon General Moore and his able assistants. The Association of Military Surgeons of the United States was officially asked for its support, moral and other, in securing these ends. The resolutions and discussions of the Medical Society of Virginia at its annual meeting of October, 1911, relating to Surgeon General Moore were presented in pamphlet form.

**Relation of the Medical Corps to the Medical Reserve Corps of the United States Army and to the Medical Corps of the Organized Militia.**—Dr. WILLIAM O. OWEN, major M. C., U. S. army, showed what this relationship should be and gave a rapid sketch of legislation concerning the medical service for the armies of the United Colonies and the United States and the results of this legislation. He showed that the duty of the medical officer was not to the dying first, but to the slightly wounded. Much training and study were required before the medical officer comprehended that his function with the sick and wounded at the front was not to care for them there in the medical or surgical sense, as the terms were ordinarily understood, but to procure for the army as a whole the greatest salvage, to

return the greatest number at the earliest possible moment to the fighting force. To make decision quickly and accurately, to prepare for transportation, and pass the injured to ambulance stations and from them to field hospitals, a medical officer must be trained in the handling of his bearer party, in the directing of the ambulance company, in the handling of the patient in the ambulance between the advanced situation and the field hospital, and in the evacuation to base hospitals in the rear. In all past wars of the United States there had been a shortage of medical officers and insufficient transportation, nevertheless ambulance companies and corps went out of existence at the end of the war of 1861-1865 and had only recently been recreated. The drill regulations for these organizations were still damp from the press, and drill regulations for the sanitary train of a division or for the sanitary column of a line of communication had yet to be formulated. The medical officer had three relations to the line: 1. To care for the sick and wounded; 2, to give sanitary advice to the commander of the troops, and, 3, to command the sanitary units. His medical experience would enable him to fulfill the first when once the sick and injured had been removed from the zone of action, his experience as sanitary health officer in civil life would enable him to act as sanitary adviser when the troops had remained in one locality long enough for him to learn the conditions, but it was only the trained sanitary soldier who could foresee and advise about conditions which had not yet arisen, but when he knew would develop unless prevented. From the command of the sanitary units a training as a sanitary soldier, a training by and with those whom he was to serve, was absolutely essential. No man could act intelligently as a chief surgeon of a division or of an army who did not form an integral part of the fighting force, who did not have the confidence of the commander of troops, who did not know just how many miles an ambulance could go in a definite time, just how long it would take a field hospital unit to reach a definite point, how long it would take to set up a hospital unit, just how fast a sanitary train could get into position. The medical department should be used by the line as a trained specialized branch for special work. Its preeminent function was to handle tactical problems of gathering the sick and wounded behind the firing line and removing them from the turmoil of campaign with the least injury to them and the greatest benefit to the fighting force; of managing and controlling the transportation and personnel with which this was done, in such a way as to facilitate the movements of troops; in going to the field of battle and selecting places where the wounded would probably be in the greatest number and so place the transportation that they could be most easily removed. To provide a unit that was so small that it could not be properly trained in peace for its war function was not to provide at all for its war function. To train these men under the stress of an active campaign was expensive, but it was for Congress to decide whether it was best to train these units in time of peace and have them ready, or to await the stress of war and then create them, paying heavily in the price of life.



## Letters to the Editors.

### THE HOSPITAL CONSOLIDATION QUESTION

NEW YORK, AUGUST 17, 1915

#### To the Editors:

Your editorial article, *A Grave Hospital Question*, harsh as it is, does not go far enough in condemning the vicious project of combining the Seaview Hospital and the City Farms Colony. One is a hospital for tuberculosis patients who have advanced beyond the incipient stage when they could be admitted to the Otisville Sanitarium. The other is a home for healthy persons who by reason of age are no longer able to earn enough to support themselves but are still able bodied and can earn something toward their support. There are also a few cripples similarly situated and the wives of some of the inmates. The superintendent of one is a physician trained in handling tuberculosis cases and experienced in hospital management. The superintendent of the other is an efficiency expert, capable of handling a large body of handicapped persons and developing their economic possibilities. In its management the City Farms Colony is the model institution of its kind and the cost of maintenance, thirty-one cents per capita a day, is the lowest in any institution for adults in the country.

It is hardly necessary to show how irrational, how unnatural, is the project of amalgamating two such dissimilar institutions. Those who favor the project say it has worked well on Blackwells Island where the New York City Homes for the Aged and Infirm and Central and Neurological Hospitals are under one management. In the 1913 report of the medical superintendent of these institutions he says: "Systematization and more defined responsibility is urgently necessary for better working facilities and the cooperation which should be established both within the hospital and as between the hospital and the New York City Home for the Aged and Infirm." It does not work satisfactorily, although the number of inmates of the home requiring medical care is far greater than in the City Farms Colony and there is a large medical board covering every branch of medicine.

Bearing upon this I wrote in the article, *The Neglect of the Aged*, *Medical Record*, September 12, 1914: "In the New York City Farms Colony, with 1,000 inmates, nearly 100 were in the hospital wards, in charge of a single nurse and one visiting physician. There is nearby the Seaview Hospital for Tuberculosis from which a physician could be summoned in an emergency, but the intern of a tuberculosis hospital is as little prepared to treat senile cases as an ophthalmologist would be to perform a Caesarean section." Such consolidation may have worked satisfactorily, 180 years ago, when the city with a population of 15,000, built its first almshouse and set aside a room with six beds for the sick poor. Today, with our present knowledge of medicine and scientific philanthropy, the proposition to combine a hospital for a special class of diseases with a home for healthy aged persons, appears so unnatural that it raises the suspicion that there is some other purpose than utility or economy behind it. The report of 1913 shows that the City Farms Colony had, on December 31, 1913, 1,167 inmates and seventy-three employees; the Seaview Hospital had at the same time, 208 inmates and 165 employees. The former had one visiting physician, the latter had a medical board of thirty-four and five resident physicians. There is no question about the economical management of the City Farms Colony. The 1913 report does not give the expenditures of the Seaview Hospital, but the proportion of employees, four to five, is certainly high for an institution of that kind. From this fact alone I assume that the per capita cost of the Seaview Hospital is high and that it might be possible to reduce that per capita cost, but no such incongruous combination as a tuberculosis hospital and a poor farm can effect a saving except by impairing the effectiveness of the hospital. As for utility and practical advantage in such a combination, it is impossible to imagine any. The superintendents of both institutions possess executive ability yet, without experience, it is doubtful if either could manage the institution of the other. A politician, trying to run the two conjointly would soon disorganize both. A single visit to the two institutions would show how utterly impossible it would be to harmonize their activities or apply the measures and methods of management in vogue at one to the other. They are

distinct in character, they must be managed separately, and to do the best work they must be kept free from politics.

It is perhaps not out of place here to point out the complicated hospital situation in this city; a tuberculosis sanitarium in charge of the health department and two tuberculosis hospitals in charge of the department of charities, public hospitals covering similar fields under different controls, a hospital under private control supported almost entirely by city funds, many private hospitals receiving public moneys, giving no returns or run by boards in which the city has no representation, etc. The hospital situation in this city is in a chaotic state. Every hospital receiving public moneys should be under the control or supervision of the health department, and that department should then be responsible for the character of the service supplied by the hospitals.

I. L. NASCHER, M.D.

## Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*Handbook of Physiology.* By W. D. HALLIBURTON, M.D., L. L. D., F.R.C.P., F.R.S., Professor of Physiology, King's College, London. Twelfth Edition (Being the Twenty-fifth Edition of Kirkes' *Physiology*). With Nearly Six Hundred Illustrations in the Text, Many of Which are Colored, and Three Colored Plates. Philadelphia: P. Blakiston's Son & Co., 1915. Pp. xvii+924.

There is always a pleasure in seeing a new edition of such a work as Professor Halliburton's physiology. No special reason, however, seems to us to exist for the appearance of the twelfth edition. As the author says, the alterations made are of a minor character, or such as are necessary to bring the book up to date. There is much new matter which was inserted in the eleventh edition. A subject of much interest is that of the vitamins and of their relation to beriberi. On this theme Professor Halliburton is brief and clear, but so complex a subject should be developed at greater length. He says that the vitamins have no curative power, an instance of the amateurishness of a physiologist's excursions into medicine. Are we justified on physiological grounds in saying that the vitamins have no curative action? It may be so, but a subject naturally so full of pitfalls should be treated with more precision. Other parts of a new character that we should recall to students of this work, are the parts on the applications of physical chemistry to physiology, the chapters on reproduction and development, which take the place of these chapters in earlier editions. There is a valuable chapter on the movements of the stomach and intestines, and a careful revision of our knowledge of the special senses. The strength of this work lies in its clear exposition, but the endeavor to be brief and keep the edition within certain limits has given an incomplete air to some sections.

*Modern Medicine, Its Theory and Practice.* In Original Contributions by American and Foreign Authors. Edited by SIR WILLIAM OSLER, Bart., M.D., F.R.S., Regius Professor of Medicine in Oxford University, England; Honorary Professor of Medicine in the Johns Hopkins University, Baltimore; Formerly Professor of Clinical Medicine in the University of Pennsylvania, Philadelphia, and of the Institutes of Medicine in McGill University, Montreal, Canada; and THOMAS McCRAE, M.D., Professor of Medicine in the Jefferson Medical College, Philadelphia; Fellow of the Royal College of Physicians, London; Formerly Associate Professor of Medicine, The Johns Hopkins University. Volume IV. Diseases of the Circulatory System—Diseases of the Blood—Diseases of the Lymphatic System—Diseases of the Ductless Glands—Vasomotor and Tropic Disorders. Second Edition. Thoroughly Revised. Illustrated. Philadelphia and New York: Lea & Febiger, 1915. Pp. x+1075.

The fourth volume of this monumental work is in no way inferior to the preceding volumes either in authority or excellence of subject matter. The field covered is a large one, including diseases of the circulatory system, blood, lymphatic system, and ductless glands, as well as a section

on vasomotor and trophic disorders. Of special interest in the section on cardiac diseases is the chapter by Thomas Lewis, on the Rate and Mechanism of the Heart Beat, in which disturbances of impulse production, heart blocks, premature contractions, paroxysmal tachycardia, etc., are discussed. Auricular flutter has been added as a seventh disorder to the six fundamental types of disturbed rhythm formerly mentioned by this author. Not only is a concise description of each disturbance given, but a careful study of the manifestations and effects of each in cardiac symptomatology is presented, the facts of importance in their diagnosis tersely stated, and the treatment discussed in detail. Of special excellence as a monographic study is the article on Congenital Cardiac Disease, by Maude E. Abbott, which is more exhaustive than any other contribution to the volume. Among other notable contributions are Diseases of the Myocardium, by Robert H. Babcock; Insufficiency and Dilatation of the Heart, by A. G. Gibson; Diseases of the Valves of the Heart, by Sir William Osler and A. G. Gibson; Pernicious and Secondary Anemia, Chlorosis, and Leucemia, by Richard C. Cabot; Hodgkin's Disease, by Warfield T. Longcope, and the sections on adrenal, pituitary, and thyroid disorders, by George Dock, and on thymus diseases, by A. S. Warthin. For information on symptomatology, etiology, and diagnosis the practitioner may refer to this volume with the confident expectation of securing all that is recent and of value. In a few instances the sections on treatment, however, will be found, e. g., under angina pectoris and chronic pericarditis, somewhat lacking in detail. Hypertrophy of the heart is not recognized as a condition requiring individual treatment.

*The Book of the Fly. A Nature Study of the House Fly and Its Kin, the Fly Plague and a Cure.* By G. HURLESTONE HARRY. With an Introduction by HARRISON ROSS. New York: Rebman Company. Pp. 124.

During the last few years public opinion has been aroused to the importance of the fly and the part played by this pest in the transmission of disease. As yet the available literature on the subject is small, and the present work is decidedly opportune. It is clearly written and is yet sufficiently scientific to appeal to the educated reader. The technically uneducated may also read the volume with enjoyment and profit. Two chapters particularly should prove of more than usual interest, viz., those entitled Service and Utility of Flies and Control of Flies within the House.

### Interclinical Notes.

J. M. Barrie in Jolly Little Jim, in the November *Red Book*, has a sharp piece of satire at the expense of the theatrical profession, which seems unkind in view of what the profession has done for the canny Scotsman. We suppose, however, that Sir James *prend son bien on il le trouve*; like all authors from Homer to Kipling, he has taken what he required, no matter whence.

Allan L. Benson, in *Pearson's* for November, expresses his belief that the outcry for preparedness would be somewhat stifled if the Government undertook to provide all the necessary munitions at its own expense; that is, the steel men, for example, would be less vociferous. Eugene Wood has an admirable article, *They Come High*, and philosophers gingerly investigating socialism will find it hard to refute his arguments. An essay that appealed to us very strongly was Charles Edward Russell's *The Real France*—the European mother of democracy, political, social, and industrial, and therefore the object of envious detraction for nearly fifty years on the part of the surrounding monarchical countries. How the United States could have swallowed all this nonsense about her historical friend is hard to understand.

Apud stage matters, we noted recently that the theatrical writer on a prominent daily paper, when sharply taken to task for his attack on a certain production, stated that he was a reporter, not a critic. This explains a good deal that has puzzled us about theatrical newspaper copy. Are we to suppose the men sent to the concerts and art galleries are also reporters, not critics? Our humble opinion of the man who ought to be sent by a conscientious

newspaper to a theatrical production, is that he should be thoroughly educated both in the art of constructing plays and in the art of acting. There are immense numbers of people in this country who would be profoundly grateful for the opinions of such a man, which might, indeed, obtain a certain following for a poor play as a sort of object lesson. It is in New York only that people go to the theatre solely to be amused. In the so-called "provinces" parents take their children to see the dramas of Shakespeare and Sheridan Knowles as a sacred duty. They are not always edified or amused by the performance, the minor roles in which are apt to be badly done. We believe that a careful analysis of a new play which lacked the elements of popularity might make audiences of these people, provided that it had one or two well written scenes or attacked some burning problem in a new way. At all events, there should be educated dramatic critics. We do not remember to have seen in any daily paper a thorough analysis of a play, pointing out just where it is most clever, putting a finger on its weak spots, discussing an intonation or a gesture of a player, etc. A new pleasure would be given to theatre goers who witnessed a play with a detailed discussion by a thoroughly competent critic in mind. Physicians are among the most discriminating of theatre goers. We notice that they are always appealed to when the managers are hard up.

"It is said that the London saloons are to open in the future only five and one half hours daily. Only a hopeless slacker could fail to get drunk in five and a half hours. An efficiency expert could acquire a magnificent load in one hour, if put on his mettle." These are comments of our old friend, Dr. Ben Travato, of Brooklyn, who refers to the London ordinance as "chasing the devil around the stump." "It is to be hoped, at least," he continued, "that the open hours do not begin till the working hours are over. If there is any palliation of spirit drinking, it lies in confining the practice to the interval between the evening meal and bedtime. It is the second day drinking that is dangerous."

We commend to our readers *A Study of Prohibition in Kansas*, by Florence Finch Kelly in the *Outlook* for November 10th, as the fairest possible picture of exactly what prohibition accomplishes. Without denying the material prosperity, etc., which have come to Kansas under abstinence, the author concludes with these striking words: "The Kansas I knew in my young days, where I grew to womanhood, was eager, aspiring, a lover of ideas, a believer in ideals. She had faith in the things that nourish and develop the intellect, that vitalize and exalt the spirit. The Kansas of today is snugly self-complacent, proud of her material possessions, given to chanting her own praises, intent on the luxuries and pleasures she can buy with her wealth. She has grown so avariciously self-indulgent that she counts every dollar wasted that cannot be seen to result quickly in two new dollars or more to add to personal enjoyment. Truly Kansas is prosperous; she is wallowing in prosperity. The State has done an inestimable service to civilization by proving that it is possible to eliminate the liquor habit and the liquor traffic and the liquor attitude of mind, and by showing how much that elimination increases human efficiency, general prosperity, and moral standards. Can she not add another service by proving that prosperity need not sink a community in materialism, lower its ideals, and extinguish its belief in the value of the things by which man's spirit rises to new achievements and new power? If she cannot, she may yet cause it to be said that it is better for man's body to be sometimes drunken, if in the intervals his spirit be free and aspiring, than for his body to be always sober but his spirit sodden with wealth."

Four Tufts of Golden Hair, we believe, registers the high water mark achievement of Ellis Parker Butler's correspondence school detective, Philo Gubb; the story is told in the November *Red Book*, which also contains *The Con Man*, by Frank Froest, M. V. O., who was once a real detective and is a graduate of Scotland Yard. We wish to congratulate the artist, Richard Culter, on his really remarkable portrait of a first class bunco steerer. The picture which shows him at the dinner table is absolutely true to type.

## Meetings of Local Medical Societies.

**MONTAIG, December 14th.**—Clinical Society of New York (Throat, Nose, and Lung Hospital); German Medical Society of the City of New York (annual); Utica Medical Library Association; Niagara Falls Academy of Medicine; Brooklyn Hospital Club; Horrell Medical and Surgical Association; Clinical Society of the New York Polyclinic Medical School and Hospital; West Side Physicians' Economic League.

**TRACY, December 15th.**—New York Academy of Medicine (Section in Dermatology); New York Neurological Society; Clinical Society of the West Side German Dispensary and School for Clinical Medicine; Amsterdam City Medical Society; Lockport Academy of Medicine; Society of Alumni of Lebanon Hospital, New York (annual); Syracuse Academy of Medicine (annual); Buffalo Academy of Medicine (Section in Surgery); Ogdensburg Medical Association; Oswego Academy of Medicine; Medical Association of Troy and Vicinity; Medical Society of the County of Yates; Medical Society of the County of Ulster (annual); Medical Society of the County of Tioga (annual).

**WEDNESDAY, December 8th.**—New York Pathological Society; New York Surgical Society; Alumni Association of Norwegian Hospital (annual); Schenectady Academy of Medicine; Medical Society of the Borough of Bronx; Richmond County, N. Y., Medical Society (annual); Dunkirk and Fredonia Medical Society (annual); Rochester Academy of Medicine; Medical Society of the County of Montgomery (annual).

**FITZGERALD, December 16th.**—New York Academy of Medicine (Section in Pediatrics); Gloversville and Johnstown Medical Association; Physicians' Club of Middletown; West Side Clinical Society, New York (annual); Brooklyn Pathological Society; Blackwell Medical Society of Rochester; Jenkins Medical Association, Yonkers; Society of Sanitary and Moral Prophylaxis, New York; Buffalo Ophthalmological Club; Jamestown Medical Society; Society of Physicians of Village of Canandaigua.

**FRIDAY, December 10th.**—New York Academy of Medicine (Section in Otolaryngology); Society of Ex-Interns of the German Hospital in Brooklyn; Flatbush Medical Society, Brooklyn; Eastern Medical Society of the City of New York (annual); Society of Alumni of St. Luke's Hospital.

## Official News.

### United States Public Health Service:

*Official history changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending November 24, 1915.*

**Anderson, John F.,** Surgeon. Relieved from duty as Director of the Hygienic Laboratory, effective November 9, 1915. **Austin, H. W.,** Senior Surgeon. Granted three weeks' additional leave of absence from November 3, 1915. **Chapin, C. W.,** Passed Assistant Surgeon. Relieved from duty in plague eradication measures in New Orleans, and ordered to proceed to Ellis Island, New York, for duty. **Clark, T.,** Surgeon. Directed to proceed to Frederick County, Maryland, to make a complete survey of school sanitation. **Cumming, H. S.,** Surgeon. Directed to extend investigation of coastal waters to State of Rhode Island and Connecticut. **Foster, M. H.,** Surgeon. Granted one day's leave of absence on account of sickness, November 10th. **Fox, Carroll,** Surgeon. Directed to proceed to Jacksonville, Fla., and other points in that State to make a study of public health organization and administration. **Guiteras, G. M.,** Surgeon. Granted five days' leave of absence to be taken before December 15, 1915. **Lombard, M. S.,** Assistant Surgeon. Bureau order dated November 9, 1915, relieving him from duty in plague eradication measures in New Orleans revoked. **McCoy, George W.,** Surgeon. Detailed as director of the Hygienic Laboratory, effective November 20, 1915. **Mullan, E. H.,** Passed Assistant Surgeon. Directed to proceed to Frederick County, Md., for duty in connection with a

Surgeon General. Directed to proceed to Baltimore, Md., on November 19, 1915, for conference with the Baltimore City Medical Society on public health matters; directed to attend meetings of the Society of Clinical Surgeons at Washington, D. C., November 26 and 27, 1915. **Ruoff, John S.,** Assistant Surgeon. Granted one month's leave of absence from December 1, 1915. **Spencer, R. R.,** Assistant Surgeon. Relieved from duty at the Hygienic Laboratory and ordered to proceed to the Marine Hospital, Chicago, Ill. **Williams, C. L.,** Assistant Surgeon. Relieved from duty at the Marine Hospital, Chicago Ill., and ordered to proceed to New Orleans, La., for duty in plague eradication measures. **Wynne, R. E.,** Assistant Surgeon. Leave of absence for fifteen days from November 1, 1915, amended to read twelve days' leave of absence from November 1, 1915.

## Births, Marriages, and Deaths.

### Married.

**Clarkson-Smith.**—In Providence, R. I., on Wednesday, November 17th, Dr. Thomas C. Clarkson and Miss Leah Maud Smith. **Griffith-Curry.**—In Five Points, Pa., on Saturday, November 20th, Dr. Harvey M. Griffith, of Conemaugh, Pa., and Miss N. Alveta Curry. **Malcolm-Wolf.**—In Montclair, N. J., on Saturday, November 13th, Dr. Percy E. D. Malcolm, of New York, and Miss Jeanne Wolff. **Schelling-Woodford.**—In New York, on Tuesday, November 23d, Dr. Henry L. Schelling, of Brooklyn, N. Y., and Mrs. Stewart L. Woodford.

### Died.

**Ashby.**—In Roseville, Cal., on Tuesday, November 16th, Dr. Richard H. W. Ashby, aged fifty-four years. **Austin.**—In San Diego, Cal., on Saturday, November 13th, Dr. Robert E. Austin, aged forty-three years. **Browne.**—In Yonkers, N. Y., on Friday, November 19th, Dr. Valentine Browne, aged eighty-three years. **Crawford.**—In Harrisburg, Pa., on Saturday, November 20th, Dr. Samuel M. Crawford, aged sixty-three years. **Hirshfield.**—In Mobile, Ala., on Sunday, November 14th, Dr. Henry P. Hirshfield, aged sixty-one years. **Hockenbush.**—In Cumming, Ga., on Saturday, November 13th, Dr. John Hockenbush, aged eighty-four years. **Hutton.**—In Elkwood, Pa., on Sunday, November 21st, Dr. John C. Hutton, aged sixty-nine years. **Jeffries.**—In Boston, Mass., on Sunday, November 21st, Dr. Benjamin Joy Jeffries, aged eighty-two years. **Kienzie.**—In Chicago, Ill., on Monday, November 15th, Dr. Frank C. Kienzie, aged thirty-nine years. **Mitchell.**—In Memphis, Tenn., on Sunday, November 14th, Dr. Robert H. Mitchell, aged forty-one years. **Newsom.**—In Ocala, Fla., on Thursday, November 11th, Dr. William Virgil Newsom, aged fifty-eight years. **Phillips.**—In Tower City, Pa., on Wednesday, November 17th, Dr. Edwin F. Phillips, aged seventy years. **Pritchard.**—In Los Angeles, Cal., on Sunday, November 14th, Dr. William Elvin Pritchard, aged fifty-six years. **Ritter.**—In Alton, Mo., on Thursday, November 18th, Dr. Nathaniel Ritter, aged seventy-six years. **Russell.**—In Dallas, Texas, on Saturday, November 20th, Dr. Frederick W. Russell, formerly of Winchendon, Mass., aged seventy years. **Shackelford.**—In Warsaw, Ind., on Wednesday, November 17th, Dr. Tiffin J. Shackelford, aged sixty years. **Smith.**—In Detroit, Mich., on Friday, November 12th, Dr. Wayne Smith, aged thirty-nine years. **Stemen.**—In Fort Wayne, Ind., on Saturday, November 13th, Dr. Christian B. Stemen, aged seventy-nine years. **Stone.**—In Washington, D. C., on Thursday, November 11th, Dr. Charles G. Stone, aged sixty-nine years. **Taft.**—In North Yakima, Wash., on Sunday, November 7th, Dr. C. J. Taft. **Turner.**—In Houston, Texas, on Sunday, November 14th, Dr. R. A. Turner, of Loveland, Texas, aged thirty-four years. **Veeder.**—In Lyons, N. Y., on Tuesday, November 16th, Dr. Major A. Veeder, aged sixty-seven years. **Webster.**—In Chicago, Ill., on Monday, November 15th, Dr. John C. Webster, aged seventy-two years. **Wilkins.**—In Framingham, Mass., on Wednesday, November 17th, Dr. George Henry Wilkins, of Newtonville, Mass., aged sixty years. **Yolton.**—In Frankfort Springs, Pa., on Friday, November 12th, Dr. William C. Yolton, aged sixty-eight years.



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### Lectures and Addresses.

#### THE HISTORY OF PELLAGRA.\*

*Some of the Salient Points.*

By C. H. LAVINDER, M. D.,

Ellis Island, N. Y.,

Surgeon, U. S. Public Health Service.

Historical studies in disease possess something more than mere academic interest, and not infrequently, as experience has shown, careful and thoughtful search among old records and papers has brought to light important details, previously overlooked perhaps, or presented new angles of vision giving a clearer and possibly a more pregnant aspect of the problem of a later day. "By the historical method alone," says Osler, "can many problems in medicine be approached properly." It is to such studies, he further says, that we owe that mental perspective always so valuable in the study of disease.

Scant attention in America has been given to the history of pellagra, and yet among the early writers on this disease will be found many interesting and suggestive things which cannot well be neglected by the modern student of this still unsolved problem. Much of it is a tiresome record with little of interest. On the contrary, some of the early papers, if modernized in language and expression, and published in a journal of today, would prove capital and stimulating reading to the most up to date student of the disease. Many of these early articles are characterized by a depth of comprehension, a wealth of assimilated experience, an accuracy of observation, an orderliness of arrangement, a well balanced judgment, and a breadth of scientific spirit which might well be emulated by the modern medical man.

Space permits little more than the presentation of a few salient points, and I shall devote much of my effort to the paper of Casal, which by general agreement is regarded historically as the first description of pellagra. In such a connection a few biographical details concerning this man may be of interest. One always has a desire to know something of the personality of an author in whose work he is interested.

Gaspar Casal, called by some of his commentators the Asturian Hippocrates, was born about 1679 and died, at about the age of eighty years, in Madrid, August 10, 1759. The place of his birth seems un-

certain and it has been suggested that he may even have been born in Italy. His father was a military man. He was twice married and had children by both wives. At least one of his sons became a physician.

Strange to say, the school at which he pursued his medical studies is uncertain, and definite information upon this point does not seem to exist. It is known that he received the degree of Bachelor of Arts from the University of Sigüenza, but where he received his medical degree does not appear.

He practised his profession in several places in Spain, including Madrid, but finally settled in Oviedo, a town in the Asturias. With this place he is quite closely identified. Here he made his observations on pellagra, beginning to record these observations, he tells us, in 1735. Later, about 1750, he moved to Madrid, and very shortly after his arrival there he began to receive many honors. He was made a physician to the court of Philip V and soon promoted to be one of the chief court physicians (*protomedico*). He also became a member of the Royal Academy, and found himself in close association with some of the great men of his day. Apparently he was a man of parts and quite capable of holding his own in the distinguished society in which he now found himself; and he successfully maintained his exalted position until his death.

Casal's paper is found as a chapter in his book, *A Natural and Medical History of the Asturias*. This chapter bears the title, Concerning an Affection which in this Province is popularly called *Mal de la Rosa*.<sup>1</sup> While his is the first description of pellagra, it occupies the somewhat paradoxical position of not being the first published description. His book was rescued from oblivion by his friend and literary executor, Dr. Juan García Sevillano, and was not published till 1762, some little time after the author's death. His observations, however, had earlier been made known to the medical world by a celebrated French physician, Thiéry, who, as one of the suite of the Duc de Duras, ambassador of Louis XV to the court of Philip V, had met Casal at Madrid. Thiéry made a brief record of Casal's observations, giving Casal due credit, added some unimportant observations of his own, and sent his report to Paris, where it was read at a session of the

\*Presidential address delivered before the National Association for the Study of Pellagra, Columbia, S. C., October 21-22, 1915.

<sup>1</sup> *Historia Natural y Médica de la Provincia de Asturias*, Oviedo, 1762. A later edition of this book, published in Oviedo, 1900, a memorial to Casal.

A *traite de medecine* and later published (1755).<sup>1</sup> Sauvages then entered this new malady in his great *Nosologie methodique* under the class of Cachexias, as a kind of leprosy, with the name *Lepra asturiensis*.

Casal's article, written in Latin, may be briefly sketched in outline. Like all the early observers, and quite naturally, too, he was deeply impressed by the erythema—the visible and terrible sign of this disease. It was not till a later day that Strambio first estimated this sign at its true value. So Casal begins his paper with a description of the skin lesion. This is followed by several case histories. Next he discusses symptomatology. Then an examination is made into etiology. This is followed by a somewhat lengthy and tiresome inquiry into the nature of pellagra with an elaborate comparison between this disease and leprosy and scurvy—the two spectres of his day. The article terminates with a brief outline of treatment. Taken in its entirety, the paper is a good one, and shows a man of knowledge and discernment.

The description of the erythema is quite accurate and full, and gives in some detail the characteristics of the lesion, the sites of predilection, seasonal recurrences, evolution, and termination. In one point there is a disagreement with later observers, and that is in the symmetry of the erythema. "It does not always attack," he says, "both hands, since some of the sick have it only on one; others on both; others on both hands and one foot; and others on both hands and both feet." He adds that it always spares the soles and palms. Curiously enough the name *mal de la Rosa*, Casal says, originated not (as one might naturally imagine) from the first red appearance of the erythema, but from the shining red surfaces so often seen after desquamation has taken place. His description of the lesion on the neck, since called Casal's collar, will bear repeating in his own words:

In some of the sick, but not in all, there exists another visible sign of this disease. This is a rough scalliness, of a dark ashen color, on the anterior and inferior part of the neck which, like a collar, extends from one side to the other, above the clavicles and sternum, toward the upper extremities, like a narrow band, some one or two fingers in width. Leaving almost always untouched the posterior part of the neck, the two ends of this collar reach only to the edges of the trapezius muscles on each side, rarely going any further. From the middle of this collar, over the sternum, half way down the chest, extends a kind of appendix about the same width as the collar, in the form as shown in the illustration.<sup>2</sup> Never have I seen any one, sick or well, with this sign unless he suffered from *mal de la Rosa*; for which reason I believe, though all do not agree with me, that it occurs only in those who are victims of this disease.

Casal's case histories need hardly detain us. They contain nothing of note not brought out in his discussion of the symptomatology. The symptomatology, however, deserves to be quoted in his own words:

From the data given and from many other things which I have been able to gather after complete examination, one may deduce the phenomena of this disease. But since some

of these things are exclusively peculiar to this affection, and others are common also to other affections, I shall first deal with the former. The symptoms therefore peculiar to this disease and inseparable from it are the following:

1. Constant movements (tremor) of the head which, though common to all, are in some so continuous that not for a single instant are they free from irregular movements of the entire body. In the Hospital of Santiago in this city I have treated a woman (and if necessary I would affirm this under oath) whose body, especially the upper half, wavered like a bird driven before a gusty wind. So great indeed was this unsteadiness she had to move her feet with the utmost care to maintain an erect position and at the same time prevent each moment a fall to the ground (?vertigo).
2. Painful burning of the mouth, accompanied by vesicles on the lips, and a foul tongue.
3. Distressing weakness of the stomach and lassitude of the whole body, especially the legs, along with profound general depression.
4. The scaling on the metacarpus and metatarsus, and the kind of collar around the neck.
5. Constant terrible burning sensations which torment these patients, especially when in bed.
6. A delicacy and fineness of the skin which resists neither heat nor cold.
7. Mental depression which, with no adequate cause, assails these patients, provoking mournful tears—a phenomenon which of itself alone is a pathognomic sign of this affection.

In other parts of his paper he amplifies in several particulars this skeleton list of symptoms, and it is evident that the irregular movements and tremors which he describes were not infrequently accompanied by a distressing vertigo, a symptom upon which many writers have laid stress. He was also accustomed to see the mental depression followed by much more marked psychic states, and discusses the mania and melancholia from which his patients later suffered. He also recognized their tendency to suicide. In common with all writers, he lays special stress upon the intolerable burning sensations peculiar to this disease, and which are only too familiar to all of us.

It is obvious that Casal had a very definite and complete comprehension of the symptomatology of pellagra. He has described quite accurately the skin lesions and the nervous phenomena, but strange to say, he pays very little attention to the gastrointestinal signs and symptoms, which in our day form so prominent a part of the disease picture. Distressing weakness of the stomach, a sore mouth, and a foul tongue summarize his comments on this feature of the disease. Not once does he mention diarrhea. This is to me most remarkable. I have found no other early writer who omits this, though in many of them there is noticeable a tendency to regard the diarrhea as a late occurrence, somewhat in the nature of a terminal event. This circumstance is worthy of comment in view of the fact that many modern students of the disease have given the intestinal symptoms a very important place, seeking here even the origin of the disease.

Casal thought the cause of pellagra was to be found in the atmospheric conditions prevailing in the Asturias—humidity, fogs, temperature, high winds, etc.—and in the diet of the people. Like many medical men of his time he attributed much influence to atmospheric conditions which he discusses at length. This is perhaps of no great interest to the medical man of today. We may pass on then to learn what he has to say of diet, a matter

<sup>1</sup> Historical, but hardly artistic interest.

today of paramount importance in the study of this disease. Here again I think it best to give his own words, as follows:

The principal diet of almost all who suffer from this disease is maize and millet (*mijo*). From the flour of these grains they make bread and also prepare *papas* (*papas*) which, mixed with milk or butter, constitute their ordinary diet. They also eat eggs, chestnuts, beans, turnips, cabbage, milk, butter, cheese, apples, pears, nuts, and other fruits of trees. Very rarely they eat fresh meat, and only occasionally salt meat, since almost all who suffer from this disease are poor laborers. For this reason they not only do not have salt pork, but neither do they have the flesh of any other animal, either daily or even every ten days. The bread made from the millet (*mijo*) is generally unleavened, and cooked in a small oven (*horno*). Their drink is water. Their clothes, linen, beds, and houses are about on equality with their food.

This diet, at first sight, would seem not only sufficient to cause this disease, but also others even worse.\* If after taking into consideration, however, all of the circumstances, each individual circumstance is also carefully considered, there will be found many and important reasons for dissenting from such a view: 1. Because in almost the entire province laborers generally subsist on this diet, and yet all do not suffer from this malady, the greater part of them, on the contrary, being strong, active and healthy. 2. Because *mal de la Rosa* does not prevail equally throughout the country, but only in certain restricted places, which form at most only about one twentieth part of the province. While in this territory there exist innumerable cases of the disease, such cases are very rare in the rest of the province. 3. Because the argument from diet is, one may say, *a priori* and obscure; and it is my opinion that from such argument one can deduce nothing certain.

This is followed by a somewhat lengthy discussion on foods in general. Casal expresses himself quite vigorously as to the lack of definite knowledge on dietetics, and shows himself very skeptical concerning accepted opinion on this subject. Food, he thinks, must have an important influence in the causation of the disease, but in itself is insufficient to account for it. Atmospheric conditions and diet combined, in his mind, constitute the essential causative factors, the former acting as a sort of predisposing agent to lower resistance, and the latter precipitating the disease.

His long discussion on the nature of the disease and its geographic distribution contains little of interest, and may be summarized in his own words, thus:

It is my opinion that *mal de la Rosa* is a peculiar kind of scorbutic leprosy, described heretofore by very few, if indeed by any one at all; that it does not occur in all the provinces, but only in this one and hardly elsewhere.

Casal's remarks on treatment are brief, but to the point. His therapy does not differ much from that of our own day. His ideas may be expressed in few words: Good and nourishing food, a judicious use of certain drugs, and bathing. "I have observed constantly," he says, "that the change from ordinary diet for another more substantial and more nourishing is most useful in controlling this disease." Among many things, he made use of mild purgatives, antiscorbutics, and mercury. Mercury, he declares, produces benefit, but only temporarily. In his concluding words he has reached the heart of the matter. "If it were possible," he says, "to apply to these poverty stricken sick the same remedies as to the rich . . . I

would prescribe for them with both hand and above all, good and nutritious food."

This closes Casal's remarkable paper. Beside its historical interest it possesses, it seems to me, especially when compared with other early articles, a wider significance, and furnishes reasons for comment on certain points of interest.

The chronological development of pellagra in Europe is, in the first place, of some significance. This disease was first observed in northern Spain about 1735 and called *mal de la Rosa* (a popular name), or by the French, Asturian leprosy. About fifteen or twenty years later it was independently noted by Pujati in northern Italy and taught to his students at the University of Padua under the name of Alpine scurvy. Soon afterward it was described in Milan by Frapoli under the name of *pelagra* (also a popular name). A little later reported independently in southwestern France by Hameau under still another name. It is to be noted that these men are all describing, independently, a new disease, which is, however, not rare, but quite prevalent. How much this is like our experience in the United States! A disease, quite unknown, is suddenly reported in Alabama, South Carolina, Georgia, North Carolina, Texas, Illinois, and elsewhere, not as a rare affection, but actually in epidemic form. One further point of resemblance—the early European writers are unanimous as to the malignancy of this new disease. "Horrible and obstinate," says Casal; Frapoli calls it, "one of the cruellest diseases that God even sent to man"; "murderous" is Strambio's epithet; "a terrible affliction which is hurrying whole populations to the grave," is the opinion of another early writer. There are perhaps not a few of us who would assent to these expressions. This apparently sudden appearance, rapid spread, and great intensity suggest an infectious process, but by no means warrant such an assumption. These are interesting facts, however, which should be taken into consideration.

The restricted geographical distribution of pellagra, so often reported, is another significant circumstance. We notice this point brought out very sharply by Casal. The disease occurred in only a very limited and restricted part of the province, and he even mentions the places by name. Strambio also states that most of his cases came from a certain part of the Duchy of Milan. Southern and insular Italy have always escaped the ravages of the disease, while northern and central Italy have suffered severely for a long time. Only certain quite definite parts of France ever suffered from it. It is quite obvious that the disease with us is very definitely restricted to the southern States. Facts of this character led Sambon to formulate his *simulium* theory, but up to the present no explanation has proved satisfactory.

Another point, brought out in Casal's paper only by implication, is the question of contagion in pellagra. Casal apparently entertained no idea of contagion in this disease. This would seem obvious from his ideas as to etiology, and also from other details of his paper. Contagion in this disease, however, was a burning question with many of the early writers, and is discussed by most of them.

\* It is quite evident from Casal's own description that he was describing a scorbutic leprosy, and not a true leprosy. The disease was not contagious, and was not inherited. It was a disease of the poor, and was not a disease of the rich.



Strambio,<sup>6</sup> writing about the close of the eighteenth century, summarizes the matter, thus: "My predecessors have been in entire accord that pellagra is not propagated by contagion, and I have found this most true according to my own observations. I have seen that with impunity one may eat the squamous scales from the hands of pellagrins, live in the same room, eat with the same spoon, and sleep in the same bed without contracting the disease; and finally that one consort may remain in perfect health, although still living in marital relations with the other who may be suffering from the disease." Fifty years later, we find Roussel,<sup>7</sup> in his great treatise on pellagra, absolutely refusing to discuss the matter, and dismissing it with the remark that this controversy was long ago settled, and that pellagra is not contagious.

This question has again been raised with the advent of pellagra in the United States; and I have no criticism for those who have raised it. The evidence upon which, in the past, this question was determined, I am free to admit, is inconclusive. Personally I do not believe the disease to be contagious, and in view of a widespread pellagra-phobia, I regret very much to see the matter carried to the point of adopting such measures as isolation and quarantine. Measures of this kind cannot be intelligently applied until we possess more definite information as to the mode of transmission, even if the disease is transmissible, and to apply them unintelligently is to achieve little that is beneficial and perhaps do much that is harmful.

Then, to omit many interesting things, we come finally to the great question of food, and maize food, in its relation to the etiology of pellagra. We have heard Casal's opinion that food was certainly a causative factor of importance, but that maize was not the responsible element in the diet. All writers on pellagra, early or late, have united in stating that people who suffer from this disease are poorly fed, and all have regarded this fact as of etiological significance. But as yet none has been able to point out the exact significance of this relation. As Strambio puts it, "all therefore are in accord in assigning bad food as the principal cause of this disease, but each one accuses in the food either one thing or the other according to the dietetic customs of his vicinity." Ever since Casal's day students are convinced that pellagra is associated with a poor diet, and volumes of research and argument have been offered on this subject. The Italians have done little more, Roussel somewhat sarcastically observed many years ago, than to ring changes on Casal's views. Yet they, and all others must continue to study the relation between poor food and pellagra. For, among all the complexities and discordant things that surround this disease, this is the one outstanding fact that most urgently needs explanation. Argumentation and experiment have in a sense travelled in a great circle; first, poor and insufficient food, then a lack of certain definite principles in the food, then poisoned food ("spoiled corn"), and, through a host of other speculations, back to food again, now

with the newer ideas of an incomplete diet and the absence of certain necessary vitamins, which, on the part of the zeists, reverts again to maize.<sup>8</sup>

The problem of pellagra still remains, but, although we seem to make progress slowly, we have no reason to feel unduly discouraged. With us the problem is young, and Europe has struggled with it for nearly two centuries. For my part I have always believed that the disease is related to diet in some very essential manner. It is difficult for men of this generation, who are so thoroughly imbued with infectious thought and ideas, to approach etiologically a disease like pellagra on the dietetic side, but our present program is sufficient evidence that we are now thoroughly alive to this important phase of study. I think it is a most hopeful sign.

### Original Communications.

#### THE EPIDEMIOLOGY OF TYPHUS FEVER.\*

By JOHN F. ANDERSON, M. D.,

New Brunswick, N. J.,

Formerly Director of the Hygienic Laboratory.

Doctor Brill has so exhaustively discussed typhus as it occurs in this country, that nothing remains for me to say in regard to that type. There are others who have had a larger experience with the European type than I, because my experience has been confined to some sixty to seventy cases studied in England. For these reasons I shall confine myself largely to the disease as I have observed it in Mexico. I think it proper to state as to this point, however, that I have never noted any essential difference between typhus fever as seen by me in England, the United States, and in Mexico, except as regards the severity or mortality. The disease as seen by me in England had a case mortality of about twenty per cent.; the case mortality of the disease now recognized in so many of our American cities is not over two per cent. The case mortality of the disease in Mexico City shows in different years and in the native and foreign population considerable variation. In 1909 and 1910 the mortality among the patients in the Mexican General Hospital was a little over ten per cent., while in 1911 and 1912 it was nearer five per cent. The disease among the foreign population is much more severe, as is shown by the fact that according to the statistics of the American Hospital in Mexico City there were treated in that institution from 1888 to 1910, 144 cases of typhus, of which fifty were fatal, this being a case mortality of thirty-four per cent. The Mexican

\*It is highly interesting to note the book of Lussana and Frus, *Sulla pellagra*, Milano, 1890. This very interesting volume was a highly ambitious effort, and a serious and important contribution to the literature of pellagra. With regard to etiology these authors lay very great emphasis on the lack of animal protein in the diet. In the therapy of the disease they urge the use of animal proteins. In support of their views they quote a score of well known students of pellagra who favored the therapeutic use of milk, milk products, meat, and animal foods in general; and they also give a table of patients treated at the Great Hospital of Milan, showing results on a dietetic treatment compared with other forms of treatment. This table is too long to reproduce here, but in over 9,000 cases of pellagra treated from 1827 to 1852 it is shown that by the adoption simply of a dietetic regimen case fatality rates dropped from 24.5 to 4.5 per cent., recovery rates rose from 19.9 to 74.6 per cent., recurrence rates dropped from 53.6 to 20.9 per cent. Truly an important and convincing array of data!

\*Read at the New York Academy of Medicine, October 21, 1915.

physicians who have had a large experience with the disease ascribe to it a mortality of about twenty per cent., although I am inclined to believe that this is somewhat greater than the true rate. It is but natural that many of the mild cases escape observation and do not come under the notice either of the physicians or health authorities, while the severer cases are seen, and in this way the mortality rate is increased over the true figure.

Typhus fever has been considered a disease of temperate and cold climates, although its occurrence in certain sections of some tropical countries has led to the impression by some observers that it is also a disease of the tropics, but, as I will show later, those sections of the tropical countries in which it occurs have the climate of the temperate zone and not of the tropical.

The disease is present in England, Ireland, certain parts of Europe, the central portion in particular, northern Africa, in the temperate portion of Asia, and other portions of the eastern hemisphere. In the western hemisphere it occurs as the mild type of the disease in practically all of our larger cities from as far west as Milwaukee and as far south as Atlanta. It also occurs in certain sections of the Republic of Mexico and of Central America. I have not been able to learn whether the disease occurs in South America.

In Mexico and in Central America the disease occurs within the latitude of the tropics, but in a section where the climate is that of the temperate zone and not of the tropical. The same is true of the disease in India and in Northern Africa.

The great central plateau of Mexico has an elevation from 4,000 to 11,000 feet above sea level, and it is within certain altitudes of this plateau that typhus prevails. On the plateau, even in the hot season, the temperature in the day never becomes oppressive, while the nights in summer are cool and in winter are cold. Mexico City has an elevation of about 7,500 feet and at that place the temperature at night during our winter months is often below freezing.

It has been observed in Mexico for years that typhus never prevails below an elevation of 5,000 to 6,000 feet. Even when persons come from the greater altitude during the period of incubation and develop the disease after reaching the coast, or as called by the Mexicans the *terre caliente*, the disease does not spread. The condition is exactly the reverse to that in regard to yellow fever, which prevails at the sea coast, but even when patients from that section develop the disease after arriving at Mexico City no spread of the disease takes place.

The freedom of the lesser altitudes of Mexico from the disease has been attributed to various factors, but, as I shall endeavor to point out, it is due to the same factors that have to do with a lessened prevalence of the disease in endemic foci during summer and fall; this holds true for Mexico as well as for other countries. This inability of typhus to spread in the lesser altitudes of Mexico as of other tropical and subtropical countries and its lessened prevalence in summer and fall is, I believe, due to the effect of the higher temperature on the transmitting insect, the body louse or *Pediculus vesti-*

*menti*. Anderson and Goldberger were apparently the first to call attention to the adverse effect of temperatures higher than 20° C. on the longevity of body lice, and their observations were confirmed by Wilder. These authors, in an endeavor to keep the lice used in their experiments under as natural conditions as possible, placed them either in the incubator at about 35° C. or carried them in bottles on the body at approximately the same temperature. It was found that the lice so kept rarely survived, even when freely fed, longer than thirty-six hours, but if kept at a temperature of 20° C. or less they could be kept alive without great difficulty.

These experimental results, to which I have so briefly referred, are in harmony with the observation of owners and physicians of plantations in the *terre caliente*, who long ago noted that when lice infested peons came from the table land to the coast they soon became lice-free without the application of remedial measures.

Since we now know that typhus is transmitted by the body louse and the effect of temperature on the life of the insect, we are able to appreciate the influence of higher temperature on the prevalence of the disease and to know why the disease is less prevalent in summer and fall, and why in tropical and subtropical countries it never prevails except above a certain altitude.

Our knowledge of the means by which typhus fever is spread and the methods to be employed for its prevention had made no advance since the disease was differentiated from relapsing fever and from typhoid fever until the latter part of 1909 and the early part of 1910.

One of the great hindrances to the experimental study of the disease was inability to produce it in laboratory animals, but, late in 1909, Nicolle reported the successful infection of a chimpanzee with blood drawn from a case of typhus and the production of the disease in monkeys of a lower order with blood from the infected chimpanzee. Some months later, working with Comte and Consul, he reported the transmission of typhus from one monkey to another by means of the bites of body lice (*Pediculus vestimenti*) which had fed on an infected monkey.

In November of the same year the studies by Goldberger and myself in Mexico were begun, although we were not aware of the work of Nicolle until some time after. Shortly after our arrival in Mexico, Ricketts and Wilde, and McCampbell and Conneff, also began their studies of the disease.

We found, contrary to Nicolle's first reported observations, that the lower monkeys, such as the rhesus and the capuchin, were susceptible to infection with the disease by inoculation with blood from human cases, also that one attack conferred immunity to a subsequent inoculation with virulent blood, and that the defibrinated blood serum, when passed through a Berkefeld filter, failed when inoculated into a monkey to produce the disease. In our opinion the experimental and epidemiological evidence pointed unmistakably to the correctness of Nicolle's observations that the body louse was the means by which the disease was spread.

Our work was interrupted at this point by our enforced return to the United States and was not

resumed until the fall of 1911, when through the courtesy of the staff of Mount Sinai Hospital, of New York, we had the opportunity to see and study a case of that type of the disease, the recognition of which we owe solely to the careful study and work of Dr. Nathan E. Brill. We had been impressed after reading Doctor Brill's thorough and accurate studies of the disease described by him, with the remarkable resemblance it bore to typhus as seen by us in Mexico and as seen by the writer in England. With blood drawn from the case seen by us in Mount Sinai we succeeded in infecting a rhesus monkey and this strain of typhus fever is still maintained by passage in guinea pigs in the Hygienic Laboratory. After we had established the susceptibility of the rhesus monkey to the disease described by Doctor Brill, it became of first importance to determine experimentally its relation to the typhus of Mexico.

Space will not permit nor is it necessary to enter into a discussion of the experiments made for this purpose, and it will suffice to state that by a series of cross immunity tests it was found that an attack of one type of the disease conferred immunity to the other and vice versa. We also found that the New York type of the disease could be transmitted from monkey to monkey by the bites of body lice.

Brill, in his three papers, has reported the observation of 254 cases of so called Brill's disease, which we now know to be typhus fever, in the wards of Mount Sinai Hospital between the years 1896 and 1910; eighteen cases have been reported by Louria at the Jewish Hospital, Brooklyn, during the summer and fall of 1910; cases have been reported from other hospitals in New York city, as well as from Chicago, Milwaukee, Indiana, Virginia, Washington, D. C., Atlanta, Providence, Boston, and other places.

Roger Lee, in a study of the case records of the Massachusetts General Hospital for the ten years from 1902 to 1912, concluded that typhus fever in mild form had been present in Boston and vicinity during that time. He found, in his study of the records of 1,404 cases of continued fever of a greater duration than seven days, twenty-eight cases which correspond extremely closely to Brill's description of typhus fever. This gave a ratio of one case of typhus fever to forty-seven of typhoid. There is a reason to believe that this same ratio would hold, not only for cases of typhoid fever in Boston, but also for typhoid fever in other large cities of the United States. If we assume that the ratio of one case of typhus fever in forty-seven of typhoid, as found by Roger Lee in the Massachusetts General Hospital, holds for certain other large cities, we may estimate for 1912, based upon the reported cases of typhoid fever, that there were present in New York city for that year, seventy-two cases of typhus, in Baltimore twenty-two, Boston ten, Chicago twenty-two, and Philadelphia thirty-four.

That this is not altogether an unwarranted assumption is evident from the fact that, according to the reports from two hospitals in New York city, thirty-six cases of typhus fever were treated at Mount Sinai Hospital and nineteen cases at the Jew-

ish Hospital, in the year 1912. The ratio of these cases of typhus to typhoid in the Jewish Hospital for that year was about 2.3 instead of the ratio of one to forty-seven, as found by Lee in Boston.

From this it is evident that typhus fever, instead of having been completely eradicated from the United States, is present and has been present for years, at least in the larger cities. This hardly need occasion any surprise when we recall how frequently certain diseases are overlooked, as is strongly shown by the history of pellagra and hookworm disease.

The demonstration of the endemic presence of typhus fever in the United States should require American sanitarians to recognize the persistence of a problem of which they have been heretofore unaware and to be on their guard against a disease that may at any time assume epidemic prevalence and virulence.

#### PREVENTION.

There is no experimental evidence to support the view that typhus is acquired in any manner other than by the bite of lice, which have previously fed on a person with the disease. This being so, in our prophylaxis it is necessary only that we keep this important fact clearly in mind, and by so doing we may readily deduce the fundamental procedures on which prevention may be based.

In my opinion, it may safely be assumed, that association with a case of typhus, in the absence of the transmitting insect (the louse), is no more dangerous than association with a case of yellow fever or malaria, in the absence of the proper species of mosquito.

All our efforts at prevention, therefore, are centred upon the louse and these efforts may be broadly grouped under the following headings:

1. Measures for the reduction of lice infestation among the population in general.
2. The destruction of all lice, and their eggs, found on the bodies, clothing, bedding, and surroundings of all cases of typhus, typhus suspects, and contacts.
3. The adoption of measures, by persons in the vicinity of cases of typhus, to reduce or prevent the possibility of their being bitten by lice.
4. Inoculation with the mild type of the disease (Brill's disease), by persons contemplating entering places where the disease is prevalent. Should Plotz's work be confirmed, this may be replaced by the use of a vaccine prepared from the typhus fever germ.

The measures to be adopted under the first heading are, to a considerable extent, educational, except in institutions and places over which the sanitary authorities have supervision, such as bath houses, lodging houses, and other places where numbers of persons may gather.

In places where they are found, systematic efforts should be made for the destruction of lice and their eggs. These efforts consist in the use of insecticides, both chemical and physical, bearing in mind the important point that the louse requires frequent feeds of blood and therefore is most apt to be found on recently used clothing or bedding. It is not difficult to kill when exposed to insecticides, while its



eggs are much more resistant to chemical agents, but are destroyed by heat or steam.

Under the second heading comes, first of all, the institution of measures requiring the prompt report to the sanitary authorities of all cases or suspected cases of typhus fever. Such cases should be promptly seen and the inspector should be satisfied that the patient's surroundings are free from lice, in which case the patient may, without danger to the community, be treated at home. If, however, such is not the case or there is doubt, the patient should at once be removed to a hospital and the place from which he is removed treated to destroy all lice and their eggs. For the treatment of materials, such as clothing and bedding, the use of steam is the method of choice. All suspects and contacts should be bathed, the lice and their eggs in the hair being destroyed, and then receive a change of clothing, their old clothes being disinfected. They should be kept under observation for at least twelve days.

The measures to be adopted under the third heading are such as should prevent or minimize the possibility of persons near cases of typhus being bitten by lice. It should be borne in mind that the louse has not the radius of action of the mosquito or even of the flea; and therefore the striking distance of typhus is shorter than that of yellow fever, malaria, or plague. For the transference of lice from one individual to another, rather intimate association with the lice infested person or his surroundings is necessary; and by reason of the fact that the louse requires frequent feedings to maintain life, this means, for practical purposes, surroundings recently occupied by persons, and possibly by animals.

There is but little to say in regard to the procedures suggested under the fourth heading. The case mortality of the mild form of typhus (Brill's disease), so widespread in the United States, is very low, probably not over one per centum attacked, while the case mortality in Serbia, for example, is possibly twenty, or perhaps more, per centum attacked. For this reason alone (and there are other reasons), the advisability of inoculation with the mild form of typhus would certainly seem worthy of serious consideration for those going to places where typhus prevails in a virulent form.

### TYPHUS IN SERBIA.\*

By J. RUDIN-JICINSKY, M. D.,  
Chicago.

I have returned from Serbia after a whole year of hard work in the war zone, in the field, and also in the base hospital at Skopljë, where I served as director of the Bohemian American Mission, Frothingham unit, during the most trying months of the first attack of the Austrians and the typhus epidemic, which finally was controlled and cholera prevented by the combined efforts of all the American missions. This result could be called justly "the American victory in Serbia," fighting the most dangerous enemy of humanity. It is a fact, that we Americans had to pay dearly in this terrible struggle with death and the scourge, but the lives lost were the lives of real

soldiers of humanity. The sacrifice made at the altar of our profession brought a blessing and gratitude from those thousands and thousands saved, where the maintenance of health and the prevention of disease was our aim, task, and goal. Beside typhus, we had many cases of relapsing fever, many cases of dysentery, a few cases of diphtheria, scarlet fever, smallpox, and many cases of melancholia, rheumatism, bronchitis, pneumonia, meningitis, mastoiditis, parotiditis, scrofula, and even a few cases of tetanus and the other diseases that are found under conditions prevailing in all the hospitals, in the trenches, and in the field in Europe at present, the war there being "more than hell."

Typhus fever—Typhus exanthematicus—is an acute contagious disease, which has been known, especially in the Orient, from time immemorial. It constituted one of the chief plagues of the olden times, and among the armies it was more destructive of human life than even war itself. Last year, in Serbia, not only the army, but especially the prisoners of war in the different camps, stables, and closed barracks, overcrowded and unclean places with unsanitary surroundings, filth, and poverty of the people, suffered most. Out of 70,000 Austrians, prisoners of war, about half, 35,000, died. The people in general, especially during February, 1915, were dying daily by hundreds, physicians and surgeons being among the first victims. It was a horrible sight for days and weeks, the many funerals on the streets of the cities, towns, and villages, three and even six coffins in one primitive wagon with wooden wheels drawn by oxen, or in the field, the bodies of the soldiers being thrown into one hole, their common grave.

Morphological and biological studies of the blood obtained from the finger tips and the ears of many soldiers, prisoners of war sick with typhus fever during the epidemic, showed in many instances the presence of a diplobacillus, which was nonmotile, Gram positive, did not coagulate milk, or split indol, or ferment grape sugar, also did not split milk sugar, but proved pathogenic for rabbits. Inoculations of rabbits gave us positive results; the same diplobacillus was found in the tissues and blood. When bouillon culture was injected under the skin, an abscess formed containing the bacillus in pure culture. Cadavers gave us the same results. Branman and Cheesman<sup>1</sup> made such tests in 1893. Milman<sup>2</sup> in Russia, and Borcic in Serbia last year. Milman proposes to call the microbe *Streptococcus exanthematicus*, because it resembles an ordinary streptococcus, which may induce typhus fever pyemia, and differs certainly very much from the specific agent or *Spirillum obermeieri*, which causes relapsing fever. The differential diagnosis is made with the help of the microscope in the beginning of the fever. *Spirochetes* during a pyretic period exhibit active motion, being spiral and following the long axis of the organism. They are aerobic and may be demonstrated in blood by staining with anilin colors, but we never find them in other fluids or secretions of the body. Knowing this, we examined the blood of our patients during the incubation with prodromal symptoms, such as anorexia,

\*Read, by invitation, November 16, 1917, before the Junior Class, College of Medicine, University of Illinois.

<sup>1</sup>Journal of the Illinois Medical Association, 1903, 11, 1000, and 1905, 12, 1000. <sup>2</sup>Revue Méd. Russe, 1916, 19, 1000.

general malaise, etc., or during the first days, when the invasion was sudden, which happened in most instances, especially where lice played a large part in the minor discomforts of the soldiers, prisoners of war, wounded patients, etc.

There were numerous insects, such as lice, bugs, fleas, mosquitoes, flies, etc., but only two species parasitic upon man. *Pediculus capitis*, the hair louse, and *Pediculus vestimenti*, the body louse, and especially the latter, were the carriers of typhus and relapsing fever from infected to healthy persons. Warburton<sup>2</sup> explains this fact through the habitat of the body louse, which is that side of the underclothing in direct contact with the body. The louse, which sucks the blood of its host at least twice a day, is, when feeding, always anchored in the clothes by the claws of one or more of its six legs. Free lice on the skin we never found, but the under side of a shirt of the patients and first dressings of the wounded, especially of those coming from the trenches or the camps of the prisoners of war, also plaster of Paris dressings in fractures were often alive with them. In our experience with this and similar insects in war, we always searched for them and their bites, and lost no time in taking proper measures, general cleaning of the premises, the beds, sheets, etc., and changing clothing as often as possible, keeping blankets apart, etc., and disinfecting public places, cars, vehicles, and different means of transportation, burning all discarded clothes, such as shirts, vests, etc., or putting them under water, especially the broad belts of the Serbian soldiers and Turkish suits of all kinds. When lice were found on the persons of our patients, we readily destroyed them by the application of petrol, paraffin oil, turpentine, xylol, or benzol, and even acetic acid to the head, using fine combs to detect and remove vermin. In the case of the body louse, we used petroleum mainly on the body and scalded the underwear every week, giving the patient a good bath besides. All coats, waistcoats, trousers, etc., were turned inside out, the folds at the seams being carefully examined and exposed to as much heat as could be borne before fire, against a boiler, or jet of steam allowed to travel from a kettle or boiler, especially along the seams. The clothing was soon dry and clean, and a hot flat iron finished the work to kill the vermin in clothing, while petrol, naphthalin, or paraffin destroyed the nits. The patients were advised not to scratch the irritated parts and the public was warned in special circulars to be absolutely clean, to look after the food supply, canalization, toilet rooms, sanitation, exposure to infection, the quality of the drinking water, with all the instruction in the prevention of the disease and the necessary procedures when sick.

We told the people also about the danger of the disease, the early symptoms, and the difference between typhus and febris recurrence, how to behave, and look for help at once, when there was vertigo, tinnitus, headache, muscular pains, profound prostration and fever going up to 104° or 105° F. as early as the second day. We observed that sometimes bronchitis was present and symptoms of cerebral congestion always. Appetite was lost and the thirst was extreme, while a thick yellowish grayish coating covered the tongue. Vomiting occurred,

the urine was scanty with increased specific gravity and a trace of albumin. The cheeks were flushed and the conjunctivæ injected, this being a prominent symptom with early nervous symptoms, and even mild delirium at first, followed later by stupor or actual coma with dull face and stupid look. The spleen on palpation in nearly every case was enlarged. Between the third and fifth days of the invasion, the characteristic eruption appeared without an accompanying decline in the temperature. The rash, or peculiar spots, appeared first upon trunk, chest, and abdomen, and from here to the rest of the skin surfaces of the body, but not in the face. The crimson red maculae, differing from simple bites of insects, in about three days changed to darker hemorrhagic petechiæ, some rose spots disappeared on pressure, but the petechiæ did not, and sometimes the whole skin seemed to be hyperemic, especially when the fever continued high, often reaching 106° F., or even higher, with very rapid pulse, 120 to 140 or more, feeble and many times irregular, the respiration also increasing in frequency. Bronchopneumonia may develop as complication. Then the tongue became brown, fissured, tremulous, and occasionally black and rolled up, without power to protrude from the mouth. Sordes formed on the teeth and lips. Urine was high colored with more albumin, and we had sometimes retention due to paralysis of the bladder. Gradually typhomania appeared, leading to complete coma or maniacal delirium, or we had coma vigil with tremors and carphologia or picking at the bed clothes. The decubitus was dorsal, the cheeks became later dusky, the face without expression, and the pupils were contracted. The prostration then reached an extreme degree and absolute exhaustion often, during our epidemic too often, terminated life. We had to watch the course of the fever carefully, giving cold applications (snow brought from far away hills, or water with artificial ice, or without) to the head and the chest, the lungs for inflammation or congestion, gangrenous consolidation or empyema, and the heart especially, which grows progressively weaker and must be controlled with good doses of digitalis, and the nervous phenomena watched according to each individual case, remembering that among the sequelæ we had not only neuritis, mastoiditis, and parotiditis, but paralyse gangrene of the remote extremities (toes, fingers, back, chest, etc.), with some times terrible phlegmons, even in the mild types of typhus whose course ran from seven to ten days. In the malignant type the disease proved fatal in a few days, the crisis coming even before the complete appearance of the rash. Relapses were very rare, an attack, as a rule, bestowing immunity for life.

The prognosis depends on the severity of the particular type and complications of the individual case, the peculiar circumstances connected with the same, the conditions of the nervous system, the food supply, and the sanitary surroundings with thorough disinfection and absolute isolation. The supply of fresh air to typhus patients brought a great reduction in the mortality rate among those treated in our tents, open air barracks, and special hospitals equipped for this purpose, along with regulation of diet, more solid food during convalescence than in typhoid, and plenty of fresh

water. The patients themselves and even the public were afraid of fresh air, covering their faces during sleep with blankets, but we prohibited this practice at once and broke the glass in the windows of our wards to be sure. Thus we finally got hold of the epidemic. The use of antiseptic agents and tonic measures brought out again the fact that typhus, prevailing especially in winter months, "was a self limiting affection and therefore curable," as Anders<sup>4</sup> says, "if life can be spared until it has run its usual course," the treatment consisting mainly in those measures that are helpful to combat exhaustion, strengthen the heart, and control the hyperemia of the brain.

1900 BLUE ISLAND AVENUE.

## PROSTATISM SANS PROSTATE.

### *A Study of Median Bar Formation as a Cause of Urinary Obstruction,*

By ALEXANDER RANDALL, M. A., M. D.,  
Philadelphia.

(Concluded from page 1132.)

#### PATHOLOGY.

Let us now turn to the consideration of the studies that have been made of tissue removed by operation in order to elucidate what is truly one of the most obscure chapters in urological pathology.

The German urologists, since the writings of Englisch, in 1901, have firmly sustained the view that in the majority of cases the *primary* change consisted of an atrophic shrinkage of the prostate gland, and that the obstruction to the vesical orifice was due to a *secondary* distortion from such changes, plus a concomitant sclerosis of the internal vesical sphincter. (Englich, Barth, Groslick, Datyner, Kümmell, Posner, Steiner, Burckhardt, Caesar, Dubs, *et al.*). This conception they have been able to prove by their investigations, and then have shown, as first pointed out by Civiale, that when true bar formation exists at the orifice, there is at the same time a diminution in the size of the prostate. The valve formation of the older writers, consisting of a simple fold of mucous membrane, is not of this type, nor is it of frequent occurrence. Likewise small middle lobe obstruction due to localized glandular hypertrophy, forms another type apart from the bar formation due to prostatic atrophy, though with similar obstructive symptoms.

Englich draws a line between, *a*, true atrophies of the prostate, seen in elderly patients, and due to various changes to be considered later, and, *b*, types which may be considered congenital, at least where in consequence of its *Anlage*, the prostate has remained small in its later development, giving symptoms at the age of puberty or shortly thereafter. He divides the obstructive bars or barriers into three groups:

1. *Valvula mucosa*, appearing as a thin, uniform reduplication of the mucous membrane, arising from the posterior lip of the orifice. This type of bar formation is rare, being seen only in the congenitally small prostates, and in cases where an intravesically hypertrophying lateral lobe has drawn up

the mucous membrane from the posterior lip of the orifice.

2. *Valvula muscularis*, formed of dense, thick tissue, with smooth surfaces, covered with thin mucous membrane, and consisting chiefly of sphincter muscle tissue (Figs. 7 and 8). It forms across the lower part of the vesical orifice and ends with sharp limitation against the lateral lobes at either side. This Englisch considers to be the most prevalent type of bar formation.

3. *Valvula musculo-glandularis*, with indented, hummocked surfaces, covered with mucous membrane, and, though containing muscle tissue, is in reality due to an underlying hypertrophy of the glandular tissue of the middle lobe of the prostate.

4. Englisch also speaks of a fourth type which is a pure muscular hypertrophy, which forms a circular muscular stricture surrounding the entire urethral opening. This, he says, is associated with marked retention and vesical hypertrophy, and should be considered as congenital in origin. It does not form a definite valve or bar across the posterior lip, however, but more truly a muscular stricture, which he suggests might be termed, *Annulus hypertrophicus orificii urethrae interni*, and is probably

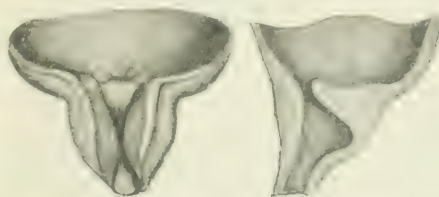


FIG. 8. Median Bar Formation.

the spasmodic type of obstruction described by Fuller. An analogy might again be drawn between this fourth type of obstruction, as given by Englisch, and the congenital pyloric stenosis of infants, where in each case a marked hypertrophy of the sphincter muscle is present.

As to the various causes of atrophy of the prostate the following may be summarized as expressive of the general opinion of the German writers:

1. *Atrophia senilis*. A spontaneous decrease in the congenitally small, the normal, or the hypertrophic gland, occurring in an increasing percentage after forty-five years of age, consisting of a retrogressive process, and representing the truest type of prostatic atrophy.

2. *Atrophia cachectica*. Closely allied to the senile type, as all glandular elements are affected, seen in its chronic form after long wasting disease, such as tuberculosis, and in its acute form after sickness associated with marked prostration and asthenia, and may be, after all is said, infectious or toxic.

3. *Atrophia inflammatoria*. Presenting changes in the gland substance following chronic prostatic inflammation, characterized by connective tissue proliferation, with secondary contracture and shrinkage. It is essentially a long process of inflammatory destruction with connective tissue repair and scar formation. It affects the prostate asymmetrically and forms a very frequent type of atrophy.

<sup>4</sup> Anders, *Practice*, 11, edition 1902, p. 100.



4. *Atrophia functionalis*. Understood in its true meaning if castration is done after twenty years of age. Before that age a decrease in the size of the gland is simply a hypoplasia. Many authors believe



FIG. 7.—English's diagram illustrating his idea of bar formation; median sagittal section.

that there is not a doubt free case of true atrophy following castration in the adult. If castration precedes puberty, then the prostate does not receive the normal stimuli which bring about the development of all the secondary sexual characteristics and remains underdeveloped throughout life. This is what really takes place in the congenital cases, where owing to lack of development there remains throughout life a juvenile condition of the prostate. In this group should likewise be included the atrophies obtained experimentally by x ray exposure to the testes, as reported by Dennis, Sasaki, and Zindel.

5. *Atrophia ex compressione*. Comprising a few cases in the literature where atrophic changes have followed pressure from tumorous growths in neighboring organs, such as echinococcus cysts, tumors of the pelvic bones or rectum, urethral growths, cysts of the utricle, etc. Likewise may be included here atrophy following stricture of the urethra, as pointed out by Cruveilhier, and that resulting from prolonged instrumentation (trauma) as spoken of by Röhrig. Foreign bodies and prostatic calculi may also be included, though rarely separated from a concomitant inflammatory reaction.

On closer scrutiny of this classification it will be readily seen that the only types which, on account of the frequency of their occurrence, demand attention, are the congenital atrophies, the inflammatory atrophies, and the senile atrophies. It is still an open question whether even this simple classification allows of differentiation microscopically, and probably it will stand as one of clinical importance only.

Barth, Dubs, von Frisch, Kümmel, and others are of the opinion that the actual obstruction to urination is caused by the diseased internal sphincter

muscle. This they point out lies in intimate conjunction with the musculature of the prostate, and goes into it without sharp boundary. Therefore with the onset of atrophic degeneration in the prostate, the sphincter muscle becomes likewise affected, and the dense, fibrous bar formation at the vesical orifice is the result of secondary contracture of this muscle ring.

The atrophic gland on examination is frequently found to be asymmetrical, broader in breadth than length, sharply limited by periprostatic adhesions; though increased in hardness, it is still elastic and resilient. On cross section it is gray or grayish red, streaked by fibrous bands, and with very little glandular tissue visible macroscopically. Retention cysts from duct obstruction may be found. Microscopically the connective tissue and muscle elements predominate, and the glandular acini are decreased in number as well as in size, often being enclosed by a dense connective tissue stroma. The epithelial cells of the acini show various degenerative changes, and the gland lumina are filled with detritus. There is never any young connective tissue seen in these prostates, nor are the muscle fibres hypertrophied, the changes being apparently of very gradual progression, and the ultimate pathological picture is a destruction of the normal gland elements, a connective tissue infiltration, and a general contracture or shrinkage of the entire organ.

In 1913, the first comprehensive study of the actual obstructive tissue at the orifice was published by Young, comprising the conclusions drawn from over 100 cases in which he had excised the obstruction by means of a special instrument, and subjected the tissue removed to microscopic study. This work is of immense value, not only as being the sole investigation of so large a group of cases, but es-

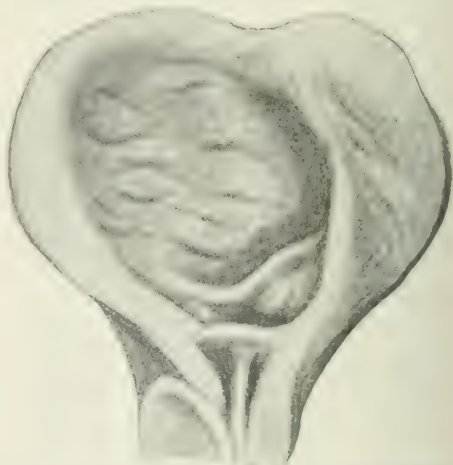


FIG. 8.—Bar formation; dorsal aspect, bladder and urethra open, as depicted by English.

pecially because it embraces the study of the actual obstructive tissue as it occurs at the vesical orifice. Since the publication of this work, covering such a large group of cases, the previous obscure field

of the pathological histology of this condition, aside from its cause, has become more clear. That the cases did not fall into one category was to be expected from the previous work on the subject.

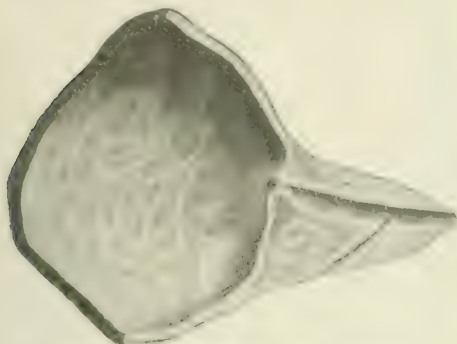


FIG. 9. Schematic illustration of fibrous median bar.

It was found that the most common change was the occurrence of a comparatively newly formed connective tissue layer immediately beneath the mucous membrane, forming a firm fibrous ring, associated with an elevation of the median portion of the prostate. In this group of cases there was no underlying prostatitis and no connective tissue infiltration of the sphincter muscle or of the gland tissue; the lesion consisted essentially of a submucous fibrosis (Fig. 9). The etiology of this type is the most difficult to determine. We may consider this the type that may be expected when the condition is secondary to either senile changes, idiopathic spasm (if we accept Fuller's idea and can compare it to the spasmodic contracture of the sternocleidomastoid muscle in torticollis), or to a degenerative fibrosis, secondary to a circulating toxin, as suggested by Wade. Here also belong the majority of congenital cases, which develop symptoms at puberty.

The second group of cases, as classified by Young, is of almost equal frequency. In these specimens there was found, in addition to a submucous connective tissue layer, a chronic inflammatory condition (reaction) in the glandular tissue, often with marked periacinous infiltration, which occasionally extended into the muscle. This type of case is undoubtedly the one following a period of chronic prostatitis, and is but the expected pathological change after such a condition, in which a low grade infection has existed over a comparatively long period of time.

The pathology of the third and last group of cases might have been prognosticated, except by those who have steadfastly maintained that there is no such thing as the middle lobe of the prostate. Careful observers, of sufficient experience, have verified from the time of Home's original description, in 1811, the occurrence of hypertrophic glandular tissue lying in the midline, at or near the vesical orifice. The final proof was given by Lowsley's embryologic studies, in 1912, when he proved the presence of middle lobe tubules in ninety-seven of ninety-eight specimens, obtained either from autopsy, the dissecting room, or fetuses that were sec-

tioned and studied microscopically. That such glandular tissue may undergo hypertrophy (Fig. 10), independently of the remaining portion of the organ, is an observation which no longer brooks denial. This, the third group, shows under the microscope typical hypertrophic glandular tissue, often associated with an inflammatory infiltration in and around the acini, which, if of sufficient duration, is accompanied by connective tissue changes, as in the second group. This hypertrophic glandular tissue is not from the lateral lobes, but is a proliferation of either, *a*, the suburethral (or pericervical) group of gland acini lying beneath the mucous membrane of the vesical orifice inside the internal sphincter, and usually referred to as Albarran's glands, or, *b*, the subtrigonal group of glands lying beneath the mucous membrane of the trigone, and originally described by Home. Marion likewise speaks of cases, which he had exposed suprapubically, where the obstruction was of similar origin, and in which he recognized the growth to have arisen from a proliferation of the above mentioned gland groups. Thus we see that these two groups of workers have really arrived at almost similar conclusions. On the one hand are those who have removed the entire prostate and have found pathological changes there present which they believe have changed the normal character of the tissues that form the vesical orifice; while, on the other hand, Young, by excising this obstructive tissue only, has found on studying it changes that practically correspond to those proved to exist in the prostate in similar cases.

These, then, are the demonstrable pathological changes that take place at the vesical outlet, whereby in each case the action of the detrusor is hampered, the level of the orifice is raised, the complete emptying of the viscus is frustrated, the patient becoming the harbinger of residual urine from which his symptoms arise, and from which complications are manifold.

#### OCCURRENCE.

The frequency with which this type of bar obstruction occurs is remarkably high when one considers the tardiness of its recognition among the



FIG. 10. Schematic illustration of fibrous median bar.

general surgeons, as may likewise be said of many urologists. Handicapped by the lack of means at their disposal for accurate diagnosis during life, the observations of the earlier investigators were de-

pendent upon post mortem examinations. We find, however, from such sources several articles which are trustworthy, made in an effort to determine the frequency of prostatic hypertrophy, and where the size of the gland was carefully tabulated. Messer (1860) reports from 100 post mortem examinations, that the prostate in old age was smaller than normal in one out of every five cases. Thompson (1886), in a similar study, comprising 104 cases, found

More trustworthy are the figures of Englisch, who made a systematic study of individuals, irrespective of their ages or the presence of local disease, and found that in the 1,757 cases studied, 199, or one in every 8.8, showed definite evidences of underdevelopment or actual atrophy of the prostate.

From the men who in recent years have examined subjects with symptoms of prostatism, the following may be tabulated:

|   |  |
|---|--|
| Matz and Arceus found atrophy present in 1 in 3.6 of a total of 120 cases |  |
| Groszick " " " " " 1 " 3.7 " " " 110 "                                    |  |
| Sandhuys " " " " " 1 " 16.0 " " " 47 "                                    |  |
| Stoner " " " " " 1 " 8.6 " " " 43 "                                       |  |
| Wade " " " " " 1 " 11.0 " " " 110 "                                       |  |
| Desnos " " " " " 1 " 3.8 " " " 296 "                                      |  |
| Totals " " " " " 1 in 7.7 " " " 720 cases                                 |  |

From the foregoing we may judge that one in every eight patients who are suffering from symptoms of prostatism have not what has been heretofore universally considered to be hypertrophy of the prostate, but rather may be expected to present evidences of an atrophic gland with the obstruction due to the formation of a median bar. Moreover, accepting Englisch's figures, one in every nine individuals has no tendency whatever toward hypertrophy, but may lead one to expect that on examination, indications of underdevelopment or actual atrophy will be demonstrable.

#### DIAGNOSIS.

The objective signs and symptoms upon which to base a diagnosis of median bar formation are not sharp and clean cut. There is no one symptom nor physical finding which will tell us that we are dealing with such a condition. It is perhaps all the more interesting for this reason, in that our diagnosis will be based upon the conclusions drawn from a very careful examination, with a keen appreciation of other possible factors and conflicting diagnoses.

**Catheter examination.** Of primary importance, as from this arise many of the symptoms and all of the complications of the condition, is the demonstration of the retention of a certain amount of urine after complete micturition has been attempted. The amount found is not of necessity an index of the severity of the obstruction, and may be out of all proportion to its cause. It may vary from twenty c. c. to complete retention and a catheter life, and yet, in contrast to the foregoing statement, it is not infrequently observed that a man with a very small residual urine may present symptoms of graver moment than one who has had complete retention, and has had to empty the bladder by catheter at regular intervals. The presence of any amount greater than twenty c. c. demands attention.

After the patient has emptied his bladder a catheter should be passed with the strictest precautions as to cleanliness. It is best to use one of the *coudé* or *elbowed* types of catheter, or even Mercier's *bi-coudé* variety, as such catheters ride easily over any obstruction along the floor of the urethra at the vesical orifice. The catheter enables one to demonstrate four features, all of importance: 1. The amount of urine withdrawn as the catheter enters the bladder should be carefully caught in a graduate and measured, as it represents the amount of residual urine. 2. This specimen should be carefully studied, both chemically, for the amount of urea, reaction to litmus, presence of albumin, and other routine measures, and microscopically for the detec-

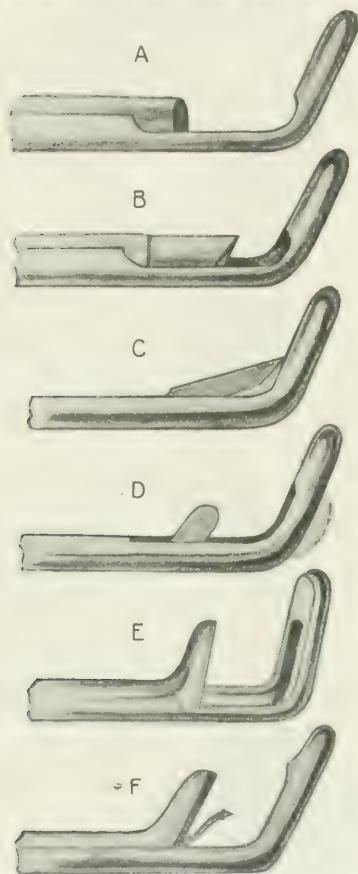


FIG. 11.—Mercier's instruments: A, excisor, 1836; B, excisor and catheter, 1836; C, 1844; D, 1850; E, 1851; F, 1852.

atrophy present in one of every nine cases. Dittel and Christina (1867) examined 115 patients, between the ages of fifty-two and 100 years, on their entrance to the hospital, and found atrophy present in thirty-six, or one in every three. However, the methods of these latter authors for estimating atrophy in the living are open to criticism. Mercier stated that hypertrophy stood to atrophy as thirty-five to twenty; that is, in 100 cases which he examined, thirty-five showed hypertrophy, forty-five were normal, and twenty were atrophic, or a proportion of one in every five.



tion of casts, epithelium, and the presence and character of infecting organisms. 3. While the catheter is still in place, and often preliminary to a cystoscopic examination, the bladder is washed out and its capacity determined, in order to exclude the presence of inflammatory contracture, so often associated with tuberculosis of the kidneys and bladder,

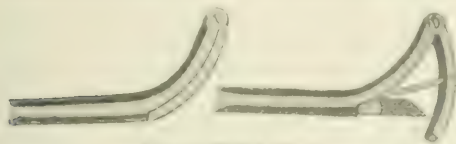


FIG. 12. Cuvell's meso-catheter.

and a natural cause of frequency of urination. The capacity should be normally between 300 and 500 c. c.; above and below this may be considered abnormal. 4. While we are washing the bladder in order to obtain a clear medium for cystoscopy, a very good idea is acquired of the muscle tonus of the bladder wall, valuable in excluding spinal disease, and in indicating overdistention or the presence of diverticula. With the normal bladder the return flow through the catheter runs with a steady force to the very end, often giving the so called "fish bite" tremor as the bladder wall closes on the catheter end and intermittently obstructs its orifice, while in the



FIG. 13. Bittner's bulbous catheter.

conditions named the initial force of the flow gradually deteriorates to a weak trickle, which signifies a loss of muscle tone in the bladder wall from some pathological alteration.

**Digital examination.** By rectal examination we exclude the probability of certain prostatic changes. It is being gradually realized that cancer of the prostate is of more frequent occurrence than has been heretofore suspected—about one in every eight cases of prostatism. In the great majority of such cases, cancer has its origin in the posterior lobe of the prostate, which lies in juxtaposition to the anterior wall of the rectum. Its typical features of stony hardness, fixation, obliteration of the median



FIG. 14. Chetani's goby catheter.

furrow, metastatic gland enlargement, and pain on palpation, should distinguish it to the educated touch. Tuberculosis and abscess of the prostate are to be differentiated by the history and urine examination, while palpation excludes a nodular inflammatory condition or the presence of a suppurative process. Sarcoma and other rare growths need be given but

little thought, as they present quite the antithesis of the condition at hand, where the prostate is nearly always smaller than normal. Hypertrophy (benign), if in an advanced stage, may be easily recognized by rectal examination from its characteristic smooth, soft, elastic feeling, but as the amount of intravesical enlargement is the point of prime importance, its differentiation should be left until cystoscopic examination corroborates the rectal findings.

At times, especially in cases carrying a large residual urine in the bladder, there may be felt by

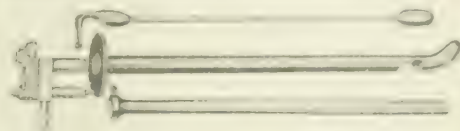


FIG. 15. A diagram showing a catheter with a bulbous expansion and a handle.

rectum the boggy bulging of the atonic floor of the bladder, above the prostatic notch.

**Cystoscopic examination.** After vesical lavage and distention of the bladder with a clear medium, cystoscopy should be performed. It is worthy of note here that the Nitze instrument, with its rectangular lens system set at some distance from the surface of the instrument, is almost an essential in outlining the vesical orifice. Attention is first given to the determination of the absence of intravesical enlargement of the prostate, so characteristic of benign hypertrophy of this gland. This is done by noting the absence of any anterior cleft, any enlargement of the lateral lobes, or the presence of hypertrophy of the median lobe, partially obscuring the view of the trigone and causing deep lateral cleftings. Attention is then centred on the exclusion of a foreign body or tumor within the bladder cavity, and a search is made for diverticula, which could so



FIG. 16. A diagram showing a large, irregularly shaped mass, likely representing a tumor or foreign body within the bladder cavity.

easily account for the occurrence of residual urine. While examining the vesical walls evidences are often observed that are suggestive of urinary obstruction, such as marked trabeculation, cellulæ, or small diverticula, and the existence of a pouch or *bas fond*, behind the trigonal margin.

Observation is then concentrated upon the topography of the vesical orifice, especially the posterior lip. The presence of a slight convexity or a straight line, in place of the normal concavity; an

appreciation of a definite thickening of the normally translucent mucous membrane of the uvula vesicæ; evidences of congestion; or obstruction to a complete view of the vesical trigone, when the cystoscope is in the horizontal position, are all signs that the vesical orifice is abnormal, and that the posterior lip is thickened and raised above its normal position.

These are the findings in an early case, and may be supplemented by other features, if the condition is of long standing, the residual urine is especially large, or if infection is present. Trabeculation is a very valuable sign, and when conspicuous is direct evidence that the bladder has been working to overcome some gradually developing resistance.

Before the cystoscope is withdrawn, two further observations should be made. First by gently withdrawing the instrument with the objective posterior and the ocular well depressed, it is possible to detect relaxation of the internal vesical sphincter, which is pathognomonic of spinal cord disease, especially of tabes dorsalis. The picture thus obtained is at times remarkable, and often the entire floor of the posterior urethra may be observed with the Nitze cystoscope. Secondly, while the patient is yet on the table with the cystoscope in the urethra, a rectal examination should be made, and an appreciation of the amount of tissue lying between the finger tip and the beak of the instrument noted. This examination is often of immense value, not only informing one of an increased thickness above the normal, but also giving very definite knowledge of the consistence of the obstructing tissue.

Before operative interference is undertaken, it is advisable to have some idea of the renal function, especially if general anesthesia is to be used. For this purpose, an estimation of the total excretory power of the kidneys is all that is necessary, and can best be obtained by the phenolsulphonethylphthalein test of Rowntree and Geraghty, while the retention of excretory products may be found by estimation of the noncoagulable nitrogen content of the blood.

It is to be reiterated, that the diagnosis of this condition does not depend upon one or two characteristic or typical symptoms or signs. A complete survey of the individual history, a very thorough examination, a nice appreciation of the mechanics of micturition, and a careful correlation of the physical findings are necessary in each case. By these means the diagnostician is gradually led to a very definite deduction, that this individual bladder, now under examination, is working against an obstruction at each urinary act, that it is suffering damage and impairment because of such impediment, and that this obstacle to the complete evacuation of the bladder is in the form of a bar or dam or valve, situated at and involving the posterior portion of the internal vesical orifice.

#### PROGNOSIS.

In the true cases of bar formation the ultimate outlook is good. In the absence of complications the removal of the cause of urinary obstruction, thereby allowing the bladder completely to empty itself, relieves the symptoms of complaint entirely. The cases where suprapubic prostatectomy has been performed have given definite cures with a low mortality rate, but it must be conceded that the number of such patients operated upon has been very lim-

ited in the experience of each operator. In Young's study there were fifty-one cases of uncomplicated bar formation. These he excised per urethram, and he states that the immediate results in all cases were satisfactory. There were no deaths, and no serious complications followed the operation. Of the ultimate results he says: "I have sent out sets of questions every six months, and have received replies within the last six months from all but six patients. In response to the question, whether they were entirely cured of all obstruction to urination, twenty-three have replied that they were entirely cured, and eleven that they are almost cured. In several of the latter cases there is only a slight irritation, pain, or discomfort, which prevents the patient from saying that he is entirely cured. Seven patients report that they are much improved, . . . one patient says he is slightly improved, . . . and three that they are unimproved. The results, therefore, may be said to have been extremely satisfactory, both as to cure of obstruction and in the relief of pain. Some of the results have indeed been brilliant, effecting cure in cases of very long standing."

At the meeting of the American Urological Association, in 1915, though giving no actual statistics, Young expressed the opinion that seventy-five per cent. of his patients had been cured completely. This is a remarkably high average, for we must realize that often extensive damage has been done by the time the patient is first seen, and damage of a character that, though the urologist relieves the obstruction and stays its progress, complete repair can hardly be expected. It proves that removal of the obstructing portion, however, is all that is necessary completely to relieve the patient.

Chetwood does not mention the end results of his method of treatment, nor does he report the mortality. He has spoken of it as a "safe and sure" means of removing the obstruction, and as this conclusion is based on the observance of over thirty-six cases, and the adherence for more than ten years to his method of attacking the problem, we feel assured that his results must warrant his stand.

Once an appreciation of this condition is established, when its proper diagnosis is understood, and when its treatment is correctly directed, the prognosis may be considered to be decidedly more favorable than in prostatic hypertrophy.

#### TREATMENT.

It is obvious that when obstruction exists at the neck of the bladder, its removal is the *sine qua non* of treatment. Its persistence is the cause of grave difficulties of micturition, while its complications are a constant menace to life itself.

It is of interest at the present day to find that Guthrie, who, as has been shown, first demonstrated the existence of such median bar formation, was strongly in favor of complete division, that is incision of such obstruction. He spoke of treatment by means of simple dilatation with sounds, or by permitting a catheter to remain permanently in the bladder, and says that though useful, these methods do not always succeed, and "often only bring on pain and increase the evil": he then adds, "the bar or dam at the neck of the bladder must be divided, and the question is, how is it to be done with the greatest safety?" Guthrie discusses the propriety

of severing the bar by following the example of Sir William Blizard, who, in a few instances, practised incisions resembling those made in lateral lithotomy, for the purpose of affording relief in very confirmed and advanced enlargements of the prostate. In two cases, Guthrie employed a modification of Stafford's instrument for cutting strictures, consisting of a prostatic catheter enclosing a blade which was easily projected from within the instrument. He says in describing it, "the knife being projected just as the instrument is felt to be passing over the bar, will cut it, and if after it has just passed into the bladder, it be withdrawn, the little knife in coming back will enlarge the original cut." Guthrie also conceived the possibility of incising the bar by opening the membranous urethra through the midline of the perineum, and thence dividing the prostate, together with the bar or any other form of obstruction which might exist. This operation, however, he did not perform to our knowledge.

Leroy d'Etiolles, Civiale, and Mercier all attempted incision of the obstructing bar as a means of relieving these cases. They each perfected instruments having peculiar and especial advantages. The first of Mercier's instruments (1839) (Fig. 11), was a single conical excisor. He combined this, in 1841, with an enclosed incising blade, and between 1844 and 1847, developed two different models of simple incising instruments. His final efforts, from 1850 to 1856, brought forward models closely simulating the lithotrites for an excision by a crushing bight of the obstructing tissue. One of these latter instruments enclosed a fixation needle between the blades, by means of which a portion of the obstructing tissue was excised and likewise removed with the withdrawal of the instrument. In speaking of the subsequent hemorrhage and his means of combating it, Mercier says, "it is at present the only serious accident which I have observed to result. . . . I repeat that by the aid of the means indicated, I have never failed to overcome it, and my experience rests upon a sufficiently extensive basis, since my operations have reached the number of 300, some of my patients having been operated upon several times." (1856). He likewise advocates excision rather than incision when the obstruction is caused by what he calls his "prostatic" variety, advising the removal of three portions, a median one and two laterals, the latter being taken obliquely and posteriorly from either side of the median excision. There is less hemorrhage after this excision, he says, as the vessels are crushed rather than cut. In his "muscular" variety, Mercier advocated incision. He wisely observes, however, that it is easier to incise a valve that has not been sufficiently excised, while it may be impossible to excise when simple division has not given the desired effects; hence in cases of doubt, when the character of the obstruction, whether prostatic or muscular, cannot be established, he recommended excision. There can be no doubt that Mercier obtained excellent results from his operations, and probably the best results were obtained in true cases of simple bar formation, while failures must have been common in cases of intravesical prostatic hypertrophy, where accurate differentiation was difficult with the means at his disposal.

In 1874, Bottini endeavored to effect a division of prostatic obstructions by means of an electrocautery instrument (Fig. 13). His method obviated the one objection to Mercier's procedure, the hemorrhage, and though his aim was the relief of cases of actual prostatic hypertrophy, it is doubtless true that his greatest successes were obtained in cases of median bar formation. Bottini's original instruments were considerably modified in subsequent years by Freudenberg, in an endeavor to make them more accurate and more safe. Freudenberg even perfected a visual cautery instrument by combining the galvanocautery blade with the irrigating cystoscope, so as to be better able to control the application. The mortality, however, was so high with the Bottini-Freudenberg instruments, that though they gained remarkable recognition and were used extensively throughout the world during the twenty years following their introduction, they have now become surgical curiosities.

Thompson, though stating that he had never met with such a case of bar formation in the patients he had drained perineally in order to give the bladder a rest, nevertheless said that he considered such a perineal operation the most likely to afford, at the smallest risk, the best means of approach for incision of a median bar.

Fuller considers such obstruction as a contracture or spasm of the vesical neck, and advocates incision per perineal boutonnière.

Chetwood, in his series of thirty-six cases, performed a perineal buttonhole operation, and then after palpating the vesical orifice, incised it by the aid of an especially constructed instrument carrying a galvanocautery blade (Fig. 14). It was practically a Bottini-Freudenberg operation performed after better diagnosis and under better control.

The Germans, and most of the continental surgeons, have advocated, during the last decade, the radical removal of the prostate by suprapubic prostatectomy. This procedure has likewise been followed in this country by general surgeons, who rarely use the cystoscope as a routine in such cases, and one frequently hears reference made to the removal of a "small sclerotic prostate." That this operation is fraught with many difficulties and some dangers hardly needs mention to any one who has attempted such removal. To remove the sharply encapsulated lobes of the benign hypertrophied prostate is a very simple procedure, but to drag from its bed the atrophic, adherent, and sclerotic tissue which frequently forms a part of the condition of median bar formation, is an operation taxing not only the energies, but the utmost skill and anatomical knowledge of the operator, while the dangers from injury to contiguous structures, from hemorrhage, and from actual failure to remove anything, should contraindicate such a procedure. Some surgeons advocate approach by perineal prostatectomy, but this has never received the sanction of the ardent followers of this route. That results are obtained by either means show that by the minimum removal of the obstructing portions, a cure may be obtained, but the magnitude of the operative risk is out of all proportion to the operative indications and the amount of tissue necessary to be removed.

Young, in 1909, in studying a patient in whom the



rectal examination demonstrated a prostate no larger than normal, and yet who carried a residual of 500 c. c., appreciated that the obstruction consisted of a definite transverse median bar formation. Through a suprapubic incision of the bladder, this obstructing portion was removed by aid of forceps and scissors; convalescence was slow, and the fistula took eight weeks to heal, yet the cure was but temporary. Following this failure, yet appreciative of the ends desired, he devised an instrument to accomplish the same result by taking advantage of the natural approach through the urethra.

Young reported his first series of twenty cases before the International Congress, at London, in 1911, where he stated that in fourteen of the twenty a cure had been obtained. In 1913, before the American Medical Association, he gave a second analysis of his cases, now amounting to over 100, in which he had used his instrument, and in the fifty-one cases of true, uncomplicated, median bar formation, he had obtained a complete cure in twenty-three, while eleven of the remainder were pronounced "almost cured."

The instrument devised by Young consists of an outer tube, or sheath, eighteen cm. long, with a *coudé* curve at its distal end (Fig. 15). On the under surface, just proximal to the curve, is a large fenestra, which on introduction is closed by an obturator. On introducing the instrument, after distending the bladder with water, when the beak is felt to enter the internal sphincter, the obturator is removed and an endoscopic light attached to the proximal end. By this means the instrument is further advanced under the guidance of the eye; the floor of the posterior urethra, with the verumontanum, is seen to pass the fenestra until, with a slight gush of water, the rim of the internal vesical orifice falls into and completely fills the fenestrated opening (Fig. 16). As this constitutes the obstructing portion, it is immediately excised by passing within the sheath a second tube, which has a sharp cutting distal end made of steel, which, when pushed home, excises anything protruding into the lumen of the sheath. By this means a piece of tissue, measuring one by 1.5 cm., may be excised, and after its removal by forceps from the lumen of the inner tube, the operation may be repeated in the directions indicated by individual cases.

The operative procedure is finished by washing the bladder free of blood clots through the instrument before its withdrawal, and immediately afterward introducing a two way catheter of large size, through which a continuous irrigation of hot water (110° F.) is maintained to control bleeding and prevent clotting in the bladder cavity. The entire operation may easily be performed under local anesthesia with four per cent. novocaine, and represents the most radical method yet devised for removing the obstruction at the vesical orifice under the guidance of the eye.

During the past few years, two further methods have been advocated as means of severing the obstruction caused by median bar formation, both the outgrowth of recent advances in instrumental construction for urological purposes.

The Goldschmidt urethroscope, operating with water distention of the bladder and urethra, has

been utilized as a means of performing a modified Bottini operation. The instrument consists of a urethrotrophic tube carrying an electric illuminating bulb in its beak, and with a fenestra on its posterior surface. An obturator carries an optical apparatus, and a channel way is provided for a galvanocautery blade, as well as means for maintaining continuous irrigation. This instrument has been used and recommended by Goldschmidt, Frank, H. Wossidlo, Kropf, and other European urologists, who have shown that the galvanocautery may be thus used for incising the vesical neck in cases of bar formation. It is stated that this has the advantage of doing away with hemorrhage, and while accomplishing the same ends as the Bottini operation, it avoids the blind nature of the latter, as the cutting is performed entirely under the guidance of the eye. This instrument, however, is quite complicated, and so far has fallen short of perfection, while its value from practical experience has not yet been pronounced. The instrument has not been adopted for this use in the United States to any extent.

Stevens, in 1913, first wrote of the use of the high frequency fulguration current, as perfected by Beer, in destroying obstructive tissue at the vesical neck. Beer, in his original article in 1910, suggested the possibility of such application, but devoted his own energies toward its development for the destruction of vesical tumors. Stevens's first case, one of true median bar formation, resulted in a remarkable cure after six applications. The patient when the treatment began had been the habitual harbinger of 780 c. c. or more of residual urine, which was speedily reduced by the means described to only forty-five c. c., with a complete cessation of all subjective symptoms.

A few others (the author included) have followed this recent method of cautery destruction of the bar, and though time is still too short to make positive statements, there is no doubt that the obstruction can be successfully removed by this means with but slight inconvenience to the patient, and will undoubtedly be rapidly developed in the near future.

In making such high frequency application, the regular catheterizing cystoscope, which carries the usual fulgurating wire, is used. A battery current for the cystoscopic light, in place of the house or street current, is preferable, as it allows the use of a greater spark gap. With ease a severe cautery destruction can be performed upon any portion of the vesical orifice, and as the treatments are not more painful or hazardous than the ordinary cystoscopic examination, the entire procedure can be carried out in a series of office treatments, thereby obviating the necessity of hospital sojourn or absence from work.

#### SUMMARY.

In considering the conclusions that are to be drawn from this study, I feel that the greatest importance centres about the establishment of the pathological changes, both local and remote, that call into existence the condition of *prostatisme sans prostate*.

In the United States the treatment of these cases of nonprostatic obstruction has been directed toward the relief of the condition by the smallest amount of surgical intervention that would accomplish the result, hence the cautery incision of Chetwood and the

urethrotomy excision of Young have been the principal methods of choice. The latter procedure alone has allowed of microscopic study of the pathological tissue at the bladder orifice, and has given the conclusions quoted above. This work has focused attention upon the local changes to the exclusion of their possible cause, which I feel is further remote. There is no doubt that these changes, which Young has described, are to be found at the point of actual obstruction, but when we ask why are these alterations present, and why at this point alone, there is no answer. It is hard to accept a theory that local sclerosis or localized inflammation will develop in one specific situation, which of itself is devoid of anatomical differentiation, and does not constitute an entity of some definite delineation. So also when we speak of a sclerosis of the internal sphincter (Chetwood), the question naturally arises, What anatomically is the internal sphincter? It has to be conceded that such a muscle, though performing definite sphincteric function, does not present anatomical outline, nor allow of demonstration on dissection or even microscopic research. The muscular tissue found here is but the middle or circular muscle coat of the bladder, and as this organ narrows toward its orifice, this muscle layer is still present, and is in fact prolonged along the urethra as its middle or circular muscle coat. There is no area or point of increased thickness at the vesical orifice, no change in the character of the muscle bundles, and no fascial limitation that would suggest a true sphincter muscle. So the question returns to us, Why are there pathological changes in this one limited spot?

Now, on the other hand, the German urologists have almost invariably treated these cases by performing a suprapubic prostatectomy, and in so doing have obtained tissue which on microscopic study has shown atrophic changes in the gland. On this is based the theory that, although the actual obstruction is at the vesical orifice, and though the changes at this point may be as classified by Young, yet the true underlying diseased condition and its pathological transformation are in the prostate. Accordingly, it must be granted that these prostatic changes constitute the ultimate pathological condition, and by reason of their close apposition to the bladder orifice cause like alterations to take place in the tissues at the orifice from which obstruction occurs.

That the close proximity and actual contiguity of the prostate to the vesical orifice allows of the occurrence of such changes must be conceded, and it presents a working basis worthy of further elaboration, while the idea that the changes, as found by urethrotomy excision of the small obstructing portion, constitute the disease in its entirety, presents no explanation of why alterations take place at this point alone.

I firmly believe that a careful analysis of the cases of true bar formation will show, in every instance, underlying changes in the prostate of a similar character and of etiological significance.

The second point to which I especially desire to draw attention is the close similarity of the symptomatology of this type of bar formation to that of the well known condition of prostatic hypertrophy. In neither condition are there any clinical symptoms

until obstruction to urination occurs. This obstruction in both cases is situated at the vesical outlet, and for this reason they closely simulate each other. It is undoubtedly this feature that has long delayed the recognition of the true character of bar formation, and has obscured the necessity of its differentiation from prostatic enlargement, and has likewise led the general surgeon to attempt to treat them by similar operative procedures. The importance of a preliminary cystoscopic examination is here forcibly brought to the fore as the one means of diagnosis, and needs no further elaboration.

The indications governing treatment clearly demand the removal of the obstruction. It has been repeatedly demonstrated that excision of the obstructing portion at the vesical orifice will allow complete evacuation of the bladder. To obtain this result a total prostatectomy is not warranted, both because of the age of the patient, which is often within the procreative period of life, and because of the magnitude of the operative procedure. The remaining methods that may be advocated divide themselves into three classes: 1. The excision of the obstructing bar by means of Young's urethrotomy median bar excisor. In the hands of the originator of this instrument, this method has given brilliant results in the largest series of cases yet studied, and well deserves further and more extensive use. The danger from uncontrollable hemorrhage has to be considered and offers the one objection to its use, though Young himself has never experienced it. 2. The obstructing bar may be attacked and severed by means of the galvanocautery incision, as advocated by Chetwood, or by using the Goldschmidt urethroscope as recommended by certain Continental urologists. This method is supposed to have the advantage over the former of not being complicated by the danger of hemorrhage, and when thoroughly performed it should lead to a prompt cure of the urinary difficulty. 3. The third method, which at present I feel will be the one of choice in the future, can hardly be classed as either an excision or an incision of the bar, but rather a destruction of the obstructing portion by means of the high frequency fulgurating current. This is performed by the repeated application of the spark to the desired portion of the vesical orifice through the ordinary catheterizing cystoscope. Although this latter method is of decidedly recent development, so much so that statistics are as yet not forthcoming, it gives promise of doing away with a more dangerous and a more radical operation.

REFERENCES<sup>1</sup>

1. ALBARRAN and P. NOUGÈS. *Ann. Chir. Urol.*, 1901, p. 108.
2. ALBARRAN, P. and J. A. BARTH. *Ann. Chir. Urol.*, 1901, p. 109.
3. BAYZ. *Ann. Chir. Urol.*, 1901, p. 110.
4. SIR CHARLES BELL. *Ann. Chir. Urol.*, 1901, p. 111.
5. EDWARD BELL. *Ann. Chir. Urol.*, 1901, p. 112.
6. SIR WILLIAM BLIZZARD. Quoted by Guthrie. 7. B. BOUTIN. *Ann. Chir. Urol.*, 1901, p. 113.
8. BRON. *Lyon médical*, 1874; *Arch. f. klin. Chir.*, xxi, 1877, p. 1; *Zentralbl. f. d. Krankh. d. Harn. u. sex. Org.*, ix, 1898, p. 113.
9. LANCET, June 5, 1880, pp. 896 and 908.
10. V. CÉSAR. *Ztschr. f. Urol.*, 1901, p. 114.
11. CHOLZOFF. *Folia urologica*, 1910, p. 788.
12. CIECHANOWSKI. *Prostatic Hypertrophy*, 1910, p. 115.
13. ALF. TROTT. *Ann. Chir. Urol.*, 1901, p. 116.

<sup>1</sup>The author in the text has omitted the numerals for bibliographic reference, as they disfigure the text and hamper reading. In so small a bibliography as is here alphabetically arranged, there will be little trouble in obtaining the reference desired.

DISLOCATION OF THE SEMILUNAR  
BONE.\*By EDWIN L. BEBEE, M.D.,  
Buffalo.

This dislocation, of which there was hardly a case reported before the discovery of the x ray, has attracted considerable attention in the last few years. Its importance rests partly on the difficulty of diagnosis, but to a greater extent on the severe disability which follows lack of treatment. It may easily be classed as a severe sprain, but the resulting stiffness and weakness of the wrist and hand may destroy their usefulness for active work, and make a man a permanent cripple.

As to its frequency, Runyon reports that out of 11,650 traumatic cases admitted to the Ancon Hospital, there were sixty-seven dislocations of all kinds. Of these three cases, or about five per cent., were of the semilunar bone. There were also in this number of injuries eighty cases of Colles's fracture. So that we may say that the ratio of this dislocation to all others and to Colles's fracture is nearly one in twenty.

**Etiology.** As in other dislocations, this is found most commonly in males, in the active period of life, from twenty to fifty years. It is caused by violence of rather severe degree, which may be direct or indirect. When direct, the force is usually applied to the back of the wrist, as in blows from rocks or heavy implements, and is apt to be attended by complications, wounds, lacerations of tendons, fractures of other bones. When indirect, the force is applied to the extended hand, as in falls of several feet, from a wagon, a high bank, or an elevated platform; or as in the blow from a heavy object when the elbow is confined, e. g., in taking down a packing case from a pile.

The anatomy and joint function of the bone favors the production of the lesion, under these conditions. We find the superior convex and the inferior concave articular surfaces separated in front by a large rough surface for the attachment of ligaments which bind it very firmly to the radius, and less firmly to the os magnum. Posteriorly these surfaces approach each other, like the surfaces of a wedge. The posterior surface is small, only about one fourth the size of the anterior. It affords attachment to relatively few ligaments. It is continuous above, nearly in the same plane, with the superior articular surface. It meets the inferior surface below in a sharp margin, which makes the apex of the wedge.

In the movement of extension at the wrist joint, the os magnum glides over the semilunar and approaches the radius. At the limit of the movement it is separated only by the wedgelike apex of the semilunar. When the joint is forcibly extended beyond this limit, as in falls or blows on the hand, the anterior ligament joining the semilunar to the os magnum is first ruptured. The semilunar is forced forward from between the other bones, as a seed is shot from between the thumb and finger. The stronger fibres joining the radius are usually untorn and act as a hinge around which the bone swings. The concave inferior surface comes to look forward

1806; *Ann. d. Chir. et de Méd.*, 1806, p. 100. 1807; *Ann. d. Chir. et de Méd.*, 1807, p. 100. 1808; *Ann. d. Chir. et de Méd.*, 1808, p. 100. 1809; *Ann. d. Chir. et de Méd.*, 1809, p. 100. 1810; *Ann. d. Chir. et de Méd.*, 1810, p. 100. 1811; *Ann. d. Chir. et de Méd.*, 1811, p. 100. 1812; *Ann. d. Chir. et de Méd.*, 1812, p. 100. 1813; *Ann. d. Chir. et de Méd.*, 1813, p. 100. 1814; *Ann. d. Chir. et de Méd.*, 1814, p. 100. 1815; *Ann. d. Chir. et de Méd.*, 1815, p. 100. 1816; *Ann. d. Chir. et de Méd.*, 1816, p. 100. 1817; *Ann. d. Chir. et de Méd.*, 1817, p. 100. 1818; *Ann. d. Chir. et de Méd.*, 1818, p. 100. 1819; *Ann. d. Chir. et de Méd.*, 1819, p. 100. 1820; *Ann. d. Chir. et de Méd.*, 1820, p. 100. 1821; *Ann. d. Chir. et de Méd.*, 1821, p. 100. 1822; *Ann. d. Chir. et de Méd.*, 1822, p. 100. 1823; *Ann. d. Chir. et de Méd.*, 1823, p. 100. 1824; *Ann. d. Chir. et de Méd.*, 1824, p. 100. 1825; *Ann. d. Chir. et de Méd.*, 1825, p. 100. 1826; *Ann. d. Chir. et de Méd.*, 1826, p. 100. 1827; *Ann. d. Chir. et de Méd.*, 1827, p. 100. 1828; *Ann. d. Chir. et de Méd.*, 1828, p. 100. 1829; *Ann. d. Chir. et de Méd.*, 1829, p. 100. 1830; *Ann. d. Chir. et de Méd.*, 1830, p. 100. 1831; *Ann. d. Chir. et de Méd.*, 1831, p. 100. 1832; *Ann. d. Chir. et de Méd.*, 1832, p. 100. 1833; *Ann. d. Chir. et de Méd.*, 1833, p. 100. 1834; *Ann. d. Chir. et de Méd.*, 1834, p. 100. 1835; *Ann. d. Chir. et de Méd.*, 1835, p. 100. 1836; *Ann. d. Chir. et de Méd.*, 1836, p. 100. 1837; *Ann. d. Chir. et de Méd.*, 1837, p. 100. 1838; *Ann. d. Chir. et de Méd.*, 1838, p. 100. 1839; *Ann. d. Chir. et de Méd.*, 1839, p. 100. 1840; *Ann. d. Chir. et de Méd.*, 1840, p. 100. 1841; *Ann. d. Chir. et de Méd.*, 1841, p. 100. 1842; *Ann. d. Chir. et de Méd.*, 1842, p. 100. 1843; *Ann. d. Chir. et de Méd.*, 1843, p. 100. 1844; *Ann. d. Chir. et de Méd.*, 1844, p. 100. 1845; *Ann. d. Chir. et de Méd.*, 1845, p. 100. 1846; *Ann. d. Chir. et de Méd.*, 1846, p. 100. 1847; *Ann. d. Chir. et de Méd.*, 1847, p. 100. 1848; *Ann. d. Chir. et de Méd.*, 1848, p. 100. 1849; *Ann. d. Chir. et de Méd.*, 1849, p. 100. 1850; *Ann. d. Chir. et de Méd.*, 1850, p. 100. 1851; *Ann. d. Chir. et de Méd.*, 1851, p. 100. 1852; *Ann. d. Chir. et de Méd.*, 1852, p. 100. 1853; *Ann. d. Chir. et de Méd.*, 1853, p. 100. 1854; *Ann. d. Chir. et de Méd.*, 1854, p. 100. 1855; *Ann. d. Chir. et de Méd.*, 1855, p. 100. 1856; *Ann. d. Chir. et de Méd.*, 1856, p. 100. 1857; *Ann. d. Chir. et de Méd.*, 1857, p. 100. 1858; *Ann. d. Chir. et de Méd.*, 1858, p. 100. 1859; *Ann. d. Chir. et de Méd.*, 1859, p. 100. 1860; *Ann. d. Chir. et de Méd.*, 1860, p. 100. 1861; *Ann. d. Chir. et de Méd.*, 1861, p. 100. 1862; *Ann. d. Chir. et de Méd.*, 1862, p. 100. 1863; *Ann. d. Chir. et de Méd.*, 1863, p. 100. 1864; *Ann. d. Chir. et de Méd.*, 1864, p. 100. 1865; *Ann. d. Chir. et de Méd.*, 1865, p. 100. 1866; *Ann. d. Chir. et de Méd.*, 1866, p. 100. 1867; *Ann. d. Chir. et de Méd.*, 1867, p. 100. 1868; *Ann. d. Chir. et de Méd.*, 1868, p. 100. 1869; *Ann. d. Chir. et de Méd.*, 1869, p. 100. 1870; *Ann. d. Chir. et de Méd.*, 1870, p. 100. 1871; *Ann. d. Chir. et de Méd.*, 1871, p. 100. 1872; *Ann. d. Chir. et de Méd.*, 1872, p. 100. 1873; *Ann. d. Chir. et de Méd.*, 1873, p. 100. 1874; *Ann. d. Chir. et de Méd.*, 1874, p. 100. 1875; *Ann. d. Chir. et de Méd.*, 1875, p. 100. 1876; *Ann. d. Chir. et de Méd.*, 1876, p. 100. 1877; *Ann. d. Chir. et de Méd.*, 1877, p. 100. 1878; *Ann. d. Chir. et de Méd.*, 1878, p. 100. 1879; *Ann. d. Chir. et de Méd.*, 1879, p. 100. 1880; *Ann. d. Chir. et de Méd.*, 1880, p. 100. 1881; *Ann. d. Chir. et de Méd.*, 1881, p. 100. 1882; *Ann. d. Chir. et de Méd.*, 1882, p. 100. 1883; *Ann. d. Chir. et de Méd.*, 1883, p. 100. 1884; *Ann. d. Chir. et de Méd.*, 1884, p. 100. 1885; *Ann. d. Chir. et de Méd.*, 1885, p. 100. 1886; *Ann. d. Chir. et de Méd.*, 1886, p. 100. 1887; *Ann. d. Chir. et de Méd.*, 1887, p. 100. 1888; *Ann. d. Chir. et de Méd.*, 1888, p. 100. 1889; *Ann. d. Chir. et de Méd.*, 1889, p. 100. 1890; *Ann. d. Chir. et de Méd.*, 1890, p. 100. 1891; *Ann. d. Chir. et de Méd.*, 1891, p. 100. 1892; *Ann. d. Chir. et de Méd.*, 1892, p. 100. 1893; *Ann. d. Chir. et de Méd.*, 1893, p. 100. 1894; *Ann. d. Chir. et de Méd.*, 1894, p. 100. 1895; *Ann. d. Chir. et de Méd.*, 1895, p. 100. 1896; *Ann. d. Chir. et de Méd.*, 1896, p. 100. 1897; *Ann. d. Chir. et de Méd.*, 1897, p. 100. 1898; *Ann. d. Chir. et de Méd.*, 1898, p. 100. 1899; *Ann. d. Chir. et de Méd.*, 1899, p. 100. 1900; *Ann. d. Chir. et de Méd.*, 1900, p. 100. 1901; *Ann. d. Chir. et de Méd.*, 1901, p. 100. 1902; *Ann. d. Chir. et de Méd.*, 1902, p. 100. 1903; *Ann. d. Chir. et de Méd.*, 1903, p. 100. 1904; *Ann. d. Chir. et de Méd.*, 1904, p. 100. 1905; *Ann. d. Chir. et de Méd.*, 1905, p. 100. 1906; *Ann. d. Chir. et de Méd.*, 1906, p. 100. 1907; *Ann. d. Chir. et de Méd.*, 1907, p. 100. 1908; *Ann. d. Chir. et de Méd.*, 1908, p. 100. 1909; *Ann. d. Chir. et de Méd.*, 1909, p. 100. 1910; *Ann. d. Chir. et de Méd.*, 1910, p. 100. 1911; *Ann. d. Chir. et de Méd.*, 1911, p. 100. 1912; *Ann. d. Chir. et de Méd.*, 1912, p. 100. 1913; *Ann. d. Chir. et de Méd.*, 1913, p. 100. 1914; *Ann. d. Chir. et de Méd.*, 1914, p. 100. 1915; *Ann. d. Chir. et de Méd.*, 1915, p. 100. 1916; *Ann. d. Chir. et de Méd.*, 1916, p. 100. 1917; *Ann. d. Chir. et de Méd.*, 1917, p. 100. 1918; *Ann. d. Chir. et de Méd.*, 1918, p. 100. 1919; *Ann. d. Chir. et de Méd.*, 1919, p. 100. 1920; *Ann. d. Chir. et de Méd.*, 1920, p. 100. 1921; *Ann. d. Chir. et de Méd.*, 1921, p. 100. 1922; *Ann. d. Chir. et de Méd.*, 1922, p. 100. 1923; *Ann. d. Chir. et de Méd.*, 1923, p. 100. 1924; *Ann. d. Chir. et de Méd.*, 1924, p. 100. 1925; *Ann. d. Chir. et de Méd.*, 1925, p. 100. 1926; *Ann. d. Chir. et de Méd.*, 1926, p. 100. 1927; *Ann. d. Chir. et de Méd.*, 1927, p. 100. 1928; *Ann. d. Chir. et de Méd.*, 1928, p. 100. 1929; *Ann. d. Chir. et de Méd.*, 1929, p. 100. 1930; *Ann. d. Chir. et de Méd.*, 1930, p. 100. 1931; *Ann. d. Chir. et de Méd.*, 1931, p. 100. 1932; *Ann. d. Chir. et de Méd.*, 1932, p. 100. 1933; *Ann. d. Chir. et de Méd.*, 1933, p. 100. 1934; *Ann. d. Chir. et de Méd.*, 1934, p. 100. 1935; *Ann. d. Chir. et de Méd.*, 1935, p. 100. 1936; *Ann. d. Chir. et de Méd.*, 1936, p. 100. 1937; *Ann. d. Chir. et de Méd.*, 1937, p. 100. 1938; *Ann. d. Chir. et de Méd.*, 1938, p. 100. 1939; *Ann. d. Chir. et de Méd.*, 1939, p. 100. 1940; *Ann. d. Chir. et de Méd.*, 1940, p. 100. 1941; *Ann. d. Chir. et de Méd.*, 1941, p. 100. 1942; *Ann. d. Chir. et de Méd.*, 1942, p. 100. 1943; *Ann. d. Chir. et de Méd.*, 1943, p. 100. 1944; *Ann. d. Chir. et de Méd.*, 1944, p. 100. 1945; *Ann. d. Chir. et de Méd.*, 1945, p. 100. 1946; *Ann. d. Chir. et de Méd.*, 1946, p. 100. 1947; *Ann. d. Chir. et de Méd.*, 1947, p. 100. 1948; *Ann. d. Chir. et de Méd.*, 1948, p. 100. 1949; *Ann. d. Chir. et de Méd.*, 1949, p. 100. 1950; *Ann. d. Chir. et de Méd.*, 1950, p. 100. 1951; *Ann. d. Chir. et de Méd.*, 1951, p. 100. 1952; *Ann. d. Chir. et de Méd.*, 1952, p. 100. 1953; *Ann. d. Chir. et de Méd.*, 1953, p. 100. 1954; *Ann. d. Chir. et de Méd.*, 1954, p. 100. 1955; *Ann. d. Chir. et de Méd.*, 1955, p. 100. 1956; *Ann. d. Chir. et de Méd.*, 1956, p. 100. 1957; *Ann. d. Chir. et de Méd.*, 1957, p. 100. 1958; *Ann. d. Chir. et de Méd.*, 1958, p. 100. 1959; *Ann. d. Chir. et de Méd.*, 1959, p. 100. 1960; *Ann. d. Chir. et de Méd.*, 1960, p. 100. 1961; *Ann. d. Chir. et de Méd.*, 1961, p. 100. 1962; *Ann. d. Chir. et de Méd.*, 1962, p. 100. 1963; *Ann. d. Chir. et de Méd.*, 1963, p. 100. 1964; *Ann. d. Chir. et de Méd.*, 1964, p. 100. 1965; *Ann. d. Chir. et de Méd.*, 1965, p. 100. 1966; *Ann. d. Chir. et de Méd.*, 1966, p. 100. 1967; *Ann. d. Chir. et de Méd.*, 1967, p. 100. 1968; *Ann. d. Chir. et de Méd.*, 1968, p. 100. 1969; *Ann. d. Chir. et de Méd.*, 1969, p. 100. 1970; *Ann. d. Chir. et de Méd.*, 1970, p. 100. 1971; *Ann. d. Chir. et de Méd.*, 1971, p. 100. 1972; *Ann. d. Chir. et de Méd.*, 1972, p. 100. 1973; *Ann. d. Chir. et de Méd.*, 1973, p. 100. 1974; *Ann. d. Chir. et de Méd.*, 1974, p. 100. 1975; *Ann. d. Chir. et de Méd.*, 1975, p. 100. 1976; *Ann. d. Chir. et de Méd.*, 1976, p. 100. 1977; *Ann. d. Chir. et de Méd.*, 1977, p. 100. 1978; *Ann. d. Chir. et de Méd.*, 1978, p. 100. 1979; *Ann. d. Chir. et de Méd.*, 1979, p. 100. 1980; *Ann. d. Chir. et de Méd.*, 1980, p. 100. 1981; *Ann. d. Chir. et de Méd.*, 1981, p. 100. 1982; *Ann. d. Chir. et de Méd.*, 1982, p. 100. 1983; *Ann. d. Chir. et de Méd.*, 1983, p. 100. 1984; *Ann. d. Chir. et de Méd.*, 1984, p. 100. 1985; *Ann. d. Chir. et de Méd.*, 1985, p. 100. 1986; *Ann. d. Chir. et de Méd.*, 1986, p. 100. 1987; *Ann. d. Chir. et de Méd.*, 1987, p. 100. 1988; *Ann. d. Chir. et de Méd.*, 1988, p. 100. 1989; *Ann. d. Chir. et de Méd.*, 1989, p. 100. 1990; *Ann. d. Chir. et de Méd.*, 1990, p. 100. 1991; *Ann. d. Chir. et de Méd.*, 1991, p. 100. 1992; *Ann. d. Chir. et de Méd.*, 1992, p. 100. 1993; *Ann. d. Chir. et de Méd.*, 1993, p. 100. 1994; *Ann. d. Chir. et de Méd.*, 1994, p. 100. 1995; *Ann. d. Chir. et de Méd.*, 1995, p. 100. 1996; *Ann. d. Chir. et de Méd.*, 1996, p. 100. 1997; *Ann. d. Chir. et de Méd.*, 1997, p. 100. 1998; *Ann. d. Chir. et de Méd.*, 1998, p. 100. 1999; *Ann. d. Chir. et de Méd.*, 1999, p. 100. 2000; *Ann. d. Chir. et de Méd.*, 2000, p. 100. 2001; *Ann. d. Chir. et de Méd.*, 2001, p. 100. 2002; *Ann. d. Chir. et de Méd.*, 2002, p. 100. 2003; *Ann. d. Chir. et de Méd.*, 2003, p. 100. 2004; *Ann. d. Chir. et de Méd.*, 2004, p. 100. 2005; *Ann. d. Chir. et de Méd.*, 2005, p. 100. 2006; *Ann. d. Chir. et de Méd.*, 2006, p. 100. 2007; *Ann. d. Chir. et de Méd.*, 2007, p. 100. 2008; *Ann. d. Chir. et de Méd.*, 2008, p. 100. 2009; *Ann. d. Chir. et de Méd.*, 2009, p. 100. 2010; *Ann. d. Chir. et de Méd.*, 2010, p. 100. 2011; *Ann. d. Chir. et de Méd.*, 2011, p. 100. 2012; *Ann. d. Chir. et de Méd.*, 2012, p. 100. 2013; *Ann. d. Chir. et de Méd.*, 2013, p. 100. 2014; *Ann. d. Chir. et de Méd.*, 2014, p. 100. 2015; *Ann. d. Chir. et de Méd.*, 2015, p. 100. 2016; *Ann. d. Chir. et de Méd.*, 2016, p. 100. 2017; *Ann. d. Chir. et de Méd.*, 2017, p. 100. 2018; *Ann. d. Chir. et de Méd.*, 2018, p. 100. 2019; *Ann. d. Chir. et de Méd.*, 2019, p. 100. 2020; *Ann. d. Chir. et de Méd.*, 2020, p. 100. 2021; *Ann. d. Chir. et de Méd.*, 2021, p. 100. 2022; *Ann. d. Chir. et de Méd.*, 2022, p. 100. 2023; *Ann. d. Chir. et de Méd.*, 2023, p. 100. 2024; *Ann. d. Chir. et de Méd.*, 2024, p. 100. 2025; *Ann. d. Chir. et de Méd.*, 2025, p. 100. 2026; *Ann. d. Chir. et de Méd.*, 2026, p. 100. 2027; *Ann. d. Chir. et de Méd.*, 2027, p. 100. 2028; *Ann. d. Chir. et de Méd.*, 2028, p. 100. 2029; *Ann. d. Chir. et de Méd.*, 2029, p. 100. 2030; *Ann. d. Chir. et de Méd.*, 2030, p. 100. 2031; *Ann. d. Chir. et de Méd.*, 2031, p. 100. 2032; *Ann. d. Chir. et de Méd.*, 2032, p. 100. 2033; *Ann. d. Chir. et de Méd.*, 2033, p. 100. 2034; *Ann. d. Chir. et de Méd.*, 2034, p. 100. 2035; *Ann. d. Chir. et de Méd.*, 2035, p. 100. 2036; *Ann. d. Chir. et de Méd.*, 2036, p. 100. 2037; *Ann. d. Chir. et de Méd.*, 2037, p. 100. 2038; *Ann. d. Chir. et de Méd.*, 2038, p. 100. 2039; *Ann. d. Chir. et de Méd.*, 2039, p. 100. 2040; *Ann. d. Chir. et de Méd.*, 2040, p. 100. 2041; *Ann. d. Chir. et de Méd.*, 2041, p. 100. 2042; *Ann. d. Chir. et de Méd.*, 2042, p. 100. 2043; *Ann. d. Chir. et de Méd.*, 2043, p. 100. 2044; *Ann. d. Chir. et de Méd.*, 2044, p. 100. 2045; *Ann. d. Chir. et de Méd.*, 2045, p. 100. 2046; *Ann. d. Chir. et de Méd.*, 2046, p. 100. 2047; *Ann. d. Chir. et de Méd.*, 2047, p. 100. 2048; *Ann. d. Chir. et de Méd.*, 2048, p. 100. 2049; *Ann. d. Chir. et de Méd.*, 2049, p. 100. 2050; *Ann. d. Chir. et de Méd.*, 2050, p. 100. 2051; *Ann. d. Chir. et de Méd.*, 2051, p. 100. 2052; *Ann. d. Chir. et de Méd.*, 2052, p. 100. 2053; *Ann. d. Chir. et de Méd.*, 2053, p. 100. 2054; *Ann. d. Chir. et de Méd.*, 2054, p. 100. 2055; *Ann. d. Chir. et de Méd.*, 2055, p. 100. 2056; *Ann. d. Chir. et de Méd.*, 2056, p. 100. 2057; *Ann. d. Chir. et de Méd.*, 2057, p. 100. 2058; *Ann. d. Chir. et de Méd.*, 2058, p. 100. 2059; *Ann. d. Chir. et de Méd.*, 2059, p. 100. 2060; *Ann. d. Chir. et de Méd.*, 2060, p. 100. 2061; *Ann. d. Chir. et de Méd.*, 2061, p. 100. 2062; *Ann. d. Chir. et de Méd.*, 2062, p. 100. 2063; *Ann. d. Chir. et de Méd.*, 2063, p. 100. 2064; *Ann. d. Chir. et de Méd.*, 2064, p. 100. 2065; *Ann. d. Chir. et de Méd.*, 2065, p. 100. 2066; *Ann. d. Chir. et de Méd.*, 2066, p. 100. 2067; *Ann. d. Chir. et de Méd.*, 2067, p. 100. 2068; *Ann. d. Chir. et de Méd.*, 2068, p. 100. 2069; *Ann. d. Chir. et de Méd.*, 2069, p. 100. 2070; *Ann. d. Chir. et de Méd.*, 2070, p. 100. 2071; *Ann. d. Chir. et de Méd.*, 2071, p. 100. 2072; *Ann. d. Chir. et de Méd.*, 2072, p. 100. 2073; *Ann. d. Chir. et de Méd.*, 2073, p. 100. 2074; *Ann. d. Chir. et de Méd.*, 2074, p. 100. 2075; *Ann. d. Chir. et de Méd.*, 2075, p. 100. 2076; *Ann. d. Chir. et de Méd.*, 2076, p. 100. 2077; *Ann. d. Chir. et de Méd.*, 2077, p. 100. 2078; *Ann. d. Chir. et de Méd.*, 2078, p. 100. 2079; *Ann. d. Chir. et de Méd.*, 2079, p. 100. 2080; *Ann. d. Chir. et de Méd.*, 2080, p. 100. 2081; *Ann. d. Chir. et de Méd.*, 2081, p. 100. 2082; *Ann. d. Chir. et de Méd.*, 2082, p. 100. 2083; *Ann. d. Chir. et de Méd.*, 2083, p. 100. 2084; *Ann. d. Chir. et de Méd.*, 2084, p. 100. 2085; *Ann. d. Chir. et de Méd.*, 2085, p. 100. 2086; *Ann. d. Chir. et de Méd.*, 2086, p. 100. 2087; *Ann. d. Chir. et de Méd.*, 2087, p. 100. 2088; *Ann. d. Chir. et de Méd.*, 2088, p. 100. 2089; *Ann. d. Chir. et de Méd.*, 2089, p. 100. 2090; *Ann. d. Chir. et de Méd.*, 2090, p. 100. 2091; *Ann. d. Chir. et de Méd.*, 2091, p. 100. 2092; *Ann. d. Chir. et de Méd.*, 2092, p. 100. 2093; *Ann. d. Chir. et de Méd.*, 2093, p. 100. 2094; *Ann. d. Chir. et de Méd.*, 2094, p. 100. 2095; *Ann. d. Chir. et de Méd.*, 2095, p. 100. 2096; *Ann. d. Chir. et de Méd.*, 2096, p. 100. 2097; *Ann. d. Chir. et de Méd.*, 2097, p. 100. 2098; *Ann. d. Chir. et de Méd.*, 2098, p. 100. 2099; *Ann. d. Chir. et de Méd.*, 2099, p. 100. 2100; *Ann. d. Chir. et de Méd.*, 2100, p. 100. 2101; *Ann. d. Chir. et de Méd.*, 2101, p. 100. 2102; *Ann. d. Chir. et de Méd.*, 2102, p. 100. 2103; *Ann. d. Chir. et de Méd.*, 2103, p. 100. 2104; *Ann. d. Chir. et de Méd.*, 2104, p. 100. 2105; *Ann. d. Chir. et de Méd.*, 2105, p. 100. 2106; *Ann. d. Chir. et de Méd.*, 2106, p. 100. 2107; *Ann. d. Chir. et de Méd.*, 2107, p. 100. 2108; *Ann. d. Chir. et de Méd.*, 2108, p. 100. 2109; *Ann. d. Chir. et de Méd.*, 2109, p. 100. 2110; *Ann. d. Chir. et de Méd.*, 2110, p. 100. 2111; *Ann. d. Chir. et de Méd.*, 2111, p. 100. 2112; *Ann. d. Chir. et de Méd.*, 2112, p. 100. 2113; *Ann. d. Chir. et de Méd.*, 2113, p. 100. 2114; *Ann. d. Chir. et de Méd.*, 2114, p. 100. 2115; *Ann. d. Chir. et de Méd.*, 2115, p. 100. 2116; *Ann. d. Chir. et de Méd.*, 2116, p. 100. 2117; *Ann. d. Chir. et de Méd.*, 2117, p. 100. 2118; *Ann. d. Chir. et de Méd.*, 2118, p. 100. 2119; *Ann. d. Chir. et de Méd.*, 2119, p. 100. 2120; *Ann. d. Chir. et de Méd.*, 2120, p. 100. 2121; *Ann. d. Chir. et de Méd.*, 2121, p. 100. 2122; *Ann. d. Chir. et de Méd.*, 2122, p. 100. 2123; *Ann. d. Chir. et de Méd.*, 2123, p. 100. 2124; *Ann. d. Chir. et de Méd.*, 2124, p. 100. 2125; *Ann. d. Chir. et de Méd.*, 2125, p. 100. 2126; *Ann. d. Chir. et de Méd.*, 2126, p. 100. 2127; *Ann. d. Chir. et de Méd.*, 2127, p. 100. 2128; *Ann. d. Chir. et de Méd.*, 2128, p. 100. 2129; *Ann. d. Chir. et de Méd.*, 2129, p. 100



and then upward, a rotation of 180 degrees. When it is displaced forward without rotation it is said to be subluxated. It may be displaced upward so as to lie in front of the radius. It has been observed in front of the flexor tendons, beneath the skin. In



FIG. 1.—Subluxated semilunar bone, indicated by arrow.

all these positions, except the last, it displaces the flexor tendons and median nerve. It is frequently complicated by wounds, making it compound, and by lacerations of the tendons, by fracture of the scaphoid, or of the lower end of the radius.

In simple dislocation after reduction and fixation the torn ligaments unite, and the joints involved take on a degree of motion which is normal or nearly so. When reduction is delayed or wanting, the bone becomes fixed in its new position. The cavity fills up with granulation tissue. A considerable degree of ankylosis takes place through fibrous union of joint surfaces which have been injured and kept from use.

**Symptoms.** After a history of a blow on the back of the wrist, or a fall or blow on the extended hand, the patient complains of pain and inability to use the hand. The pain is felt on attempt to move the wrist or fingers. It is referred to the wrist. It may radiate to the fingers in the distribution of the median nerve. The disability is marked. He is unable to bend the wrist or grasp objects with any power. He is unable to lift. Apart from the acute muscle spasm, the pain and disability are largely due to the flexor tendons and median nerve being pressed upon by the sharp anterior angle of the semilunar bone.

On examination the attitude is peculiar. The wrist is held rigid with the fingers partly flexed. There is apt to be some silver fork deformity as in Colles's fracture, the hand being somewhat in the position of extension and radial adduction. There

is a depression at the back of the wrist, due to the absence of the semilunar bone from its normal position. On the anterior aspect of the wrist at about its middle and at its junction with the palm, is a rounded prominence formed by the displaced bone. Its outlines are obscured by the overlying flexor tendons. At the back of the wrist, above the depression, the head of the os magnum is unduly prominent. Motion at the wrist is painful or absent. Pronation and supination are not interfered with. Flexion of the fingers is limited and painful. Swelling and ecchymosis are present after recent cases, and possibly the symptoms of fracture or other complications. The x ray is necessary for diagnosis. The position which gives the best view of the dislocated bone is with the hand bent back in hyperextension, the little finger toward the plate, so as to give a transverse view. This will cause the empty cup shaped surface for articulation with the os magnum to stand out in bold relief.

When an interval of weeks or month has elapsed without reduction, the patient still complains of pain and disability. The pain is referred to the wrist. It radiates to the fingers. It is felt on any attempt to move the wrist or flex the fingers. There may be numbness. On account of the stiffness and pain the patient is unable to use the arm and hand in his usual occupation. The swelling, ecchymosis, and muscle spasm have disappeared. The deformity is thus unmasked and more plainly evident. There is atrophy of the muscles of the hand and forearm. The displaced bone is prominent in front, with a corresponding depression behind. Above this is the prominent head of the os magnum. All motions at the wrist are limited by fibrous union of joint surfaces and obstruction of displaced bone. The grasp



FIG. 2.—Subluxated semilunar bone, indicated by arrow.

of the affected fingers is distinctly less than on the sound side.

**Treatment.** In recent uncomplicated cases, reduction by manipulation followed by fixation has given good results. The torn ligaments have united,

with the bone in good position. Later, the normal use of the parts has been regained. The method of reduction has been traction in the hyperextended position, with direct pressure on the displaced bone. After reduction the hand has been brought over into the position of flexion, the pressure on the semilunar bone being maintained. If this does not succeed, open reduction should be attempted. In two of Runyon's cases, restoration of function was complete after open reduction, closed reduction having previously failed. Excision should be done, when in recent cases it is impossible to reduce, or when the dislocation is compound.

In cases seen after the expiration of four to six weeks, good results have been alleged after open reduction. But comparing the results actually obtained with those following excision, the verdict must be given in favor of the latter. For after excision there is loss of pain, and recovery of normal or nearly normal mobility. The use of the hand is as good as ever, only a slight inconvenience being felt in adduction or ulnar flexion. So in all cases of four weeks' standing or longer, the treatment indicated is excision.

In operating, the tendon of the flexor carpi radialis is a convenient guide. An incision along its inner margin, beginning below on a level with the radial styloid, and extending upward two and one half inches, gives a good exposure. The flexor tendons and median nerve can be pulled to one side without danger of injury. After healing is complete, massage and passive motion aid in the recovery of normal function.

CASE. R. S., aged forty years, freight handler, was injured June 12, 1913, while lifting down a heavy crate. The box came down on his hyperextended hand, while his elbow was confined by the door jamb. The pain in his wrist was very severe. He was unable to continue work. He was treated by immobilization, followed by passive motion for several weeks. The pain and disability which remained, made it impossible for him to resume his former occupation. He was given a job as watchman. When seen, February 9, 1914, he complained of pain in his left wrist on any attempt to use the hand or bend the wrist; of inability to grasp objects, or to exert any pressure with the hand; that motion at the wrist joint was limited and painful, especially with the fingers flexed. On examination, a prominence or lump was seen on the left wrist, at the junction of the thenar and hypothenar eminences. This was about three quarters of an inch in diameter. It projected out so that the left wrist was one half inch larger in circumference than the right. There was a corresponding depression at the back of the wrist. The lump was tender to pressure, and was the point to which pain was referred when the wrist was moved. Dorsal flexion was fifteen degrees less than normal. Palmar flexion was twenty-five degrees less than normal, and painful. Abduction and circumduction were painful and limited. The x ray showed the semilunar bone somewhat anterior to its normal position. It was not rotated. Its superior surface failed to articulate normally with the os magnum. With the hand in hyperextension it appeared quite empty.

The bone was removed, March 9th. Healing was by primary union. After two weeks, massage and passive motion were begun, and continued twice a week for five weeks. At this time the man resumed his regular occupation as freight handler. He was free from pain. He could move his fingers freely and grasp objects vigorously without discomfort. Movements at the wrist joint were improved, being nearly normal in range. By October 7, 1915, he was working every day as freight handler. He has

now no pain in the wrist. He has as much power as ever in the use of the hand, except in adduction or ulnar flexion, when he is conscious of some weakness. Passive motion is quite normal. Active motion is only slightly limited in extension.

401 ELWOOD AVENUE.

## ARTIFICIALLY FED INFANTS\*

### *Rational Feeding During the First Year,*

By I. H. GOLDBERGER, M. D.,

New York,

Assistant Director of Educational Hygiene, Department of Education; Instructor in Pediatrics, University and Bellevue Hospital Medical College.

The teaching of the proper methods of artificial feeding has been considered by the leaders in pediatrics, a most difficult task. The various schools of pediatricists concur with this opinion. The difficulty of properly understanding this branch of pediatrics may be explained by the lack of a uniformity of opinion as to what constitutes the ideal in artificial feeding. The pendulum of fads in infant feeding swings to extreme angles far too often for the general practitioner to keep himself properly informed, and he soon gives up in disgust. Under these conditions how is the poor unsophisticated undergraduate expected to understand what we are talking about? I well remember my first lectures on infant feeding, and how difficult it was to grasp even the fundamental principles. I hoped then never to be so unfortunate to have bottle fed babies under my care. My case was typical, probably, of many hundreds of students wherever infant feeding was taught.

It is my belief that the subject of artificial feeding would be understood, if we taught only simple formulas; the more complicated and new fangled ones could be handled by the expert. However, students should be taught the indications and uses of practically all types of milk formulas, that they may, later, have the opportunity of developing methods themselves. I have been in the habit of prescribing simple formulas of clean whole milk, in a manner that can be easily understood and prepared by the mother. All infants should have a chance at normal feeding before getting the abnormal. There is a tendency to place children on malt and proprietary foods because they gain faster. This class of proprietary foods is responsible for a large percentage of cases of scurvy.

In prescribing milk formulas for infants, it is essential to bear in mind the following:

1. The quantity of each feeding.
2. The quality or strength (percentage) to be fed.
3. The frequency or interval between feedings.
4. The formula.

Let us consider each item separately.

1. *Quantity.* There have been innumerable observations made on the normal capacity of the stomach of children at various ages, with the result that it is considered safe to feed one ounce more than the age of the child up to seven months, from seven to nine as many, and from nine to twelve one ounce less. However, it has been my custom to feed one

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ounce more than the age of the child up to and including the seventh month and never more than eight ounces at a feeding—no matter what the age. When the capacity of a child's stomach is more than eight ounces, I believe that soft diet should be started.

2. *Quality or percentage feeding.* This comes to one by experience. The accompanying chart outlines the percentages of whole milk that should be fed infants at the various ages. For instance, at birth to one month, a baby should be fed one per cent. whole milk with an addition of five per cent. sugar, making the formula read one per cent. fat, six per cent. carbohydrate, and one per cent. proteid. There should be a gradual increase of 0.1 per cent. in the percentage of fat and proteid, each week, making an increase of 0.4 per cent. for the month. At two months the baby should be receiving 1.4 per cent. fat, six per cent. carbohydrate, and 1.4 per cent. proteid; at three months, 1.8 per cent. fat, six per cent. carbohydrate, and 1.8 per cent. proteid, and so on.

Undergraduates who have been taught this method, have found it convenient, in that a table of this kind gives them a standard to work by. This table can be employed also when top milk is fed, using the fat percentage for a given month as a standard and then proportioning it according to the percentage of cream desired, depending upon whether it is in the proportion of two to one when using eight per cent. cream, or three to one with twelve per cent. cream.

3. *Frequency of feedings.* The question of intervals between feedings is one that has received serious consideration, both in this country and abroad, during the past few years. The observations of careful observers, among them Leo, Pipping, Comroe, Pfannenstill, and Czerny, on normal infants whose ages ranged from two hours to twelve months, showed that a portion of the food remained in the stomach for a longer period than two and a half hours. According to the investigations of Fabler, Bogen, and Heubner, milk passes out of the pylorus in the case of bottle fed infants in about three hours. This is borne out also by Heiman and Wasenthal. In 1912, J. H. Comroe addressed 135 circular letters to leading pediatricists throughout the United States, preference being given to teachers in medical schools and to authors of recognized textbooks dealing with the subject. A tabulation of 117 replies demonstrated the trend toward longer feeding intervals. During the first month sixty-six, or fifty-six per cent., employed the two hour interval; seventeen, or fifteen per cent., used the two and a half hour; thirty-three, or twenty-eight per cent., the three hour interval, and one, or less than one per cent., used the four hour interval. From the second to the fifth month, the three hour intervals were employed with increasing rapidity, and thereafter the four hour intervals were favored, especially during and after the sixth month.

It has been my custom to feed infants from birth to six months at intervals of three hours, allowing seven bottles daily, including one night feeding. From the sixth to the ninth month, five bottles with four hour intervals are given. After that the night

feeding is omitted, and the baby receives nothing between 6 p. m. and 6 a. m. There is one point that we must insist upon—and that is, regularity in feeding times. All authorities agree that the first thing to establish in life is regularity of habits. The importance of establishing and maintaining perfect regularity in the feeding time is so great, and the prejudice against waking an infant if he happens to be asleep when feeding time comes round, is so widespread, that it is necessary specially to insist upon this point. The crying that accompanies long intervals is beneficial in creating a better appetite and a more perfect circulation. Personal experience has shown that in the vast majority of cases, infants fed at longer intervals are able to digest a milk of greater caloric value than the average baby fed at shorter intervals. It has been found also that there is less abdominal distention in babies fed at longer intervals, than in infants fed more frequently.

Beside writing the formula for the mother, it is of the utmost importance to put down on paper the hours for feeding and the quantity for each feeding. She should adhere strictly to this until the time comes for making a change. Babies who are fed regularly and properly have a tendency to sleep more soundly, digest their food better, and to be infinitely more contented and happy than those whose mothers are irregular and unsystematic. If an infant refuses its food altogether, or takes less than usual, the food should be examined to see if it is right. Then the mouth is inspected to see if it is sore. If neither of these things is the cause, the bottle should be taken away and not offered again until the next feeding time comes, when a fresh bottle is given. Cool boiled water, the amounts determined by the age of the infant, is given between feedings when the child is awake.

4. *Formulas.* Of formulas there are many types, the most common in use being those made with four per cent. cream or whole milk, eight per cent. cream, twelve per cent. cream, and sixteen per cent. cream or gravity cream. To this list may be added whey cream, malt soup, Eiwiss Milch, buttermilk, and finally those prepared from the proprietary foods.

The difficulty experienced by undergraduates and others has been in knowing which specific type of formula to prescribe and equally important, the method of prescribing. With this in mind, I have devised a simple method of computing formulas according to percentages. No claim is made for originality, although I am not aware of its mention in the literature. Now that we have considered the three essential factors in the feeding of infants, namely, the quantity to be fed with each feeding, the quality or percentage of milk fed, and the frequency or interval between feedings, let us attempt to feed, for example, an infant of six months. The quantity in each feeding is determined by using one ounce more than the age of the child in months, therefore we use seven ounces at a feeding. Since the quality is determined by experience, I suggest using three per cent. fat, seven per cent. carbohydrate, and three per cent. proteid. The frequency should be every three hours. Since we are using a milk where the fat and proteid are similar in strength, we naturally



employ whole milk, that is, milk after the bottle has been well shaken, and with this knowledge, our formula reads as follows:

One fourth of 8 ounces each: whole milk, 30 ounces; sugar of milk, 2 ounces; lime water, 2 ounces; barley water,

The quantity of whole milk in the formula is determined by dividing the total quantity for the twenty-four hours (40 ounces) by the percentage of the milk used in the formula (in this instance four per cent.), and then multiplying the result by the fat percentage actually fed; in other words, 4 (the percentage of whole milk being 4-4-4) into 40 (the total number of ounces for the twenty-four hours) times 3 (the percentage of fat actually fed to the infant), gives thirty ounces of whole milk. The idea is to determine the number of ounces that one quarter whole milk will represent before we determine what three quarters whole milk will represent in a total of forty ounces. When indications call for the use of a higher percentage of fat in proportion to the proteid, we substitute that percentage in place of four per cent. In other words, we divide the total by 8 when eight per cent. cream is used, 12 when twelve per cent. cream is employed, and so on.

The following table shows the quantity, quality, and intervals required at each feeding by the average baby. Some thrive better with less food, while others, naturally big, quickly growing babies, can digest more. The best procedure with infants with a tendency to weak digestion is to regard them as a few weeks or a month or so younger than they are, and to feed accordingly.

| Age    | Oz. at  |      | Per cent. of |     | Hours of feeding      |
|--------|---------|------|--------------|-----|-----------------------|
|        | Feeding | Int. | Proteid      | Fat |                       |
| 1 mo.  | 4       | 4    | 1.4          | 1.4 | 6, 9, 12, 3, 6, 10, 2 |
| 2 "    | 4       | 4    | 1.8          | 1.8 | 6, 9, 12, 3, 6, 10, 2 |
| 3 "    | 4       | 4    | 2.2          | 2.2 | 6, 9, 12, 3, 6, 10, 2 |
| 4 "    | 4       | 4    | 2.6          | 2.6 | 6, 9, 12, 3, 6, 10, 2 |
| 5 "    | 4       | 4    | 3.4          | 3.4 | 6, 10, 2, 6, 10       |
| 6 mos. | 5       | 8    | 4            | 4   | 6, 10, 2, 6, 10       |
| 7 "    | 5       | 8    | 4            | 4   | 6, 10, 2, 6, 10       |
| 8 "    | 5       | 8    | 4            | 4   | 6, 10, 2, 6, 10       |
| 9 "    | 5       | 8    | 4            | 4   | 6, 10, 2, 6, 10       |
| 10 "   | 5       | 8    | 4            | 4   | 6, 10, 2, 6, 10       |
| 11 "   | 5       | 8    | 4            | 4   | 6, 10, 2, 6, 10       |
| 12 "   | 5       | 8    | 4            | 4   | 6, 10, 2, 6, 10       |

Let the impression be given that all infants should be fed according to rule, permit me to say that I believe that each child should be fed as an individual, and that he should be fed according to his peculiarities, using all the information we can command, and not by any single method. Each child must be a law unto itself, and the keynote of infant feeding should be, and must be, individualism. But for the beginner and for those unfamiliar with the intricacies of infant feeding, we must establish methods easily comprehensible rather than the complicated methods now in vogue.

The question of consistent gain in weight is a problem that often confronts us, relative to increasing the strength of a formula. As indications of the growing condition of the infant, we must take into consideration its appetite, the frequency and condition of the stool, and a consistent gain in weight.

I believe it is almost impossible to feed children intelligently unless gross examination of the stools is made from time to time. It has been my custom to insist upon the mother bringing soiled diapers of

the day previous and of the same day they report, before any change in the formula is made. I have been in the habit of telling mothers that they could expect no gain in weight until the infant was able to take each day so much to the pound of body weight. As soon as that point is reached, we find that the child begins to gain. A gain of from four to six ounces a week is considered a good average. Infants should be weighed once a week, until the physician is satisfied that the weekly gain is persistent. Then once a month is sufficient. When for some reason the child fails to gain proportionately to the formula it is receiving, it is a good procedure to determine the child's caloric requirements, and to compare them with the number of calories it is actually receiving. On many occasions I have discovered that the reason for a child's failure to gain the average four to six ounces a week was due to the fact that it was being underfed. I have had similar experiences with youngsters who according to the caloric method of feeding had been receiving too much food. Diminishing the total quantity of food sent the weight up immediately. Estimation by the caloric method is the only safe, simple, and effective way to guard against mistakes.

It seems to me that for the successful practice of infant feeding, we should think in both percentages and calories. What we really ought to do is to fit the food to the infant, digestion first, and then see if the caloric value is sufficient to cover the child's needs. I have found that the average baby during the first year requires between fifty and sixty calories to the pound of body weight. But whether we figure by percentage or by caloric method, the same conclusion should be reached. I use the caloric method principally as a check on the other. A weight chart should be kept for every bottle fed baby under care.

The great frequency with which rickets and scurvy occur in artificially fed infants, brings up the matter of their prophylactic treatment. The administration of fruit juices is generally withheld until a child is at least six months old or more. No ill effects have been noted in cases where orange juice had been given as early as the first month. Instructions are given to administer fifteen drops of strained orange juice, prune juice, or pineapple juice in one ounce of water, the dose to be gradually increased until, at the age of five months, the child gets two ounces of the fruit juice diluted with one ounce of water, twice daily. It is best given between the first and second feedings, and again between the 3 and 6 p. m. feedings. With this treatment there has been no occasion for scurvy, while rickets has become a minor consideration. The early use of fruit juices is important, also, in checking any tendency toward constipation.

Constipation is a condition that occurs with great frequency in bottle fed children. Cathartics are used with greater frequency than they should be. I believe more beneficial results may be obtained with the use of a proper sugar. When regular movements fail us, where lactose is added to the formula, the proper procedure is to use a malt sugar instead, preferably, dextrimaltose, and if that fails, malted milk may be used. Malt soup is used as a last resort. Very often, the use of oatmeal water

as a diluent in place of boiled or barley water, produces the desired effect.

Soft dict should be fed when the child reaches a period between six and seven months of age. At this time he should receive five bottle feedings a day, 6 a. m., 10 a. m., 2 p. m., 6 p. m., and 10 p. m., the inner three periods to be for soft feedings. It is best to begin with one zwieback softened with about one ounce of the formula to be fed at 10 a. m. This soft feeding is followed with the remainder of the bottle. This is continued daily for about two weeks, when about three tablespoonsful of cereal, preferably cream of wheat, cooked for three hours in a double boiler, is added to the dietary at the 2 p. m. feeding.

When the child is eight months of age, he is given about four ounces of clear broth (chicken, beef, mutton, or lamb). In preparing this broth, instructions are given to add, in addition to the meat and marrow bone, vegetables like peas, beans, carrots, tomatoes, celery, and parsley. The soup, however, must be strained through several layers of cheesecloth to remove all the fat globules. Toward the end of the first year, boiled rice, rolled crackers, or toasted bread crumbs are added to the broth. Increase in the soft diet must be made with care, and sudden changes should be avoided.

Fresh cool air and sunshine are as necessary for the strength and vitality of the baby as the food itself. Nothing is more invigorating to the child, nothing will improve its appetite more, produce sounder sleep, better color, and a more healthful appearance, than fresh cool air. The infant should breathe pure air day and night. If the mother finds it impossible to take the baby out of doors because of extra housework or inclement weather, she should be instructed to clothe the youngster as if to be taken out of doors, and to place it in its carriage before an open window, avoiding drafts. Practically the same conditions should prevail at night. The child must never sleep in bed with its mother, and every effort should be made to have the baby sleep in an adjoining room.

One of the most important of recent contributions to pediatric literature has been the work of Charles H. Smith and Leon T. LeWald on the influence of posture on digestion in infancy. In a paper published in the June issue of the *American Journal of Diseases of Children*, they emphasize the importance of the manner of feeding and the management of the child between feedings. For many years we have been taught that an infant must be put to rest in the horizontal position immediately after feeding, lest he be "spilled." The authors are convinced, as evidenced by the Röntgen ray, that air is swallowed with the food by all infants, and that the erect posture favors the eructation of this air; the horizontal position prevents it. The latter position, by preventing eructation, is an important cause of vomiting, colic, indigestion, and disturbed sleep. The following routine outlined by them should be followed in feeding infants. Before feeding, the infant should be held upright to allow the escape of gas in the stomach. Immediately after feeding, the infant should be again held up against the shoulder of the mother. He may be patted on the back, or gentle pressure may be made on the epigastrium to

encourage eructation of the swallowed air. It may be necessary to interrupt the feeding once or oftener to hold the child upright to eructate, in cases in which an excessive amount of air is swallowed. After the gas is eructated the child should be put down to sleep, preferably in a prone position. If restless, he may be taken up after a short time to see if there is more air in the stomach. Habitual tongue suckers need to be held up several times between feedings, as they constantly swallow air.

In closing, let me emphasize this point, that while certain methods, rules, and standards are necessary to guide us in the feeding of infants, it should be remembered that the child is an individual and must be treated as such. Individualism and common sense are the keystones in this branch of pediatrics.

1066 CLAY AVENUE

### A NONTOXIC ANTISEPTIC.

By DOUGLAS H. STEWART, M. D., F. A. C. S.,  
New York.

Judging from some letters of inquiry that have reached me, there is a demand for something in the way of wound treatment which would fill the following roles, all at the same time: 1. It must be equally applicable to clean or infected wounds. 2. It must not be fluid and a consequent nuisance in a satchel. 3. It must cleanse a wound as peroxide does. 4. It must be a nontoxic, nonirritant antiseptic. 5. It must not affect healing adversely. 6. It must make a solution with water at a minute's notice, and this of definite strength without the preliminaries of weighing, etc. 7. It must be adaptable to the treatment of lacerations, incisions, burns, proctitis, vaginitis, and some other things.

My correspondents do not say so exactly, but I gather that they desire something that is unfailing under all circumstances, regardless of the technic of its application. If that is what is meant, the answer to such a request is beyond me, who can only make an attempt to approach the desired standard and quality of excellence by suggesting the use of two powders to make two solutions; one for wound cleansing and one for dressing purposes, though one may obtain very good results indeed with the two powders mixed in a single solution; but caking and deterioration forbid the mixing of all the ingredients in a single powder.

Suppose we were possessed of two cardboard mailing cases of a suitable size for satchel purposes. Suppose also that No. 1 contained table salt and sodium citrate (ten to one), and that No. 2 held a mixture of equal parts of sodium perborate and of sodium bicarbonate. Then out of the first it would be easy to extemporize something akin to Wright's solution and, out of the second, a solution which would manifest some of the cleansing properties of hydrogen peroxide, plus a bactericidal effect, plus the sedative effect of the bicarbonate upon traumas, burns, cellulitis, etc. If the latter solution is employed to cleanse wounds and the former is used to soak the bandages, then results seem almost uniformly good whether infection is present or not.

As a rough and ready way of treating an infected wound, let us suppose some amount of water was

given, i. e., a tumblerful or bowlful, and that from box No. 2 we added to that water heaping teaspoonful after heaping teaspoonful; then when the proportion became a little greater than two per cent. (one to forty), an undissolved precipitate would appear and this residue could be used as an index. On its appearance an equal number of heaping teaspoonfuls of the contents of box No. 1 could be added to the solution. The final result of such a process would yield a liquid containing sodium citrate, one to 400, with sodium chloride bicarbonate, and perborate, one to forty. These proportions have been varied, but within certain limits, up to making all the ingredients equal parts, one formula seems to act much like another. If we wish to approximate Wright's idea, one measure of No. 1 in twenty equal measures of water will do it.

For douching, cleansing enemata, etc., also mouth washes, a heaping teaspoonful from box No. 1 with a heaping tablespoonful from box No. 2, mixed together in a quart of water, will prove satisfactory. As to its internal use in hyperchlorhydria and for lavage, that is rather foreign to the scope of the present writing, therefore mere mention is sufficient.

When used upon foul smelling wounds, the deodorant effect of a full strength solution is promptly evinced, and only the more impressively so, because the solution itself is odorless.

If it be urged that all the aforesaid involves too much trouble, then the holder of such a view should discard box No. 1 and place his reliance upon box No. 2 alone. Wright's solution is not for the man who fears that sort of trouble, a phobia which but too often means a placid toleration of dirty finger nails. And what about the patient of such a man? "He may trouble you more than ever, when you have nailed his coffin down."

No. 2 will dissolve the dirt off the hands if it accomplishes nothing more.

One essential in the employment of such a solution is that both wound and bandage shall be made as wet as possible, the latter consisting of layer on layer soaked to saturation, over this a few thicknesses of paper (or a single thickness of paraffin paper), and the whole bound together by a dry roller bandage. In other words, it is a wet dressing and should be considered only as such.

128 WEST EIGHTY-SIXTH STREET.

### DIABETES.\*

#### *The Complications and Treatment; the Allen Plan.*

BY LOUIS HENRY LEVY, M. S., M. D.,  
New Haven, Conn.

The complications of diabetes mellitus are almost as numerous as those of any chronic disease where the toxic elements are constantly present in the circulatory system. The circulation of abnormal elements, the bathing of the normal tissues with pathological substances or normal substances in pathological amounts, will sooner or later cause a change from the normal. Living cells, in order to maintain their greatest efficiency as to activity and reproduction, must be surrounded by conditions which are

most conducive to their life. Given the proper osmotic pressure of the fluids with which they come in contact, and the most favorable proportion of the substances for their nutriment, cells will live and reproduce without pathological change. Vary these factors and immediately pathological changes occur. Just as in the living animal as a whole, when proper attention is given to the caloric intake; when the foods best adapted to that animal are properly adjusted, it will develop along the best paths of growth. Increase or vary these factors to a point which is abnormal and keep this change a constant factor, and damage is bound to be done. So it is in diabetes, where the blood is overcharged with dextrose, this surplus soon begins to have its effect on the walls of the vessels in which it is carried; on the organs where it is produced or stored; and to a lesser extent on those organs from which it is excreted.

In diabetes, where there is a continuous hyperglycemia, dextrose may be found in a greater than normal amount in the cerebrospinal fluid and hence in the fluids in the ventricles. It has also been demonstrated in tears, in sweat, in the saliva, and there is no doubt that it reaches the fluids in the eyeballs. Thus may readily be seen the large number of organs that are constantly kept in contact with this increased amount of dextrose and hence the amount of injury that may result.

It is not the part of this paper to go deeply into any theories as to the presence of a surplus amount of sugar in the system, but a few of the accepted facts may be stated. There are two contending views as to the cause of hyperglycemia. It may be due to a nonutilization of the sugar normally present, or it may be caused by an overproduction of sugar. It has been found that when normal sugar metabolism takes place, that the respiratory quotient

Expired  $\text{CO}_2/\text{CC}$

Inspired  $\text{O}_2/\text{CC}$

is one. The  $\text{CO}_2$  stands for the carbon dioxide produced and the  $\text{O}_2$  for the oxygen consumed at the same time. In diabetes, especially in experimental diabetes, it has been found that the amount of carbon dioxide produced is less than normal, and hence the respiratory quotient is less than one. It varies between 0.64 and 0.76. This would tend to show that less dextrose is being oxidized by the tissues to carbon dioxide and hence more of it is being retained by the blood, producing a condition of hyperglycemia.

The other theory deals with the overproduction of dextrose and is well supported by clinical data. It has been found that pancreatinized dogs develop glycosuria. It has also been shown that as much as four fifths of the pancreas may be removed before sugar appears in the urine. Simultaneous removal of both adrenals and the pancreas prevents the development of glycosuria. This would tend to point to an interrelationship between the two glands. Injection of adrenaline into the system produces glycosuria. It has been found that with people and animals during periods of excitement, sugar is often present in the urine. During these periods of excitement, an increased amount of adrenal substance has been found in the blood. Hence it must be assumed that the glycosuria is due to the increased



amount of adrenal substance. Normally this increase is held in check by the pancreas. However, when the pancreas is excised, or when the islands of Langerhans are involved in some pathological process, the check on the adrenals is removed and the liver is stimulated to an overproduction of sugar. Opie found that in diabetics that came to autopsy, about eighty-five per cent. showed an involvement of the islands of Langerhans.

That other factors beside the islands of Langerhans are involved in the production of hyperglycemia and glycosuria, may be understood when it is known that there have been reported cases of complete necrosis of the pancreas in acute pancreatitis or abscess and yet no sugar has been found in the urine. Cases of diabetes have also been reported where careful examination of the pancreas showed no lesion. On the other hand, it is well known that tumors of the thyroid or pituitary will cause glycosuria. The classical experiment of Claude Bernard in puncturing the floor of the fourth ventricle with the result of glycosuria is well known. Cases are on record of hemorrhages, necrosis, or tumors of the floor of the fourth ventricle with resulting glycosuria. Nor must be omitted the fact that when a parathyroidectomy is performed, sugar will be found in the urine.

To sum up briefly: There exists in the floor of the fourth ventricle a centre for sugar production. Stimuli are sent to this centre by the secretion from the adrenals. Normally, the pancreas prevents overstimulation by the adrenals. There is an antagonism, however, between the secretions from the thyroid and the pancreas. When this relationship is disturbed, the relationship between the adrenals and pancreas is also disturbed, resulting in overstimulation of the sugar centre which causes an overproduction of sugar. A definite scheme for this interrelationship of the organs of internal secretion for sugar production has been worked out by von Noorden.

The most common complications of diabetes involve the skin, and are often very stubborn to treat. In cases of carbuncle it is important to know whether diabetes is present because coma following the incising of such carbuncles is well known. Furunculosis, erythema, eczema, pruritus, and dry skin are other complications. Various explanations have been offered for the common occurrence of carbuncles or furunculosis. One is that blood with an increased amount of sugar in it makes a better culture medium for the bacteria which often get into the circulation. This, although known to be true when bacteria are grown on artificial media outside of the body, as in the case of *Bacillus typhosus*, has not been proved for bacteria in the body in diabetes. A more generally accepted reason is that the resistance of diabetics is lower than that of normal individuals, and on that account they are more susceptible to infection. As a proof of this, how often do diabetics contract tuberculosis or pneumonia? Typhoid fever in diabetes is almost always fatal. As a matter of fact, it has been demonstrated in pancreatinized dogs that the blood serum has lost its bactericidal properties, and also that the opsonic index is much lower than in normal dogs.

Erythema, eczema, and dryness of the skin are

probably due to the change in osmotic pressure of the blood, and also to the hyperaemia of the sugar in solution. The pruritus is the most annoying of these symptoms, and often very resistant to treatment. It is due to the irritation of the sugar excreted in the sweat. It may also be due to an irritation produced by nonpathogenic organisms which flourish in the saccharine media in the moist parts of the body, especially around the genitalia. The pruritus may be the only symptom of the diabetes, but as a rule it goes hand in hand with the dryness of the mouth or skin.

In the circulatory system the most common seat of injury is in the bloodvessels of the lower extremities. Here, probably on account of the sluggish circulation due to gravity, the overcharged sugar in the blood may have a greater opportunity to do injury. The lesion is usually a gangrene, either dry or moist, which scarcely differs pathologically from other forms of gangrene of the lower extremities. Buerger has demonstrated the gangrene to be due to an arteriosclerosis of the vessels. Often the only lesion is an ulcer, but this may be the beginning of the gangrene. The prognosis in these cases is grave, since surgical treatment has usually been the only remedy and this, as a rule, results in coma and death. Endocarditis and valvular lesions, due directly to diabetes, are very rare.

Inasmuch as the liver is the organ where sugar is manufactured, and inasmuch as in diabetes there is an overproduction of sugar, it must be seen that no diabetic process can persist for any great length of time without some change in the liver substance. These changes may be slight or they may be marked. They may vary from an active congestion to a marked cirrhosis. As the cirrhosis proceeds, and as more of the liver becomes involved, the latter becomes less and less capable of holding the sugar reserve and on this account alone the hyperglycemia and glycosuria may persist. With the cirrhosis the characteristic signs may also be present, hence we can feel the enlarged hardened liver and see the dilated superficial veins of the abdomen. In one case that I saw, the enlargement of the liver was mostly in the transverse diameter, and was well shown by percussion posteriorly. The cirrhosis may be associated with a bronzing of the skin.

Since the pancreas is most often the seat of the pathological process in diabetes, it may readily be seen how it is possible for changes other than those in the islands of Langerhans to be present. It has been known for a long time that in pancreatic disease such as chronic pancreatitis or pancreatic insufficiency, glycosuria is often present and post mortem examination has shown that not only is there a fibrosis of the interglandular areas of the pancreas, but that the islands of Langerhans are also involved. In such cases, the presence of large clay colored fatty stools, sometimes attended with diarrhea, is an indication of the involvement of the interglandular areas. The patients usually have a ravenous appetite yet emaciate rapidly.

A very common experience in diabetes is the development of albuminuria, causing a disappearance of the glycosuria. On post mortem examination, changes can be found in the kidneys. Von Noorden

was one of the first to point this out, and he explained it by saying that the epithelium of the tubules became impermeable to the sugar, and even though no sugar was present in the urine, yet a marked hyperglycemia might persist. Glycogen found in the albumin in the renal tubules in cases of nephritis in diabetics, shows that there is a sugar retention in this complication.

One of the peculiarities of diabetic complications is that diabetes rarely follows pulmonary tuberculosis. Diabetics, however, are prone to tuberculosis. This undoubtedly is due to the lowered resistance of the diabetic.

Gastric complications are not common. There may be some gastric symptoms due to a disturbance from changes in gastric secretion. As a rule, the gastric secretion is not changed much from normal. There may be a diminished or an increased acidity. In cases where a hypochlorhydria exists, fermentation may cause considerable distress. Autopsy has in some cases revealed chronic gastritis with glandular atrophy.

A difficult complication to deal with is diarrhea associated with constant hunger. In one such case under my observation it was necessary to feed the patient every hour and in spite of this, he gradually lost weight. These cases may be associated with pancreatic insufficiency. The stools are typical, clay colored, large, and usually with a layer of fat resembling melted butter, on top. The diarrhea is due to either one of two factors, or it may be due to a combination of these. On account of the necessity of a carbohydrate free diet, the patient is usually put on a protein diet consisting of vegetables. These, to a large extent, are composed of indigestible substances which, on reaching the large intestine, act as irritants. Or in cases of pancreatic insufficiency, decomposition of the unused fats into fatty acids may produce the diarrhea.

In the nervous system the complications vary from slight paresthesias to psychoses. The vagaries in the involvement of the nervous system are numerous. They may simulate forms found in other conditions, such as the arthritides and tabes. Pains in the joints, in the calves, in the thighs, are encountered, the most common being the pains in the thighs. Often the pains are situated in the intercostal spaces, suggesting a tabetic crisis, or a posterior ganglionitis. The sensory nerves or posterior nerve roots are most often involved. At times the motor nerves are affected, but this is not common. Occasionally the only symptom in diabetes is weakness with pain in the legs. Such a case is apt to be puzzling as to diagnosis during the physical examination until the acetone in the breath gives the clue.

The two changes occurring in the eye in diabetes are retinitis and cataract. With the cataract the only symptom that the patient gives is gradually failing vision. He may, on careful questioning, give a history of having had thirst and polyuria, but these patients usually go about their daily occupations without inconvenience except for the failing vision. Retinitis can easily be made out on examining the fundi. The cause of these eye changes is supposed to be increased osmotic pressure within the eyeball.

The treatment of the complications of diabetes means the treatment, first of all, of the diabetes itself. No diabetic process can be completely or permanently cured unless the glycosuria and hyperglycemia are also relieved or removed. For the treatment of diabetes, no method with the possible exception of the starvation method, has yet been suggested that has improved upon the general principles of treatment laid down by von Noorden. As Joslin, Janeway, and others have shown, almost every diabetic can be made sugar free and kept sugar free by proper dietetic measures. The fact that so many drugs have been suggested is the best indication of their inefficiency as specifics. The aim in curing diabetes is to reduce the hyperglycemia to normal, and this will always cause a disappearance of the glycosuria. Diabetes should be treated scientifically and not on guess work. It is impossible to treat it rationally unless a careful check is kept on the amount of sugar excreted. To give a patient a diet list with foods of varying carbohydrate content, and advise him to eat this food and avoid that, without carefully following the amount of sugar excreted, is not the best therapeutics. A relationship must be established between the carbohydrate intake and the carbohydrate excretion. Nor can we work properly on the qualitative examination of single specimens of urine. It is absolutely necessary to examine quantitatively the twenty-four hour specimens.

For the treatment of any form of diabetes it is essential first to ascertain the amount of sugar excreted in twenty-four hours on the patient's usual diet. The urine should also be examined for acetone and diacetic acid so that the extent of the diabetes may be known. For the determination of sugar the best method is by means of the polariscope, but when this is unavailable any other of the better known methods may be used. I have always used the Rudisch method, which has been very satisfactory and requires only about three minutes to perform. Having ascertained the amount of sugar excreted in the urine on the patient's regular diet, the patient is next put on a carbohydrate free or strict diet. This can be easily devised from a table of foods containing their chemical composition. I have confined myself to the von Noorden standard diet. While on this diet, twenty-four hour specimens of urine are examined every two or three days until they are sugar free. This may require only two or three examinations, or it may require many more. If after two weeks sugar still persists in the urine, the patient is placed on one vegetable day a week and this may be followed two days later with a fast day. The vegetable day consists of the exclusion of everything but vegetables low in carbohydrates. Eggs may be given and also white wine or brandy. A list of vegetables of low carbohydrate content may be found in Atwater and Bryant's Table of the Chemical Composition of American Foods. It will be found that the sugar in the urine will be diminished after one of these days. Should the glycosuria still persist, an oatmeal day once a week may be tried. This consists of a porridge made from eight ounces of oatmeal and eight ounces of butter, flavored with salt or pepper. The whites of six eggs may be added and a light wine given.

If after all of these attempts sugar is still present, it is advisable to place the patient on the newer treatment as outlined and tried very successfully by Allen. This is essentially a starvation treatment and was first tried several years ago by Naunyn, and more recently with excellent results by Guelpa. It consists in putting the patient to bed and giving him no food for from two to five days. He is allowed one half an ounce of brandy every three hours during this period. Water can also be given. For the first twenty-four to forty-eight hours, the patient will experience considerable hunger, but this gradually disappears. The results with this method have been marvelous, particularly so in the severer forms, and also in juvenile diabetes where it is impossible to remove the last traces of sugar. I have seen three patients, thirteen, sixteen, and nineteen years of age, in whom diabetes had stubbornly resisted the regular method, become sugar free on starvation treatment. As soon as patients become sugar free, food is carefully and gradually given, the urine being closely watched. They cannot tolerate very much carbohydrate. Should glycosuria develop again, they are put back on the starvation treatment.

In the less severe cases, as soon as they become sugar free, carbohydrate in the form of some standard biscuit of known carbohydrate content, or slices of bread are given. An ordinary slice of bread weighs between thirty-five and forty grams and contains approximately twenty grams of carbohydrates. If the urine remains sugar free, more bread or other food of known carbohydrate content may be given until tolerance has been established. When this has been established it is not difficult to keep the patient sugar free.

In diabetes the only logical drug is sodium bicarbonate. It is especially indicated in cases with acidosis, and should be continued as long as acetoneuria persists. It is also advisable to give it prophylactically when the amount of sugar is high, even though no acetone is present in the urine. It should be made the basis of treatment in the skin complications. I have had excellent results in skin lesions with ten per cent. sodium bicarbonate wet dressings and ointments. This has been especially so in extensive furunculosis or carbuncles. A mild antiseptic like potassium permanganate may be added, and as a rule, the infection clears up and disappears. In pruritus, a ten per cent. sodium bicarbonate solution, or a powder consisting of sodium bicarbonate, zinc oxide, camphor, and talcum will give considerable relief. Gangrene must be treated surgically, although Joslin mentions one case of gangrene and one of large carbuncle that were cured by the starvation method. Symptomatic treatment for the relief of pains may also be resorted to.

I cannot close this paper without citing two cases in which pancreas extract in tablet form was given with success. Pancreatic extract in diabetes has been condemned by some very able men and I feel that their condemnation is justified at least in its use in the severer cases. In both of my cases the amount of sugar never exceeded one per cent., but in spite of dietetic treatment there was always a trace. In one of these cases the sugar reaction was atypical. Both were given the tablets containing

pancreatic extract. The sugar disappeared and has not returned after several months. Sodium bicarbonate in twenty grain doses was administered at the same time to lower the acidity of the stomach and prevent possible digestive action on the pancreatic extract by the gastric juice. The only explanation that seems plausible is that there might have been present in these tablets just enough of that particular pancreatic element which inhibits the adrenal secretion from overstimulating the sugar centre.

In this connection might be mentioned the interesting work which Meltzer and Kleiner have recently done. Using pancreatinized dogs in which there was hyperglycemia, they succeeded in lowering it by intravenous injection of an emulsion of pancreas containing sodium bicarbonate.

From the present outlook, it would seem that the ideal treatment for all stages of diabetes, even with acidosis, is the Allen starvation plan. Allen and Joslin have gone so far as to instruct patients how to examine their urine; how to calculate the amount of carbohydrates to be eaten from a list of foods with their carbohydrate content, and if sugar is again found in the urine they are advised to place themselves again on one or two fast days until sugar free. How simple and yet how effectual! If the good reports of this treatment continue to be announced, then will Joslin's statement have been aptly made: "We no longer nurse diabetics—we treat them."

197 YORK STREET.

### CHAUFFEUR'S KNEE.

By GUSTAV F. BOEHME, JR., B. S., M. D.,  
New York,

Neurologist, West Side German Dispensary; Assistant Physician,  
Neurological Institute, Etc.

For years we have sympathized with the patient who is on his feet for many hours daily, for he has been the victim of callouses and corns, of foot deformities and that bane of all clerks and store keepers, pes planus. A short time hence I called attention to "tango foot" brought on by the flights of the terpsichorean artist and devotee. At this time I desire briefly to call attention to a minor ailment occurring in those who drive automobiles to any extent, or who are not accustomed to this form of sport.

A number of drivers of cars have in the past two years consulted me for a pain in the knee, made worse by ascending stairs or on moving the knee in the control of the pedals of their machine; this was their only complaint.

On examination flexion and extension of the knee (usually the right one) was limited and painful, and the patient was cognizant of a sense of grating in the front of the knee. On each side of the patella a fluctuating swelling, of more or less extent, could be noted, depending upon the length of time the condition had existed. The picture is one of a bursitis of the subpatellar bursa lying between the tendinous expansion of the quadriceps and the periosteum of the patella. The process differs from that of housemaid's knee in that the superficial bursa is uninvolved, and no swelling is



felt in front of the quadriceps tendon in movement, but laterally to it the swellings can be felt to change in size, while the grating feeling is distinctly made out.

The mechanism of this process is as follows. The position of the knee in the ordinary car is a rather cramped one; flexion and extension of the knee occur in shifting the gas and other pedals by the foot. In those predisposed to this condition, this constant movement sets up a low grade inflammation in the subtendinous bursa.

What has been rather surprising is that in none of these cases has there been any sign of inflammation in the ankle joint or in the tendons crossing it. I am at a loss to explain this, yet I have never seen a tenosynovitis of the ankle tendons in a chauffeur. I have felt, however, that the fact that the ankle movement is not a cramped one, while that of the knee is undoubtedly limited by the position in the car seat, and thus adds in its semiflexion to the difficulty of moving the quadriceps tendon, occasions more pressure on the bursa than usual, and in this way predisposes to inflammation at this point.

Treatment, briefly summarized, consists of cessation from driving, rest for a short time, with local applications of aluminum subacetate or lead and opium solution. Passive movements with massage and baking should be begun early to prevent stiffness of the knee.

220 AUDUBON AVENUE.

### Abstracts and Reviews.

#### THE RESPIRATION CALORIMETER IN CLINICAL MEDICINE.\*

By EUGENE F. DU BOIS, M. D.,

Professor of Medicine, School of Medicine, Cornell University Medical College.

We hear housewives talking glibly of calories in food and our newspapers write of vitamins with some familiarity. It would be well for clinicians to pause to examine some of the fundamental principles of nutrition in disease, for now our patients demand suitable diets rather than mere medication, and many of them are better up in the subject of nutrition than were our textbooks a few years ago. Even our hospital diets originated years ago and have been but little changed since then, and what changes they have undergone have emanated from the most part from dietitians or nurses. We have long contented ourselves with classifying foods with regard to their physical states and have merely casually recognized the need for a certain proportion of protein, carbohydrate, and fat in the dietary.

Nutrition in disease should rest upon a scientific basis which should be derived from experiments in calorimetry and the respiratory quotient. Accurate methods of study in these two fields have not been available until within the last few years, and the greater portion of all the earlier work is nearly valueless owing to imperfections of method. Calori-

metry and the study of respiratory metabolism have now, however, been made possible by the perfection and elaboration of the Atwater-Rosa calorimeter, by which the actual heat production and the respiratory metabolism may be determined with great accuracy. The latest form of this apparatus is the Sage calorimeter, which was completed in 1913 in Bellevue Hospital by Mr. J. A. Riche and Mr. G. F. Soderstrom. This consists of an air tight chamber large enough to accommodate a man either recumbent or half sitting in a modified steamer chair. The chamber is insulated wholly from the effects of external temperature changes, and by means of sensitive electrical thermometers and a water cooling system, the total amount of heat produced by a patient can be measured in successive periods. Being absolutely air tight it can be connected in closed circuit with a ventilating mechanism whereby known amounts of oxygen are automatically supplied and the total amounts of moisture and carbon dioxide given off, measured with great precision. With it two different methods of calorimetry can be carried out simultaneously—one by the direct measurement of the total heat production, the other by means of the calculated heat production based upon the respiratory exchange. These two methods serve to check each other nicely. By this apparatus we can determine in hourly periods the total oxygen consumption, the output of carbon dioxide and water, the proportion of calories produced by protein, carbohydrate, and fat, the heat lost by evaporation, conduction, and radiation, the heat stored in the body, and, lastly, the total metabolism.

The main object in calorimetry is perhaps the determination of the total or basal metabolism in health and disease, that these two may be compared. The greatest divergence of opinion has arisen over the determination of the normal basal metabolism, and this seems to have been due to certain material errors which may be briefly reviewed. In the earlier studies variations from the average at times amounted to fifty per cent. above or below, and were found to be due to permitting the subject to move and to eat during the course of the observation. Earlier calculations based on the carbon dioxide elimination were incomplete and failed to take into consideration the fact that this gas varied greatly in calorific value with changes in the respiratory quotient. It was then found that the metabolism was not proportionate to the weight of the patient, but to the area of the surface of his body. Earlier methods of determining the surface area were fallacious and led to considerable error. Now, however, these and other sources of error have been successfully eliminated and in men between the ages of twenty and forty years the basal metabolism seldom varies by more than ten per cent. from the average, irrespective of size or shape of body. The basal metabolism of such persons is 39.7 calories per hour per square metre of surface area. This is a little lower in women, and in men who sit comfortably in a steamer chair than when they lie flat.

In normal man the specific dynamic action of foods was determined with standard meals, and these facts supplied a basis for the study of the dynamic actions of foods in different diseased conditions.

\*Abstracted from the *Journal of the American Medical Association*, New York, November 1914.

Turning, now, to the results of calorimetric studies carried out in the Sage and other calorimeters of modern construction, we may first speak of the changes in basal metabolism associated with age. In comparison with the average adult figure, the metabolism of infants in the first few weeks of life is very low. This rises rapidly until it reaches fifty per cent. above the normal by the end of the first year. Between the ages of two and six years metabolism is highest and then undergoes a fairly rapid decline until the age of twenty years, after which it declines very gradually. After the age of forty years the decline amounts to about seven per cent. below normal for the decade between forty and fifty. In old age metabolism is still lower. The reason for the very low metabolism in the first few weeks of life is unknown, but the increase during the first decade is probably due in large part to the stimulus of growth and the relatively large size of the head, trunk, and liver.

With the determinations of basal metabolism and the specific dynamic actions of foods in normal human beings at different age periods, we have the material with which to compare the results of studies carried out in certain diseases.

The most striking changes in metabolism have been encountered in exophthalmic goitre. Up to the present time forty-four patients with this disease have been studied by different observers and a curve plotted from the results shows that there is an increase in total metabolism which is strictly proportionate to the severity of the condition. In one fatal case an increase of 120 per cent. above the normal average was noted during the last two weeks of life. Two very severe, nonfatal cases studied in the Sage calorimeter showed about 100 per cent. increase above normal. Broadly speaking, very severe cases show an increase of over seventy-five per cent., severe cases of fifty per cent. or more, moderate and mild cases of less than fifty per cent., and in some mild cases the figures may fall within the normal limits of variation. The opposite condition has been found in cases of cretinism and myxedema, in which a reduction of twenty-five to fifty per cent. below normal may be encountered. So far drugs, serums, and the ligation of the arteries have failed to produce a greater reduction in metabolism in exophthalmic goitre than has been secured by rest and diet alone. It was also found that patients with this disease utilized both carbohydrate and protein quite normally, even when they showed some degree of glycosuria. From this it is evident that we need not inflict upon them the hardships of strict dietetic restrictions.

Studies in cases of diabetes mellitus have confirmed Lusk's contention that in the severe forms of the disease the patient converts and excretes about half of his proteins as sugar. This was shown by the urinary dextrose:nitrogen ratio in animals, and recently in man. This ratio gives the most satisfactory index of the severity of the disease. The Allen fasting treatment was proved to lead to an increase in the respiratory quotient parallel with a fall in the D:N ratio and a decline in the glycosuria. There was also a marked decline in the total metabolism and the patient could be brought into a condition in which his low food needs were

met by his improved metabolic functions. The reduction in total metabolism fell to a point lower than that reached by prolonged fasting in normal persons. Prior to the fast the total metabolism in diabetes was found to fall within the normal limits.

In typhoid fever, during the course of the disease, the total metabolism is increased roughly in proportion to the rise in temperature and reaches an average of about forty per cent. above normal at the height of the fever. High calory feeding did not raise the heat production above that found in patients given low diets. Typhoid patients were shown to need more food than normal men and they used up their carbohydrates and stores of glycogen rapidly, which is also the case in other fevers. To prevent these patients from using their own proteins and fats, they should be given relatively large amounts of carbohydrates. Early in convalescence the metabolism is slightly subnormal, but it soon rises to fifteen or twenty per cent. above, owing largely to increased food and the stimulus of growth.

In severe anemia the metabolism was seldom below normal, and, on the contrary, it was often found to be twenty-five to fifty per cent. above, owing to an increased output of the heart and a more complete utilization of the blood oxygen than normal. Mild cases of nephritis and of cardiac disease with compensation have a total metabolism within normal limits. In most dyspneic cases there is an increase of about thirty to forty per cent. when acidosis is present. The intermediary metabolism in all such patients seems to be normal.

It is upon the results of work with calorimeters and apparatus for the exact determination of the respiratory quotient that we must in the future found our theories of human metabolism in disease. Actual experiments would have to be performed on each patient to determine his exact caloric needs, but as this is impossible we can adopt as a standard the normal adult basal metabolism and add ten per cent. to this for the stimulation produced by food and a like amount for the ordinary activity of bed patients. This would give a food requirement of 2,000 calories a day for the average man weighing 150 pounds. In the future we must think in terms of the respiratory metabolism rather than in the results of urinary analyses and determinations of intake and output.

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### Therapeutic Notes.

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**Pseudocoxalgia and Its Treatment.**—E. Muirhead Little, in the *Clinical Journal* for November 10, 1915, writes of a condition, likely to be confounded with tuberculous disease of the hip joint, to which the term pseudocoxalgia was applied by Calvé in 1910. The patient is usually a child between the ages of three and twelve years, apparently healthy, who begins to limp and perhaps complain of pain which, however, is never severe. Though flexion and extension of the thigh on the pelvis are free and painless, rotation, especially inward, is much reduced and abduction is nearly impossible, except under anesthesia. There is little or no tenderness and no tumefaction, but the great trochanter generally seems more prominent than on the normal

side. The diagnosis is supplied by x ray examination, which reveals a flattening of the head of the femur, with irregular permeability of the head and neck to the x rays, an irregular epiphyseal line, and a blurred acetabular margin. The process is a chronic one; after two or more years, the patient may have lost his limp, though at times some shortening, with reduction of the range of abduction and of rotation, may remain. Though most surgeons who have dealt with this malady advise that no treatment be adopted, Little deems it advisable to place the thigh in a position of marked abduction under anesthesia and maintain it there by means of plaster of Paris or an abduction splint. This is done to prevent the head of the femur from assuming, as growth proceeds, a shape which would prevent abduction when the active disorder comes to an end. With a patten or high boot on the other foot, the child should be allowed to move about freely. Fresh air and sunshine are desirable. Thyroid medication may be tried, hypothyroidism having been suggested as a cause of the condition.

**Treatment of Dry Forms of Eczema.**—P. G. Unna, in *Berliner klinische Wochenschrift* for March 1, 1915, states that in eczema of the callous type, prevalent in the winter season, oxidizing remedies must be used in order to penetrate the thickened horny layer. In the official diachylon ointment, the contained lead oxide manifestly exerts an oxidizing influence. To relieve itching, tar may be added to the ointment, the activity of which may also be reinforced by the introduction of salicylic acid or phenol:

℞ Unguenti diachylon, ..... ʒi (30 grams);  
Acidii salicylici, ..... gr. x (0.6 gram);  
℞ Phenolis, ..... gr. v (0.3 gram).  
Fiat unguentum.

An important feature in the treatment of this affection is avoidance of the use of soap and water, especially on the face and hands. The affected areas should be frequently anointed and the parts between times kept protected with a cap, glove, or other appropriate covering.

In the dry, seborrheic eczema prevalent in warm weather, the following paste is a specific in mild cases:

℞ Sulphuris precipitati, ..... ʒi (10 grams);  
Calci carbonatis precipitati, ..... ʒi (10 grams);  
Unguenti zinci oxidi, ..... ʒi (10 grams).  
Fiat pasta.

Water may be employed as usual in such cases; but there are other more obstinate forms associated with the formation of hard papules suggestive of psoriasis which do not yield immediately to the use of sulphur. In these a rather weak chrysarobin collodion is useful:

℞ Chrysarobini, ..... gr. xv (1 gram);  
Collodii, ..... ʒvi (20 grams).  
M. Sig.: Shake before applying.

This may be applied with cotton wound round a matchstick, and after it has become dry diachylon ointment should be rubbed over it with the finger. If the collodion loosens before the eczema has been cured, it should be reapplied. The ointment superimposed over the collodion prevents irritation and further progress of the eczematous process. Ec-

zema of the hand can thus be treated, if a glove is worn, without interference with the patient's occupation.

**Treatment of Pellagra.**—Isadore Dyer, in the *Texas Medical News* for April, 1915, is credited with the statement that in the stomatitis of pellagra the combined administration of potassium chlorate and iron lactate will exert a favorable action. The following formula is advised:

℞ Potassii chloratis, ..... ʒi (1.2 to 0.2 gram);  
Ferri lactatis, ..... ʒi (1.2 to 0.2 gram);  
Extracti rhamni purshianæ, ..... ʒi (0.015 gram).  
M. ft. pil. No. i.

Sig.: One pill every three or four hours.

When the pill is not easily swallowed a liquid preparation may be used:

℞ Potassii chloratis, ..... ʒi (0.2 gram);  
Ferri lactatis, ..... ʒi (0.2 gram);  
Fluidextracti rhamni purshianæ aromati, ..... ʒi (1.25 c. c.);  
Tincturæ nucis vomicæ, ..... ʒi (1 c. c.);  
Elixiris simplicis, q. s. ad ..... ʒi (4 c. c.).  
M. Sig.: Teaspoonful every three or four hours, well diluted.

As a general tonic, quinine hydrobromide may be used, in doses varying with the severity of the case. For diarrhea, phenyl or sodium salicylate, or even at first small doses of powdered opium, may be given, but the quinine alone in large doses will control the diarrhea sooner or later, usually within the first few days.

Cheerful surroundings should be insisted on and an optimistic prognosis made, though combined with warning of the long duration of treatment required and of the possible relapses. The patient should be kept out of the sunlight, away from the kitchen, and out of bed as long as this is possible. When the acute symptoms have been controlled, the dose of quinine hydromromide should be reduced to two grains (0.12 gram) three times a day and general tonics such as the glycerophosphates, lactophosphates, iron, and manganese given. Sodium arsenite may be administered with the other tonics:

℞ Liquoris sodii arsenitis, ..... ʒi (0.2 c. c.);  
Tincturæ nucis vomicæ, ..... ʒi (0.6 to 1 c. c.);  
Tincturæ gentianæ compositæ, ..... ʒi (1 c. c.);  
Tincturæ cinchonæ compositæ, ..... ʒi (1 c. c.);  
Syrupi pruni virginianæ, q. s. ad ..... ʒi (4 c. c.).  
M. Sig.: Teaspoonful in water after meals.

**A Varnish for Wounds.**—A writer in the *Prescriber* for April, 1915, makes favorable mention of the following combination as a dressing for wounds:

℞ Mastic, ..... ʒv (20 grams);  
Resin, ..... ʒi (10 grams);  
Turpentine, ..... gr. v (7 grams);  
Benzol (pure) ..... ʒi (10 grams).

The varnish is first painted over the affected area and, in a few minutes, after the benzol has in part evaporated, a plain bandage is applied. Bandage is preferable to adhesive plaster, the latter having a tendency to loosen from the varnish.

A similar preparation, analogous to a well known German proprietary hand disinfectant and wound dressing, may be made after the following formula:

℞ Mastic, ..... ʒx (40 grams);  
Benzol, ..... ʒi (60 grams);  
Castor oil, ..... gtt. xx.



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CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.

CLAUDE L. WHEELER, A.B., M.D.

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## THE TRAGEDY OF GLYCOSURIA.

Under this heading Keith Robertson, in the *Practitioner* for November, presents the gloomy picture of a young woman, pale, thin, tired, dry lipped, starved looking, and irritable, with sugar and diacetic acid in her urine. She has no sign of disease of her central nervous system, so we suppose her trouble to be in the pancreas. We know that the fault does not have to do with the external secretion of this gland, which flows out through the duct; it must be connected with an internal or endocrinic secretion that is called the pancreatic hormone. But this hormone has never been isolated; it is very elusive; we know of its presence only through the effects it produces, and yet the lack of it causes glycosuria. How and where it acts we do not know. Some think it enables the muscles to take sugar from the blood and metabolize it; others that it controls the production of sugar in the sugar forming organ. The former say that the sugar in the blood is not oxidized in the muscle cells in diabetes, because the pancreatic hormone is not present in sufficient amount to enable the cells to do the work, while their demand for sugar leads to a stimulation of the liver and an increased output of sugar which results in hyperglycemia and glycosuria. Further, as the cells cannot obtain their energy from sugar, they

tackle the fats and break them up into beta oxybutyric acid, diacetic acid, and acetone. If the tissues could be supplied with glucose, pathological acetoneuria and acidosis would disappear quickly. On the other hand, experiments seem to show that the blood cells and the muscle cells use up just as much sugar in diabetes as in other conditions. There seems to be some basis for the assertion that the trouble in this disease is an overproduction of sugar by the liver, in which not only all of the carbohydrates are converted, but fats and albumins also are dragged in and disintegrated with the production of beta oxybutyric acid, diacetic acid, and acetone.

Meanwhile, how about our patient? We estimate regularly the total daily amount of sugar she excretes, we test regularly for diacetic acid, and we diet her with care, trying to reduce the amount of sugar and at the same time to avoid the appearance of diacetic acid by regulation of the carbohydrate intake. The prognosis is bad. Drugs are futile. Advertised specifics prove disappointing. Pancreatic extract is not yet of practical use for this purpose, for the pancreatic hormone has not yet been separated, like adrenaline, so that we can employ it. An unsatisfactory ending, is it not?

## THE PROGNOSIS OF TRAUMATIC HEMATOMA FROM LESIONS OF THE AXILLARY ARTERY.

The prognosis of traumatic hematoma, the result of lesions of the walls of the axillary artery, is not of the best. Inflammatory complications, which are not infrequent, increase the gravity of the progressive extension of such a growth. Operation is indicated at the earliest possible moment, always recalling that the results will not be brilliant in cases of arteriosclerosis.

The seat of the hematoma is also an important element in the prognosis. In most operative procedures there results occlusion of the artery so that the circulation must be carried out by the collaterals, and the efficiency of the latter depends greatly upon the seat of the hematoma. There are two circuits, one in front and one behind, uniting the subclavian with the axillary. The anterior is composed of the superior intercostal and internal mammary, the superior thoracic, external mammary, and the internal branch of the subscapular.

The posterior anastomosis includes the superior and posterior scapular, the two circumflex, and the external branch of the subscapular. Consequently, if the hematoma extends from the clavicle to the origin of the acromi thoracic, the collateral circulation is easily established, gangrene is not to be feared, and the prognosis is rather favorable.

This is no longer the case if the hematoma is seated between the subscapular and deep humeral, because there are no anastomoses between the collaterals of the axillary and humeral, so that it appears that an occlusion of the axillary at this point must inevitably cause gangrene of the arm.

This has been the opinion of several surgeons, but the researches of Farabeuf and Nélaton, confirmed by Vauverts, show that there exist anastomoses between these two vessels. Nevertheless, this should be termed the dangerous area because it cannot be doubted that this location of the hematoma presents certain dangers. This is the conclusion of Vauverts, who has shown that the very small calibre of the collaterals uniting the branches of the axillary and humeral leaves considerable doubt on this point, and in an arteriosclerotic subject it is evident that the collateral circulation would become established with difficulty.

The fear of gangrene in such cases must lead the surgeon to resort to the old practice of ligature of the subclavian instead of the axillary. If the arterial coats are healthy, suture should by all means be attempted.

As to the functions of the limb, the prognosis is not so good when the lesion is situated in the dangerous area, and from what is actually known there is here a more accentuated impotency than when the collection is seated under the clavicle, because the collateral circulation cannot become freely established.

#### HOOKWORM AND RURAL SANITATION.

The prevalence of hookworm disease in the south, especially among the so called poor whites, and its baneful effect upon their physical and economic lives have impelled the Rockefeller foundation to investigate the matter on a rather large scale, and to institute measures for its cure and eradication. It is evident that because of the wide distribution of the disease any central educational campaign or remedial project to reach the ultimate individual is a task of great proportions. This disease is transmitted from the infected to the healthy native and is kept alive in a community by infected dejecta; it is, therefore, against the promiscuous disposal of dejecta that the campaign must be directed. The disease is especially pernicious because, not only is the parasite taken into the body through the alimentary canal, as in other parasitic diseases, but is even oftener taken in through the skin, especially of the soles of the feet. Part of the campaign of prophylactic education has been to urge the wearing of shoes so that the parasite will not be able to reach the skin; for there are people unable to understand

the relation between being well shod and prevention of the disease.

On the other hand, while the sanitary conditions of these sections has been of the crudest, especially in relation to sewage disposal and collection, it is a much easier matter to make the natives perceive the convenience, at least, if not the advantage of improved privy facilities. Besides, it is the remedy which will at once reach to the very root of this disease as well as of other diseases transmitted because of the lack of proper methods of sewage collection and sewage disposal and consequent soil pollution. For rural communities the pail system of collection in a sanitary privy of the Lumsden-Stiles type is the best and least expensive. It is protective against the fly as well as the splash annoyance. Yet even the slight expense to persons who are at the lowest ebb financially, in large part as a result of the physical effects of this disease, may militate against its installation. Each county, however, can, without material expense, install or caused to be installed this improvement in each rural household, and enforce proper maintenance therein. Without soil pollution the lack of shoes would be a minimum factor instead of a maximum one in the communication of the disease. Treatment with thymol, while effective enough, does not prevent reinfection from the same or other sources.

#### TETANUS AND VACCINATION AGAIN.

This has before now been a subject of comment in these columns, but recently reported cases in the daily press of tetanus following vaccination in New York and its vicinity bring this matter once more forcibly to mind. Its importance is large enough to warrant many words if they could, even in the smallest degree, help to relieve so distressing a situation. Accidents of this character menace in a very real way the usefulness of one of the greatest boons ever vouchsafed to mankind through the agency of the medical profession. It is difficult for us of a later and happier day to appreciate the value of Jennerian vaccination. We must visualize events of the eighteenth and earlier centuries to realize even remotely the blessing of this discovery. Tragic events, especially if preventable in any degree, which jeopardize a procedure of such vast importance, should receive most earnest attention.

Tetanus following vaccination is an event of just this character. All available evidence, both clinical and experimental, justifies the belief that infections of this kind are not due to the vaccine virus *per se*, but occur subsequently, and are attributable to later contaminations of the vaccination wound. In all justice, however, it must be admitted that experience

also teaches, despite all contrary evidence, that vaccination wounds, at least in children of certain ages, are unduly prone to such infections. The reasons are not apparent.

At least two valuable practical points may be suggested for all to follow. First, however trivial the operation of vaccination may seem, we should always remember that it is a surgical procedure sometimes followed by severe and even fatal results. It should therefore be done with all possible care, cleanliness, and attention. Second, if tetanus unfortunately develops, it should not be forgotten that the prompt administration of tetanus antitoxin, in sufficient quantity, and by the proper routes, may result in saving a life. It is becoming more evident that, while we have long recognized the prophylactic value of this antitoxin, we have not till lately estimated properly its value in treatment. Administered early, in large doses, especially by way of the spinal canal and the blood stream, it is now regarded as a remedy of much importance, one to be resorted to with promptness.

#### KENNETH W. MILLICAN.

In the years of his service on the editorial staff of the *NEW YORK MEDICAL JOURNAL*, the late Dr. Kenneth W. Millican displayed a breadth of learning, a lofty idealism, an indefatigable industry, and an unselfish devotion to his work which made him a most valued member of the staff and endeared him to all with whom he came in contact. We record with grief his death in London, where he had been engaged on the staff of the *Lancet* for some years. Wherever he was Doctor Millican always threw himself into his work with enthusiasm and ability. Socially he was one of the most charming of men, and his death will bring sorrow to a wide circle of friends in America as well as in Great Britain.

#### PHENOLPHTHALEIN.

Dr. J. C. McWalter, of Dublin, communicates to the *Lancet* for November 20, 1915, his conclusions as to the value of phenolphthalein as a laxative, after having exhibited it over 1,000 times. Among other things, he states: It is singularly painless as a rule. This is its chief advantage. Further, it does not seem to lose its effect, at least, until it has been persisted in for a considerable time. Some observers state that it occasionally becomes absorbed, acting on the kidneys and causing backache, but Doctor McWalter has not observed this in small doses. Its action is very much like that of cascara sagrada, but probably more active and less griping. It seems almost an ideal laxative in pregnancy. It should not be given in tablet form unless mixed with chocolate, but it may be given in powder or in cachets.

Phenolphthalein is particularly useful in intestinal toxemia, because obviously what is required is a mild antiseptic, capable of being taken for a considerable period without toxic or cumulative results, and yet free from those irritating effects on the mucous membrane of the intestine which render most purgatives harmful in such cases. In chronic mucos membranous colitis the use of intestinal antiseptics is generally disappointing, but phenolphthalein will be found, in doses of half a grain thrice daily, eminently satisfactory in preventing enterospasm, easing pain, checking the excessive secretion of mucus, ameliorating the neurasthenia, and generally improving the patient's condition. Like all drugs of its kind, phenolphthalein has become much dearer since the war, but the dose being small, the actual cost is negligible.

#### Obituary.

#### KENNETH WILLIAM MILLICAN,

B. A., M. R. C. S., L. R. C. P.,  
of London, England.

Doctor Millican, as he was known by courtesy in the United States, died suddenly during the first week of December, in the Middlesex Hospital, London, of acute dilatation of the heart, in his sixty-second year. He was born in Leicester, in 1853, and received his preliminary education at Atherton Grammar School, Warwickshire, and at Cambridge University, where he obtained the degree in arts. He also studied medicine at the university and at St. Mary's Hospital, W., London. He became surgeon and laryngologist to the Infirmary for Consumption, Margaret Street, W., London, in 1887, and the following year was appointed surgeon to the West End Hospital for Paralysis. A few years later, the spirit of adventure which was so marked a feature of his character, sent him on a trip around the world, and in 1896 we find him medical officer to a large copper mine in California. Subsequently he came east and became associate editor of the *NEW YORK MEDICAL JOURNAL* under the late Dr. Frank P. Foster, a position in which his remarkable talents as a writer and editor had full sway. A deep sense of personal obligation to an old friend and benefactor led him to leave this attractive position to assume the editorship of the *St. Louis Medical Review*, which he held until 1906, when the inability of the *Review* to continue as a weekly publication sent him to join the staff of the *Journal of the American Medical Association*, where he remained until 1910. He had purchased a home in the mountains of Vermont, in the hope of developing it into a hotel and sanatorium, but an offer from the *Lancet* to assume the duties of sub-editor proved irresistible to an always loyal Englishman, and he finally recrossed the water to finish his days in London.

Doctor Millican was a charming writer of minor verse, and his friends will cherish the characteristic Christmas cards which they received, bearing an admirably written sentiment always in the difficult sonnet form. His editorial articles in the *JOURNAL* at once attracted attention from their style and



vigor. With the exception of two volumes of verse, *Passion Spray and Smoke Clouds*, the latter written in collaboration with the late A. B. Clarke, L. R. C. S., his contributions were published exclusively in periodical literature. He was married twice, the second time to Mrs. Bertha Camille Simons, of Omaha, Nebraska, who survives him together with a young daughter, and at present resides at 121A North End Road, West Kensington, London.

Doctor Millican's death was a shock to an immense circle of friends and acquaintances, for, despite a somewhat pessimistic disposition, he was of most lovable character and was never happier than when trying to help others. Highly temperamental like a true poet, he believed evil of men only with difficulty, and his liking for anyone, once established, was not to be destroyed. Early training as a medical officer in the English militia had given him a fine bearing, and a handsome face and delightful manner added to the attraction which he possessed for all who knew him.

### News Items.

**Change of Address.**—Dr. Max Goldstein, to 347 Roebing Street, Brooklyn.

**Harvey Society Lectures.**—The fourth lecture in the course will be given on Saturday evening, December 18th, by Prof. Florence R. Sabin, of Johns Hopkins University, on the Method of Growth of the Lymphatic System.

**Medical Society of the Borough of the Bronx.**—The annual dinner of the society will be held at Ebling's Casino, Thursday evening, December 16th. Dr. S. S. Goldwater, formerly commissioner of health, will be one of the speakers.

**American Relief for Belgian Physicians.**—Dr. M. J. Morrissey, of Hartford, Conn., has contributed \$2 to the fund, which brings the total receipts up to \$7,873.84; the total disbursements amount to \$7,310.04, leaving a balance on hand of \$563.80.

**Brooklyn Neurological Society.**—At the annual meeting of this society, the following officers were elected: President, Dr. Siegfried Block; vice-president, Dr. C. P. Frischbier; secretary-treasurer, Dr. J. P. F. Meagher; librarian, Dr. J. F. Morisson.

**The Mütter Lecture for 1915.**—On December 17th, at 8:30 p. m., Dr. Rudolf Matas, of the Tulane Medical College, New Orleans, will deliver the Mütter lecture for 1915, his subject being the Fundamental Principles that Underlie the Surgical Treatment of Aneurysm. The profession is cordially invited to attend.

**Faculty Changes at Creighton Medical College.**—Dr. Robert Ketzner, formerly of the University of Chicago, has been elected dean of the faculty and professor of anatomy in Creighton Medical College, Omaha; Dr. A. J. Key, assistant in anatomy at Johns Hopkins Medical School, has been appointed instructor in anatomy, and Dr. G. W. Earle, of Tufts College, Boston, has been appointed instructor in pathology and director of the clinical laboratory.

**New Courses of Instruction to Food Inspectors.**—In order to perfect inspectors in the details of the various branches of their work, Mr. Lucius P. Brown, director of the health department's Bureau of Food and Drugs, has organized a course of lectures, conferences, and demonstrations dealing with the various aspects of pure food work. These lectures are in the nature of a postgraduate course, and each detail of the work will be presented by experts selected from the inspecting force. The plan is to have a general lecture, first, followed by demonstrations to squads of not more than five in the field. It is expected that these demonstrations will last about a week in each subject.

**Middle Tennessee Medical Association.**—At the forty-third semiannual meeting of this association, held in Sparta on November 18th and 19th, the following officers were elected: President, Dr. R. W. Billington, of Nashville; vice-president, Dr. Scott Farmer, of Cookeville; secretary and treasurer, Dr. John Witherspoon, of Nashville. The next meeting will be held in Lewisburg in May, 1916.

**St. Louis Medical Society.**—Dr. Louis Boislamière was elected president of the society at a meeting held on Monday, November 22d. Other officers elected were: Dr. Walter Baumgarten, first vice-president; Dr. W. H. Stauffer, second vice-president; Dr. J. A. Seahold, secretary. The annual meeting and installation of officers will take place on January 8th.

**Northwestern Ohio Medical Association.**—The following officers were elected at the annual meeting of this association, held in Kenton recently: Dr. S. D. Foster, of Toledo, president; Dr. J. R. Tillotson, of Delphos, first vice-president; Dr. R. N. Lee, of Mount Blanchard, second vice-president; Dr. E. H. Porter, of Tiffin, secretary, and Dr. A. S. McKittrick, treasurer. Next year's meeting will be held in Toledo.

**Six Months' Supply of Salvarsan to Be Shipped.**—The British and French Governments have acceded to the request of the United States Government to allow a six months' supply of salvarsan and neosalvarsan to be shipped from Rotterdam, and the British Consul General of that port has been instructed to issue permits to that effect. The American importer announces that as soon as shipments arrive they will be released to physicians and hospitals without increase in price. He particularly warns the medical profession against the purchase of spurious products which are now being offered.

**The New York State Division of the Medical Reserve Corps of the United States Army** held its annual meeting on November 13th and elected the following officers: President, Dr. Reynold Webb Wilcox; vice-president, Dr. Howard Fox; secretary, Dr. Harold Hays; treasurer, Dr. Graeme M. Hammond; councillors, Dr. Henry C. Coe, Dr. Herbert Lawson, Dr. S. Meredith Strong, Dr. J. Bayard Clark, Dr. H. Lyons Hunt, and Dr. Frederick T. Van Buren. The association has 135 members, a large number of whom are taking the correspondence course for medical officers.

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Monday, December 13th, Section in General Medicine, College of Physicians; Tuesday, December 14th, Pediatric Society; Wednesday, December 15th, Section in Otolaryngology and Laryngology, College of Physicians; Thursday, December 16th, Section in Ophthalmology, College of Physicians, Northeast Branch of the County Medical Society, Pathological Society, Northwest Branch of the County Medical Society; Friday, December 17th, Jefferson Hospital Clinical Society, Southeast Branch of the County Medical Society.

**The German Medical Society of the State of New York.**—This society held its annual meeting at the Academy of Medicine, 17 West Forty-third Street, on Monday, December 6th, at 8:15 p. m. Dr. Otto T. Free, of Chicago, read by invitation a paper on The Intranasal Opening of the Frontal Sinus, which was discussed by Dr. H. Smith, Dr. Samuel McCullagh, Dr. C. J. Imperatori, and members of the society. This was followed by a contribution on The Psychoclinical Examination of the Child, by Dr. J. Victor Habermann, which was discussed by Dr. Max Schlapp, Dr. Joseph Byrne, Doctor Onuf, and others. Officers were elected for 1916.

**Medical Association of the Greater City of New York.**—The fifteenth annual special meeting for the borough of Brooklyn was held on Monday evening, December 6th. The program included the following papers: The Surgical Treatment of Bronchiectasis, by Dr. Earl H. Mayne; Percussion Technique and Theory, by Dr. Bernhard A. Fedde. These papers were discussed by Dr. Glenworth R. Butler, Dr. Tasker Howard, Dr. Edward E. Cornwall, Dr. Louis Curtis Ager, Dr. Ransford Van Gieson, Dr. Richard Ward Westbrook, Dr. Joseph Paul Murphy, and Dr. Sidney Yankauer. Dr. Thomas S. Southworth, president of the association, and Dr. Reynold Webb Wilcox, ex-president of the association, also delivered addresses. Dr. Robert E. Coughlin, chairman for the borough of Brooklyn, presided.

**The Tri-State Medical Association of Mississippi, Arkansas, and Tennessee** met in annual session in Memphis, November 16th to 18th, under the presidency of Dr. William E. Hicks, of Earl, Ark., and elected the following officers: President, Dr. Arthur G. Hudson, of Memphis, Tenn.; vice-president for Mississippi, Dr. Samuel D. Robinson, of Clarksdale; vice-president for Arkansas, Dr. Robert E. Bradstreet, of Marianna; vice-president for Tennessee, Dr. John W. Morris, of Somerville; secretary, Dr. James L. Andrews, of Memphis (re-elected); treasurer, Dr. James A. Vaughan, of Memphis (re-elected).

**Changeable Weather Brings Pneumonia.**—Accompanying the announcement of a "tuberculosis week" comes the news that the mortality from pneumonia and other respiratory diseases was heavier last week than during the corresponding week of last year. According to figures compiled by the health department, the pneumonia season is indeed upon us, and it is time to sound a warning of the dangers of these diseases. One seventh of all the deaths that occur in New York are due to pneumonia and other respiratory diseases, exclusive of tuberculosis. In other words, 11,000 people die in New York city every year from these diseases. There were 1,282 deaths from all causes during the past week, compared with 1,385 during the corresponding week of last year, the respective rates being 12.52 and 12.94. During the first forty-nine weeks of 1915 the death rate was 13.52 compared with 13.60 for the corresponding period of 1914.

**A Radium Hospital in New York.**—The new Radium Sanatorium, situated at 203 West Seventieth Street, New York, was opened last week. The object of the institution is not only to supply radium treatment for patients suffering from cancer, but also to make a thorough study of other methods of treating malignant growths. Dr. Joseph P. Bissell, who, it is expected, will be managing director of the sanatorium, has asked the following physicians to serve on the surgical staff: Dr. Cornelius G. Coakley, Dr. John A. Fordyce, Dr. Charles H. May, Dr. George D. Stewart, Dr. Winfield S. Ayres, Dr. Henry C. Coe, Dr. Anthony Bassler, Dr. Eugene C. Savidge, Dr. George MacKee, and Dr. William C. Lusk. Dr. Charles Norris and Dr. Howard Fox have been appointed pathologists and Dr. Samuel A. Brown is chief of the medical department. The institution has been planned along the lines of similar institutes in Europe.

**Doctors Victims of Check Swindlers.**—Pinkerton's National Detective Agency has issued a warning to banks against swindlers who have been stealing blank checks and cancelled vouchers from doctors, dentists, and other professional men, and on these blank checks forging checks and endorsements. Some of the forged checks are endorsed "O. K. \$70," giving the amount of the check. Others are accompanied by what purports to be a letter of identification. This forger has so far used the following names: F. E. Hanford, W. Lawrence, Harry Clark, W. Wadsworth, Clark Williams, and L. R. Johnson. Physicians would do well to bear this matter in mind, and make sure that their blank checks and cancelled vouchers are safely stored where they cannot be purloined. The forger is described as an American about five feet eight inches in height, with dark hair, weighs 150 pounds, is smooth shaven, and about forty years of age.

**Free Diphtheria Antitoxin.**—The Department of Health of the City of New York has for many years been furnishing diphtheria antitoxin free of charge to the public. This work was commenced in 1895, when antitoxin was first introduced, and included, at that time, the maintenance of a corps of physicians to inject the antitoxin on request. Two years ago, the administration of antitoxin by department physicians was discontinued, but additional facilities were provided for the prompt and ready use of this remedy by private physicians by having supply stations opened in certain all night drug stores and by delivering antitoxin by messenger free of charge to the bedside of the patient on request of the medical attendant. Figures compiled by the health department show that there was more antitoxin sold in 1914 than in 1913, but there was a very material reduction in the amount distributed free in 1914, with an appreciable increase in the number of cases of diphtheria reported. The antitoxin prepared by the department may be obtained from almost all drug stores and from any borough office of the department.

**Columbia University to Aid Long Island Medical College in Preparing Its Students.**—Arrangements have been made whereby the preliminary course required by the Long Island Medical College, Brookllyn, will be given by Columbia University in the classrooms and laboratories of the medical department. The course given will be in physics, chemistry, biology, and a modern language, and any student who takes it will be given credit at the university, even if he does not take up the four years' course at the Long Island College Hospital, for which it is a preparation. The plan of securing the cooperation of Columbia University to help the Brooklyn college was devised by Dr. Otto V. Huffman, secretary of the faculty of the college.

**Resolutions on the Deaths of Doctor Trudeau and Doctor Huddleston.**—We have received the following resolutions from Stony Wood Sanatorium, Lake Umbagog, N. Y.:

It is the desire of the Board of Directors of Stony Wood Sanatorium to place on record some expressions of our sorrow and sympathy at the untimely loss we have sustained in the death of Dr. Edward Livingston Trudeau.

Our own satisfaction, like so many other pleasures derived from the relief of suffering from tuberculosis, was due in its inception to the inspiration and splendid example of his actions and have a center in the early days of Stony Wood, the founders were greatly aided by his wise and generous counsel, and to the last of his life we are of use I serve to humanity we discuss that we possessed his sympathetic interest and loyal support. Doctor Trudeau was never too busy or too ill to give freely of his time to the problems and needs of Stony Wood.

In common with every tuberculosis hospital, every sanatorium, and every home into which tuberculosis has entered, we feel that we have indeed lost a friend.

HENRY L. SHERMAN, Committee.

The Board of Directors of Stony Wood Sanatorium desire to express their sorrow and feeling of the loss we have suffered in the death of Dr. John H. Huddleston.

In the examination of patients Doctor Huddleston gave generously his time and professional skill, and he brought to the service of Stony Wood in the medical board the gentleness, good judgment, courtesy, and sustained interest which characterized his work in so many phases of the warfare against tuberculosis.

His qualities of mind and heart commanded the respect and admiration of his associates, and it is with a deep sense of regret that we feel we shall no longer have the benefit of his large experience and valued counsel.

To Mrs. Huddleston and his family we wish to make known our profound sympathy in their bereavement.

HARVEY C. SPRADUE, Committee.

HENRY L. SHERMAN, Committee.

**Personal.**—A dinner was given in honor of Dr. Otto T. Freer, of Chicago, at the residence of Dr. Wolff Freudenthal, on Monday, December 6, 1915. Among the guests were: Dr. H. Arrowsmith, Dr. H. J. Boldt, Dr. Walter Bopp, Dr. Max Einhorn, Dr. Louis Fischer, Doctor Imperatori, Dr. S. Adolphus Knopf, Dr. H. L. Lynch, Dr. Harmon Smith, Dr. A. Stein, and Dr. F. Torek. Doctor Freer responded to an invitation of the German Medical Society and made an address on Opening the Frontal Sinus through the Nose.

Colonel L. M. Maus, Medical Corps, United States Army, retired, has been appointed secretary to the Kentucky State Tuberculosis Commission and is now living in Frankfort, Ky.

Dr. William Seaman Bainbridge, assistant surgeon, Medical Reserve Corps of the United States Navy, upon the invitation of Medical Director J. D. Gatewood, United States Navy, gave an interesting talk at the Naval Medical School, Washington, D. C., November 23d, on his recent experiences behind the English, French, and Belgian lines. His address was illustrated by lantern slides, some of which showed the character of wounds suffered by the soldiers and the measures used in their treatment.

Dr. William H. Allen, formerly director of the Bureau of Municipal Research, and one of its founders, has established the Institute for Public Service, at 51 Chambers Street, New York.

Dr. Joseph W. Walsh, of Brooklyn, has been presented with a Carnegie medal for heroism for his rescue of Mr. William Casey, secretary of the Aqueduct Commission, at Coney Island, last August.

Dr. H. Sheridan Baketel, of Brooklyn, has returned from Europe and has resumed practice at 54 Sidney Place.

Dr. John S. Billings has been appointed deputy health commissioner of New York city, succeeding Dr. Haven Emerson, recently appointed health commissioner. Doctor Billings will continue his work as head of the bureau of preventable diseases, and will also take charge of the work of dividing the city into health districts.

Pith of Current Literature.

CORRESPONDENZ-BLATT FÜR SCHWEIZER AERZTE

**Treatment of Tetanus,** by Theodor Kocher.—Magnesium sulphate has a symptomatically curative effect, antitetanus serum a prophylactic one. The latter should be used immediately in every case where a wound is suspected of being infected with tetanus and repeated on the fifth, eighth, and twelfth day. The established subcutaneous dose is ten c. c. As soon as the initial symptoms of tetanus appear, a twenty-five per cent. solution of magnesium sulphate should be injected subcutaneously in an amount proportioned to the weight. The maximum dose is 1.5 gram to the kilo, but on the average not over a quarter of this is used, repeated four times during the first day. The patient must be watched carefully so that the right moment may be seized at which to repeat the injection, as indicated by the onset of spasms, accompanied as a rule by an increase of the tonic rigidity. When the subcutaneous injection of the magnesium sulphate is inefficient, as it may be in bad cases, two thirds of the dose should be injected intramuscularly and the injection repeated six times in the twenty-four hours. In extremely bad cases, especially when cyanosis is present, the treatment must be very energetic from the start if the patient is to be saved; we may give an intravenous injection every hour or half hour, or etherize the patient and give an intramuscular injection, followed by repeated etherization and injections that may be intramuscular or subcutaneous according to the degree of effect. If respiratory trouble develops, which is not likely, an isotonic solution of calcium chloride may be injected. The surest and most lasting effect is produced by the intraspinal injection of very small doses given under ether, but this cannot be done in children because of the difficulties of artificial respiration and the frequent repetition. The patient must lie flat with the head—not the neck—supported by a pillow, and if the muscles of the trunk and thorax do not relax, the head must be lowered so that the body slants downward. This position induces danger of arrest of respiration, when artificial respiration must be started, preferably with the use of oxygen. The heart is not affected by the magnesium sulphate. Much credit is given to Meltzer throughout.

BERLINER KLINISCHE WOCHENSCHRIFT

**Lupus,** by P. G. Unna.—For mild cases and for recurrences it is not necessary to resort to the use of irradiation, Finsen light, high frequency currents, or carbon dioxide snow, for simple medical treatment will give excellent results. The most valuable drugs for local application are salicylic acid, zinc chloride, antimony chloride, creosote, and pyrogallol. Salicylic acid is the most effective, and creosote is a valuable adjunct for local pain. The following formula yields a very satisfactory ointment for local application:

|   |  |         |
|---|--|---------|
| R | Acidi salicylici, . . . . .                    | 3ss;    |
|   | Liquoris antimoni chloridi (Br P.) { . . . . . | āā 3ss; |
|   | Extracti cannabis indicæ, { . . . . .          | āā 3i;  |
|   | Creosoti, . . . . .                            | 3ii.    |
|   | Adipsi lauræ, . . . . .                        | 3ii.    |

M. Or a suitable salve can be made according to the following:

|   |                               |         |
|---|-------------------------------|---------|
| R | Acidi salicylici, { . . . . . | āā 3ss; |
|   | Zinci chloridi, { . . . . .   | āā 3i;  |
|   | Opri pulveris, { . . . . .    | āā 3i;  |
|   | Creosoti, . . . . .           | 3ii.    |
|   | Adipsi lauræ, . . . . .       | 3ii.    |

M. The lupus lesions should be kept covered with one of these salves continuously until healing is complete. Simple cauterization also gives good results when a mixture of equal parts of lactic acid and the solution of antimony trichloride is painted on the diseased region. One or two days after this application, the skin will be inflamed and should then be treated with a bland paste containing zinc oxide, sulphur, and chalk. If it is desired treatment may be by means of a collodion made as follows:

|   |  |            |
|---|--|------------|
| R | Acidi salicylici, . . . . .                | āā gr. xv; |
|   | Hydrargyri chloridi corrosivi, { . . . . . | āā gr. xv; |
|   | Creosoti, . . . . .                        | ℥xlv.      |
|   | Colloidi, . . . . .                        | 3v.        |

M. The application of this collodion leads to exudation and local reaction and should be followed by bland applications. In these remedies the curative properties lie in the combination of a caustic (chlorides) material with one which produces softening and maceration of the skin. In the secondary tuberculous skin lesions, such as those arising from the breaking down of tuberculous glands, treatment can be very satisfactorily carried out by means of the daily application of a soap of the following composition:

|   |                               |           |
|---|-------------------------------|-----------|
| R | Potassii hydroxidi, . . . . . | 3iss;     |
|   | Olei morrhue, { . . . . .     | āā 3viii; |
|   | Aque destillate, { . . . . .  | āā 3viii; |
|   | Alcoholis, . . . . .          | 3iiss.    |

M. A small amount of the soap should be placed on the skin, the hand moistened with water, and a lather formed which should be completely rubbed in.

ZENTRALBLATT FÜR HERZ-UND GEFÄSS-KRANKHEITEN

October 1, 1915.

**Nephritis syphilitica,** by A. Oiggaard.—The advice is given and urged that we should always examine the urine of a syphilitic before, after, and several times during treatment.

BULLETIN DE L'ACADÉMIE DE MÉDECINE.

September 28, 1915.

**Therapeutic Effects of Magnesium Chloride,** by Rosenblith.—A number of cases are reported in which suppuration was apparently rapidly inhibited by the external use of a 1.2 per cent. solution of magnesium chloride. Thus, in the case of a soldier wounded in the right sacrolumbar region by shrapnel, with paraplegia and extensive ulceration, whereas hydrogen dioxide or Labarraque's solution failed to arrest the extension of this ulceration, magnesium chloride dressings brought about rapid improvement of the wound, in spite of the markedly poor condi-



tion and emaciation of the patient. In a fracture of both bones of the forearm in which a deep sinus still persisted ten weeks after the injury, the institution of magnesium chloride dressings brought about complete healing in twelve days. In two cases of gonococcal rheumatism both the joint symptoms and the urethral discharge practically ceased when subcutaneous injections of magnesium chloride solution were given. In a patient suffering from acute gonorrhea for four days, the inflammatory or bacteriemic stage came to an end in less than forty-eight hours when three injections, each of two c. c., of magnesium chloride solution were given. Such injections may also be expected to yield benefit in septicemic states. Thus, in a wounded man whose evening temperature had held at 40° C. for three months, a drop of one to 1.5° C. took place after the third of a series of magnesium chloride injections, and the lower temperature level was maintained until complete recovery had taken place. Accelerated tissue repair, owing to inhibition of supuration through augmented phagocytosis, proved a prominent feature of the action of magnesium chloride solution in wound dressings.

**Typhoid Infections and Antityphoid Vaccination**, by Léon Bernard.—Comparative trial of the agglutination test, cultures from the feces, and cultures from the blood in a large number of cases led to the conclusion that the last mentioned method is alone trustworthy in the diagnosis of typhoid infection, especially as regards its differentiation from paratyphoid infections. Among 325 positive blood cultures, seventy-seven were typhoid and 248 paratyphoid. Among unvaccinated subjects paratyphoid organisms were found twenty-six times and typhoid thirty-two times, whereas among subjects previously vaccinated against typhoid, 167 showed paratyphoid and thirty-four typhoid organisms. The characteristic manifestations of typhoid disease were not modified by antityphoid vaccination, but the mortality was reduced from 21.9 per cent. in thirty-two unvaccinated patients to nil in thirty-four vaccinated. The mortality in paratyphoid cases was reduced from 11.5 per cent. to 6.58 per cent. by antityphoid vaccination. Bernard does not believe typhoid cases can be clinically differentiated from paratyphoid cases, except in their less severity. Paratyphoid and typhoid organisms should not be considered to belong to different species.

#### PRESSE MÉDICALE

Oct. 10, 1915

**Treatment of Suppurative Arthritis of the Knee**, by Léon Bérard and Barjavel.—Free incision of the joint and removal, if possible, of foreign bodies, is the first duty of the surgeon. Where the knee has not been subjected to extensive injury, Carrel's aspiration method may be sufficient to dry up the synovial cavity, even if discharge has been abundant, and to insure subsequent good function of the knee. This favorable result was secured in five out of eight cases; in the remaining three amputation was required. More frequently, in military practice at least, early arthrotomy, with multiple counter openings for drainage, is necessary. Two longitudinal incisions, five to ten cm. in length, should be made at the sides of the knee, in front of

the lateral ligaments. The synovial pouch beneath the quadriceps tendon should also be incised high up, and three large drains then passed from one incision to another, a species of triangle being thus formed. An anteroposterior drain passing through the popliteal space should be inserted only when absolutely necessary, as when there is pus situated behind. After irrigation of the joint with a one in 500 alcoholic solution of iodine, the limb should be placed in a stiff dressing, preferably of plaster. After the operation, insidious deeply situated abscesses should be carefully watched for, as these are often responsible for failure of the treatment. Where bony lesions, even slight, exist, arthrotomy almost always fails, and resection of the joint should be performed without delay—if not at the primary intervention, within a week of the arthrotomy. The sawed bony surfaces should be fixed closely together with metallic staples. Amputation is indicated where resection fails and where the initial injury was so extensive as to insure failure of conservative treatment.

**Significance of Tingling in Lesions of the Peripheral Nerves**, by J. Tinel.—Systematic study of the tingling produced by exerting pressure on a nerve will often yield useful information whether an interruption in the course of the nerve is complete or incomplete and as to the exact situation and extent of the lesion, and will permit of early detection of regeneration of the axis cylinders and of following its progress. In complete section of a nerve there will be noted, beginning four to six weeks after the injury, a short segment of the nerve trunk—not over two or three cm. long—pressure upon which causes tingling in the cutaneous distribution of the nerve. This condition remains exactly the same for weeks or months. On the other hand, in complete nerve interruption due to firm, constant pressure, e. g., in compression of the musculospiral nerve in fracture of the humerus, tingling will constantly result from pressure or percussion on a longer section of nerve, e. g., one from six to ten cm. in length. Incomplete nerve interruption, i. e., the presence of a lesion which does not obstruct the passage of regenerated axis cylinders, is characterized by tingling upon pressure on the nerve below the seat of injury and by progressive extension of the zone of tingling toward the periphery. Recovery after nerve suture can be promptly and exactly followed by careful observation of the "tingling sign."

#### RIFORMA MEDICA

November 6, 1915.

**Primary Perithelioma of Lymphatic Glands**, by G. D'Cría.—From observation of a case of this condition, the following conclusions may be drawn: It is possible to find a primary origin of tumors of the peritheliomatous type in lymphatic glands, and perithelioma may be a tumor of the malignant type like sarcoma and carcinoma. Many observers are of the opinion that a perithelioma is always a benign new growth, but the case in point shows distinct sarcomatous characters and consequent malignancy.

**Diagnostic Value of the Precipitreaction in Meningitis**, by M. Cassella.—Eight cases are reported, justifying the following conclusions: This

reaction may be an important and practical diagnostic element in epidemic, cerebrospinal meningitis. It responds better if followed by the Zonal method, and it is indifferent whether this is used by the cold or heat method, except that the latter shortens the technic and renders it less dangerous. The serum of cerebrospinal meningitis cases does not give the reaction either with the spinal fluid or with filtrates of cultures of meningococci. The serum of convalescents is actively precipitant, both with spinal fluid and filtrates of cultures.

## BRITISH MEDICAL JOURNAL

**Clinical Aspects and Diagnosis of Paratyphoid Fever**, by J. A. Löffler and F. H. Whittington.—Paratyphoid may be so mild and atypical that a complete bacteriological examination is required for diagnosis, or it may be as severe and typical as typhoid itself. It is difficult and unprofitable to attempt to distinguish clinically between paratyphoid A and B. The A form usually lasts from two to three weeks, the B from ten to eighteen days. About sixty per cent. of patients feel ill before the onset of marked symptoms, while the remainder are suddenly seized with chill and collapse. The common symptoms in order of frequency are: Headache, in eighty-five per cent.; diarrhea, in fifty-five per cent.; abdominal pain, in thirty-five per cent.; aching pains in the limbs, in thirty per cent.; shivering, extreme general weakness, and backache, each in twenty-five per cent.; and epistaxis in twenty per cent. Differing from typhoid patients, those with paratyphoid are usually dull and heavy, but can readily be aroused to mental clarity. The temperature has little tendency to the step ladder rise of typhoid, and is seldom high. The pulse is almost always slow, actually as well as in relation to the height of the fever. The blood pressure is also usually low. Large rose spots are both common and abundant, and occur up to late in the disease. The fever usually falls by crisis or short lysis. Complications and sequelæ are the same in type as after typhoid, but are less frequent and less severe. Hemorrhage is, however, quite common on account of the usual involvement of the large bowel in the inflammatory process. Paratyphoid B also shows considerable tendency to produce purulent lesions, such as orchitis, periostitis, empyema, and liver abscess. Both A and B forms tend to manifest brief relapses of mild type. The mortality of paratyphoid A is less than one per cent., that of B a little more than four per cent. Positive diagnosis can be made only in one of two ways; either by the isolation and cultivation of the paratyphoid organisms from the blood, stools, or urine, or by agglutination tests.

**Note on the Tetravaccine**, by Aldo Castellani and Ralph W. Mendelson.—Experimental studies carried out on animals showed that they developed immunity to each of several organisms injected simultaneously quite as effectively as if each was given separately. A tetravaccine was used containing 250 million paratyphoid A and a like amount of B bacilli, 500 million typhoid, and 1,000 million cholera organisms in each c. c. Three doses of 0.5 c. c. each were given at intervals of a week, but the third dose was found not to be essential. This vaccine has

been given to more than 50,000 men and has proved entirely harmless. Serious reactions were also wanting, the inoculated persons usually being able to work within twenty-four hours after each dose. Protective substances were developed in the inoculated men in amounts apparently as great as in control individuals inoculated with vaccines of only one type of organism. This tetravaccine has proved of value in the protective inoculation of troops, particularly since immunity of a relative effectiveness can be simultaneously secured against four common diseases of war.

**Treatment of Amebic Dysentery**, by George C. Low.—Emetine may be regarded as a specific drug in the treatment of the amebic form of dysentery and can be given intravenously, subcutaneously, intramuscularly, or orally. Intravenous administration may be adopted in moribund or fulminant cases, but the other methods are preferable for general use. The subcutaneous injections often result in local pain and stiffness which may last for several days, and the same effects may follow intramuscular injection, but are less frequent. Intramuscular injection is the most suitable method of administering emetine, but care should be taken to avoid giving successive doses into the same region. Intramuscular and subcutaneous injections are not followed by nausea or vomiting, even when large doses are used, but these symptoms may result from oral administration. So far as curative effects are concerned, there is no choice of mode of administration, so long as the drug is retained. For oral administration the drug should be given in keratin coated tablets at bedtime. For injection the dose should be two daily injections of a grain each for the first few days, and thereafter one grain every evening until a total of twelve grains have been given. If the symptoms are not all relieved, the disease is probably due to some cause other than the ameba. Emetine does not affect the ameba in its encysted form, but, in the experience of the authors, daily doses of one grain each quickly caused these forms to disappear from the stools.

## LANCET.

November 15, 1905.

**Wound Infections and Their Treatment**, by Albroth E. Wright.—Strong salt solution will influence wounds by reason of its physiological and physical properties and through its direct action on the infecting organisms. Two per cent. solutions will begin to inhibit, and five per cent. solutions will completely stop the growth of pyogenic bacteria. In the wound the hypertonic salt solution will cause a disintegration of many of the leucocytes with a liberation of trypsin and will thus favor autodigestion. In addition, it will stimulate the outflow of fluid from the tissues. These actions promptly lead to a softening and removal of the superficial slough and leave the wound surface clean with only a mild surface infection to combat. When this condition has been secured, a change to physiological salt solution will be indicated to promote the emigration of leucocytes to the free surface by chemotaxis. The leucocytes are not damaged by salt of this concentration and are strongly phagocytic. After such treatment the wound will be found to be almost free

from organisms. If measures are not taken to prevent it, the next step will be a breaking down of some of the leucocytes with the liberation of trypsin and the provision of a suitable culture medium and the wound will again become foul. When the favorable stage is reached, the next step should be the surgical closure of the wound by suture. With this method of treatment we should combine the use of vaccines prepared from those organisms proved in each case to be the most resistant to the normal destructive properties of the blood and lymph. These are usually the streptococcus and staphylococcus, the bacillus of Welch, and *Bacillus proteus*. Such a vaccine should be administered as soon as possible after the receipt of the wound. It is also of use after the organisms have established themselves in the tissues, but is specially valuable at the time of secondary suture after treatment with saline solutions.

**Nervous Affections of the Sixth and Seventh Decades,** by J. Mitchell Clarke.—The several forms of meningitis are uncommon or rare during this period, but tuberculous meningitis may occur and cause difficulty of diagnosis on account of atypical symptoms and the likelihood of being confounded with other commoner conditions. Cerebral hemorrhage and thrombosis are frequent causes of nervous affections, but they belong rather to the domain of vascular diseases. Intracranial tumors are rare at the time of life under discussion, and the same is true of cerebrospinal syphilis. True epilepsy may arise after the fiftieth year, but is relatively rare. Many of the commoner conditions of this age period may lead to epileptiform seizures, and the diagnosis of true epilepsy is, therefore, often difficult. Vertigo due to aural disturbances, increased intracranial pressure, cerebral vascular atheroma, aortic stenosis, granular kidney, and neurasthenia are very common and distressing nervous manifestations after the age of fifty years. Hysteria is not common, and patients who have formerly been affected with it often gain considerable relief after they pass fifty. Neurasthenia, also, is not a disease of later years, although it may occur at such time. The traumatic neuroses are, however, quite common and are likely to be very severe and remain more or less permanently established. Neuralgia is not at all infrequent in the later years of life and is a common manifestation of other systemic conditions, such as arteriosclerosis, renal disease, etc. Finally, paralysis agitans is essentially a disease of late life, its chief incidence being in the period between fifty and sixty-five years of age. It seems probable that some of the nervous affections which are common in these later decades of life are due to senescence, and the need for moderation in activity and diet to delay the effects of increasing years is obvious.

**Zinc in Potable Water,** by John C. Thresh.—Examination of drinking water from various sources showed that where it was conducted through galvanized iron pipes it took up in solution a variable, but considerable proportion of zinc in the form of the carbonate. The amount dissolved varied from 0.12 to nearly two grains in the gallon, depending on the length of pipe through which it had

passed and the period for which it had remained in contact with the pipe. Careful study of the health of communities using such contaminated water for long periods of time revealed no evidence that the water was deleterious, even to young children.

#### CANADIAN MEDICAL ASSOCIATION JOURNAL

November 25, 1911.

**Delivery by Hysterotomy,** by H. E. Kendall.—A young woman with a moderately contracted or male pelvis had had her first two children born dead after difficult forceps operations, and in each case had regained her health slowly. In three succeeding pregnancies, Cæsarean section was performed at term, the children were born healthy and without blemish, while she recovered from each operation rapidly and uneventfully. The second case was one of placenta prævia at five months. The patient had been bleeding for two months and was exsanguinated. The problem was to empty the uterus without loss of blood. Recovery was smooth and reasonably rapid. The third patient was suffering from eclampsia at full term, but labor had not begun. The child was removed by vaginal hysterotomy, the operation taking not more than twenty minutes. A living child was delivered, some blood was replaced by saline, there were no more convulsions, and consciousness returned in twelve hours.

**Dyspnea in Cardiorenal Disease,** by Thomas F. Cotton.—Dyspnea with slight cyanosis seen in elderly patients subjects of cardiac disease is due not to an excess of carbon dioxide brought about by insufficient aeration of the blood, but to an acid intoxication. This dyspnea often is of the Cheyne-Stokes type and is accompanied by various signs of cardiac failure; hypertension is common, renal impairment is constant, and wasting and a subnormal temperature are to be noted. There is probably no real difference between cardiac and renal asthma, and the dyspnea probably is due to renal insufficiency. In most cases it may be attributed to acid intoxication. The pure cardiac dyspnea is accompanied by an excess of carbon dioxide, which by rendering the blood more acid acts as a stimulus to the respiratory centre.

#### BOSTON MEDICAL AND SURGICAL JOURNAL.

November 25, 1911.

**Medical Aspects of Empyema and Pulmonary Abscess,** by Frederick T. Lord.—An immediate and free drainage of the pleural cavity is essential for prompt and permanent cure of a purulent effusion, except in cases in which the pus is sterile on cultivation, or contains tubercle bacilli alone, when an open incision is likely to be followed by a persistent sinus. When the patients are gravely ill, evacuation by thoracentesis may well be undertaken as a preliminary to operation, or as a life saving measure. In pulmonary abscess the clinical aspect of the patient is of prime importance in deciding between expectant and operative treatment. The general appearance and the degree of sepsis, measured by the temperature curve, the pulse rate, sweats, chills, and the white count, are valuable guides. Persistent septic features with an increasing amount of sputum and abundant elastic tissue or lung shreds, indicate an advancing lesion. The



chances of surgical relief diminish with the lapse of time.

**Recognition of Pleural Disorders by X Rays; Special Reference to Empyema,** by Percy Brown.

The employment of fluoroscopy, or visual examination with the screen, far exceeds in value the production of graphic records upon plates or films, or radiography, in acute or subacute pleural disorders, but the latter comes into its own when the subacute or chronic cases are to be considered, or when the variant dispositions of effusion are to be observed, including adhesions and empyema.

**Lung Abscess and Bronchiectasis from a Surgical Standpoint; End Results of Acute and Chronic Empyemata,** by Wyman Whitemore.—Although the operation for acute empyema may be a very simple one, yet the results have been far from satisfactory. After an acute case becomes chronic the outlook for the patient as a useful member of the community is questionable. Surgery has little, if anything, to offer cases of bronchiectasis at the present time, but in lung abscess its prospects are becoming encouraging.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

*November 27, 1913.*

**Artificial Pneumothorax,** by Theodore B. Sachs.—As a result of analyzing the reports of twenty-four American observers, the author reaches the conclusion that the sphere of application of this remedial measure is being modified by experience so as to include all progressive cases of pulmonary tuberculosis, especially when unilateral, irrespective of the stage of the disease, if after a sufficient trial they have not responded to strict sanatorium treatment. For safety and to secure the best results this treatment requires hospital or sanatorium supervision. By this means we can best secure continuous clinical, laboratory, and x ray observation, can avoid complications, and determine for each individual the times for subsequent inflations. Conservatism should guide us in each successive step in the gradual attainment and maintenance of satisfactory compression. The treatment cannot be made subject to rule, but must be specially studied with reference to individual needs.

**Lymphoid Marrow and Tuberculosis,** by Leonard W. Ely.—Experiments on guineapigs proved their lymphoid bone marrow to be a good field for human tubercle bacilli, and lent weight to the view that tuberculosis of bone was determined by the presence of lymphoid marrow. The evidence in favor of this contention is that the disease is found only in bones with such marrow; that it is common in children, in whom such marrow is abundant; that the disease disappears after resections in adults; and the results previously obtained experimentally on guineapigs.

**Effect of Typhoid Vaccination on the Widal Reaction,** by C. D. Hamilton.—Careful observations on the agglutination reactions of patients at different intervals of time after prophylactic typhoid inoculation were conducted to determine the effect which the inoculation had on the Widal test. Ten specimens of blood taken one month, six months, and one year after inoculation all gave positive Widal reactions. After twenty-four months seven

of ten samples of blood gave positive reactions, and six out of ten were positive thirty-six months after inoculation. Only three positive reactions were obtained from the ten specimens forty-eight months after inoculation, and one patient still gave a positive reaction fifty months afterward. A positive Widal reaction cannot be considered of diagnostic value in a person who has ever been prophylactically inoculated.

**Radium in Carcinoma of the Cervix and Vagina,** by Howard A. Kelly and Curtis F. Burnam.—Ten of fourteen surgical cases were operated in and treated prophylactically with radium. Of these, two have been well over three years, one over two years, four over one year, and three for more than six months. In the four cases not operated in, all were treated with radium and two have remained well for over three years and the other two for over one year. Fifty-three patients out of 199 were clinically cured by radium, 109 greatly improved, and thirty-seven have not been improved. Of the fifty-seven clinical cures, one patient has remained well for six years, three for over four, four for over three, and five for over two years.

**Painful Feet,** by Henry W. Frauenthal.—Attention is called to the frequency with which the lesions of the feet resulting in chronic painful states are due to secondary infections arising from some primary focus elsewhere in the body. In the treatment, it is desirable to eradicate this primary source. Dental and gingival infection is a possible primary cause, nongonorrheal leucorrhea, chronic gonorrhea, tuberculosis, and syphilis are common causes, the latter two infections directly involving the feet.

**Stability of Infusion of Digitalis,** by R. A. Hatcher and Cary Eggleston.—Infusions prepared according to the pharmacopeial directions with ten per cent. of alcohol, and others prepared without alcohol were found to retain their activity for two weeks or over when kept cool. A specimen which was opened frequently and kept at room temperature lost nothing in activity in three weeks. Deterioration was slow in one specimen planted with colon bacillus, and in another deliberately contaminated with floor sweepings. The general conclusion was that the infusion, when properly prepared with ordinary care for cleanliness, would retain its activity under ordinary conditions for at least a week. The addition of alcohol was not found to be necessary.

**Mercury Salicylate in Syphilis,** by Kent Nelson and E. A. Anderson.—Working with military prisoners under conditions of perfect control, and relying on Wassermann tests performed by the same man throughout, the authors found that the objective symptoms of syphilis would yield slowly to this drug, but that the Wassermann reaction could never be rendered lastingly negative. They express the belief that the treatment, unaided, does not possess real curative value.

**Constitutional Symptoms after Deep Röntgen Therapy,** by Sidney Lange.—On the strength of the belief that the local changes due to x rays are in the nature of an acidosis and can be relieved by the local use of alkalis, large doses of sodium bicarbonate were tried for the prevention of constitutional symptoms. In most cases thirty grains of

sodium bicarbonate every three hours before exposure, and for forty-eight hours afterwards, ameliorated or prevented constitutional symptoms.

# JOURNAL OF MEDICAL RESEARCH

## MEDICAL RECORD

**The Form of Typhus Endemic in New York City.** by Nathan G. Phillips. The epidemic of the mild or endemic form rarely goes to the hemorrhagic or purple stage, being always an erythema. Headache, characteristic of the disease, is more lasting and progressively more intense up to the end of the illness, whereas in the epidemic form it rarely lasts more than one week. The mortality in the mild form is less than 0.25 per cent., only one death having occurred in over 400 cases on the records at Mt. Sinai Hospital. The period of greatest prevalence is in the summer, while the epidemic form occurs usually in winter. The endemic form shows no evidence of being communicable. It seems also that the body louse is not an important factor in the transmission of the disease, as this parasite dies in warm weather. Some other agent must be looked for to explain the origin and spread of the mild form of typhus. Plotz's *Bacillus typhi exanthematici* seems to be the specific exciting cause in all cases. The term Brill's disease should now be dropped and the condition should carry the name of endemic typhus fever.

**Immunized Milk as a Prophylactic and Remedy in Tuberculosis,** by Julius Rosenberg.—Cattle tuberculosis is rapidly increasing and tuberculous milk is everywhere. Certified milk does not assure milk from healthy cows, while butter and even cheese may be the source of infection. Pasteurized milk is not sterile and pasteurization cannot transform a diseased product into healthy milk. Cows reacting to the tuberculin test only mildly should be segregated from both the diseased and the healthy animals. As a safeguard of a healthy cow, prophylactic vaccination is a great success. This protective vaccination not only immunizes the cow, but produces immunized milk which is a remedy for tuberculosis. Immunized milk possesses antibacterial qualities like the blood serum of animals which have been immunized, and is a dilute antitoxic and bactericidal serum. Drinking this milk transmits the antibodies which pass through the intestinal mucous membrane into the general circulation. The presence of these antibodies in the milk has been proved by extensive experiments conducted under the supervision of the department of health in New York. It is now possible to obtain a standard immunized milk from the dairy companies. The technic of immunization is, first, the tuberculin test, and then three to four subcutaneous injections of vaccine.

**Salvarsan and Mercury in Primary Syphilis.** by John Constat.—Salvarsan, in spite of occasional severe complications, is still the remedy *par excellence* for syphilis. In 1,161 cases where salvarsan or neosalvarsan was administered, Constat had no more serious complications than slight fever, headache, vomiting occasionally, and a feeling of malaise. Observation of the eighteen cases reported causes the conviction that from two to five injections are sometimes necessary to cure primary syphilis. At least six Wassermann tests with one provocative test should be made before a cure is expected.

**Bacteriological Study of an Epidemic of Septic Sore Throat,** by Krumwiede, Jr., and Valentine.—In the study of an outbreak in Long Island, it was found that septic sore throat was milk borne; the evidence indicates that the original infection comes from cases of sore throat among those engaged in handling the milk and not from the cow. It was noted also that there might be an infection of the cow's udder by the human streptococcus without an accompanying mastitis. Consequently in tracing such an epidemic too much reliance must not be placed on the examination of the cow's udder, but bacteriological examinations of the throats of those coming in contact with the milk should be made.

**Blastophthoric Effect of Chronic Lead Poisoning,** by Weller.—In his experiments on guinea pigs Weller found that there was a distinctly deleterious effect exerted on the germ plasma in chronic lead poisoning. In the male it was characterized by sterility, by a reduction of approximately twenty per cent. in the average birth weight, by an increased number of deaths in the first week in life, and by a general retardation in development, so that the offspring of a lead poisoned male remained permanently under weight. The offspring of a lead poisoned female are underweight at birth and are very frequently stillborn. The experiments indicated that the reaction of the poison was on that portion of the germ plasma which was undergoing maturation and not on that which is stored as undeveloped germinal epithelium.

## ARCHIVES OF INTERNAL MEDICINE.

**Inactivation of Pepsin by Sodium Chloride,** by W. W. Hamburger.—The observation was made that sodium chloride, used in the form of physiological saline solution, will, in the absence of hydrochloric acid, completely prevent pepsin from digesting protein. Hydrochloric acid added after this inactivation by sodium chloride fails to reactivate the pepsin. When pepsin is dissolved in an acid solution, simple neutralization of this acidity, without addition of sodium chloride, suffices to cause permanent inactivation of the pepsin, the necessary sodium chloride having been supplied through the interaction between the hydrochloric acid and the alkali. Present methods of treatment in hyperacid conditions of the stomach include merely a reduction of the degree of acidity. The ideal alkaline treatment, on the other hand, should aim at complete and continuous neutralization, to the end that peptic digestion, which, next to mechanical trauma, is probably the chief factor in promoting gastric ulcer, may be prevented. Clinical investigations showed that by the use of certain alkalies, combined with certain methods of feeding, complete and continuous neutralization can be effected. This condition is useful, not only as a prophylactic measure against gastric or duodenal ulcer, but to facilitate the healing of actual ulceration.

**Observations in Infantile Tetany,** by Almon Fletcher.—Metabolic studies in a case of infantile tetany failed to support the view that a disturbance of calcium metabolism accounts alone for the nerve

apparently in this disorder. It is suggested rather that the condition results from a disturbance of the concentration equilibrium of various salts. It was thought that such salt changes would probably be associated with gastrointestinal disturbances and decreased renal activity, and, indeed, in the author's case, as improvement in these two functions took place, restoration of salt equilibrium ensued and the patient, a male child thirteen and a half months old, recovered. The treatment consisted in the administration of a milk mixture made up of evaporated milk, ten ounces; barley flour, one and a half ounce; lactose, one ounce, and water, up to forty ounces. Eight ounces were given every four hours, five times a day. Codliver oil, twenty minims, and phosphorus, 1/300 grain, three times a day, were also given and later one gram of urea was added to the food daily as a diuretic. A striking change in the child's condition soon followed.

**Significance of the Estimation of Urobilin in the Stool in Pernicious Anemia**, by O. H. Robertson.—Variations in the output of urobilin in the stools, estimated by the method of Wilbur and Addis, may be taken as an index of the course of the disease. Such variations may occur before there is any change in the number of red cells, and their determination constitutes the most accurate means available of estimating the effects of therapeutic measures, such as splenectomy, blood transfusion, and salvarsan injections. Where the urobilin output is high, indicating that hemolytic blood destruction is taking place to a considerable extent, relatively favorable effects are to be expected from splenectomy, the spleen being the chief hemolytic organ. Where the urobilin output is low, and the anemia results chiefly from depressed marrow functioning, little or no benefit from splenectomy should be expected.

### Proceedings of Societies.

#### AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

*Eighty-ninth Annual Meeting, Held at Pittsburgh, September 17, 18, and 19, 1915.*

The President, Dr. CHARLES L. BOSTFIELD, of Cincinnati, in the Chair.

**Local Anesthesia in Herniotomy.**—Dr. J. H. JACOBSON, of Toledo, at the Providence meeting of the association in 1913, had reported twenty-eight operations for the radical cure of inguinal hernia performed under local anesthesia. Since that time he had done ninety-six operations for the radical cure of inguinal hernia; six operations for the radical cure of strangulated inguinal hernia; seven operations for the radical cure of femoral hernia; five operations for the radical cure of strangulated femoral hernia; three operations for incarcerated femoral hernia; two operations for incarcerated umbilical hernia; and five operations for incisional hernia, a total of 124. There had been no deaths.

His further experience with this method of performing herniotomy had convinced him that, whenever possible, such operations should be performed

under local anesthesia. The only exception to this rule should be in herniotomy in children and where the operation must be performed in uncontrollable nervous adults. The latter exception in actual practice was not as frequent as they might think, for the reason that most nervous individuals could be controlled by carefully explaining to them the nature of the operation and the reasons for operating under local anesthesia.

A preliminary hypodermic injection of morphine and scopolamine or pantopon and scopolamine was usually sufficient to allay all nervousness, and the operation could proceed even in nervous patients with the same facility as under general narcosis. In only three of the operations was it necessary to complete the operation with a slight amount of ether. These were among the earlier operations. Local anesthesia recommended itself for hernia operations because it assured the patient absolute safety. No other form of anesthesia gave the same degree of safety as did the modern Braun technic of local anesthesia. When a surgeon had mastered the few principles which were necessary for success in local anesthesia, he would soon abandon all other anesthetics in herniotomy. He had never observed the slightest toxic effect from the use of the one half per cent. novocaine and adrenaline solutions which he had employed for these operations. The frequency of hernia in otherwise normal patients should make it the most common of all surgical operations. This would be only when the entire surgical profession gave such patients a method which involved no danger to life and which allowed a maximum of cures. These conditions were at the present time best fulfilled by the use of local anesthesia.

Dr. JOHN W. KEEFE, of Providence, said his experience was in accord with that of the essayist. He had done a number of hernia operations with the aid of local anesthesia. Recently he had been using morphine and scopolamine previous to using cocaine and adrenaline. He found that scopolamine made the patient so excitable that in a few instances he had to defer the operation to another day. This might be due to some peculiarity on the part of the patient. Most of the operations for inguinal hernia could and should be done under local anesthesia.

Dr. ALBERT VANDER VEER, of Albany, said they had reached a point when the majority of the profession were in favor of local anesthesia, and yet the subject was not definitely settled because it should receive a good deal of consideration, not only from the State but their National associations. He did not believe a hernia operation should be undertaken in children under local anesthesia; a general anesthetic was best.

Dr. WILLIAM H. HUMISTON, of Cleveland, stated that any one who had seen Doctor Jacobson operate under local anesthesia would be convinced that he was a master. In following an exclusive method of anesthesia, one was inclined to make every case submit to that form of anesthesia, and in his early work he soon found out that this was poor judgment. It was necessary to select cases.

Doctor JACOBSON did not think they ought to consider local anesthesia without adopting the modern technic of Braun, and they ought to eliminate



cocaine on account of the disturbances following it and the danger. When they became familiar with local anesthesia and the method of giving it, it would appeal to them. His plea was to get more of these cases of hernia in which to operate as they could assure these patients absolute safety.

**Intestinal Obstruction and Volvulus.**—Dr. RUFUS B. HALL, of Cincinnati, reported a case of intestinal obstruction and volvulus, caused by a large gallstone. He emphasized the statement that the profession generally did not regard gallstones in which the patient was not a great sufferer as surgical. These cases were treated by physicians most contentedly and hopefully, with very indefinite results so far as permanent relief was concerned, being variously described by such vague terms as stomach symptoms, discomfort after meals, indigestion, neuralgia, gastritis, liver derangement, etc., and treated for years without permanent benefit. He believed that they were surgical and he recommended exploratory operation in all chronic cases in which there was a clear past history of one or more acute attacks. If an exploration was made at that time, it would not be a serious operation and would avoid many of the serious complications that were likely to develop later. In cases in which the stone, through ulceration, passed into the bowel, the patient was subjected to great danger, even if he survived. That any patient survived the many dangers attending this tedious process was marvellous. When intestinal obstruction occurred, it was so many years after the acute attack that the real cause was not recognized until revealed at the operation or autopsy. The long past history of gallstone was ignored or forgotten. The advanced treatment of exploratory incision which he recommended for this very large class of suffering patients ought to be used by all men engaged in special abdominal surgery, thereby educating the family physician to call for a consultation in these cases more frequently than was the custom.

Dr. HUGO O. PANTZER, of Indianapolis, stated that the case cited by the essayist brought to his mind one instance which was to him very instructive. The first case was reported by Doctor Elsner, of Rochester, N. Y., about twenty odd years ago. In that case a stone of similar size to the one described by Doctor Hall following a history of gall-bladder trouble, was attended by attacks of acute obstruction. The patient, when seen, in each of the attacks, showed a different part of the abdomen to be the seat of obstruction, and when finally the stone was passed by the rectum, the thing was easily explained. The stone created local irritation, and within the musculature the adjacent parts would open spastically, then close upon it, and the obstruction was explained in that way. Under the influence of medication, and in one or two attacks without medication immediately preceding, the spasm relaxed and the stone went farther down. This was unusually interesting, inasmuch as it was complicated with volvulus, and he believed Doctor Hall's case was about the only one of the kind ever reported.

Dr. FRANK D. GRAY, of Jersey City, said that all of them every now and then learned from their own

experience and the observation of others the importance of dealing with abdominal conditions promptly. If this particular case had been operated in promptly, there was no doubt the woman's life could have been saved, and the plea he would make was to give heed to the undoubted and persistent symptoms, go in, find the trouble, and relieve it.

Dr. FRANCIS REIDER, of St. Louis, found this case of interest from two points of view. First, what a gallstone could do; second, the promptness with which the patient died after the operation without regaining consciousness. Another interesting feature was the cause of death, which he attributed to the violent peristalsis. There were other factors to be considered. The principal one was that of anesthesia, which might be looked upon as a contributory cause of death. He presumed it was a general anesthetic. The resisting power of the patient had been underestimated. He should say that the case was one for local anesthesia and for exploratory operation.

Dr. GORDON K. DICKINSON, of Jersey City, stated that if thirty per cent. was their accurate diagnostic value in the abdomen, then operation should be done promptly, and more on suspicion than on an accurate diagnosis, more on opinion that something was wrong than to wait until they felt that something was positively and surgically bad. In Europe or in Mexico or in the abdomen, watchful waiting was bad policy. In going over his cases and studying them carefully, he found that death in many of them was due to dilatation of the right side of the heart, which came on quickly after an abdominal operation, owing partly to the anesthetic, and partly to the condition of the heart before he took the case. The fact that the abdomen was relieved of its pathological condition made him feel that possibly in the case of Doctor Hall there was a right sided heart failure.

Dr. J. HENRY CARSTENS, of Detroit, agreed with the essayist and with Doctor Gray that they did not perform these operations early enough. If they could make a diagnosis and resort to an exploratory operation promptly, they would never have so many of these cases go to the bad.

Dr. MAGNUS A. TATE, of Cincinnati, said the case reported by Doctor Hall reminded him of one he saw five years ago. A woman, sixty years of age, had been complaining of progressive pain and tenderness for a number of years. One day she was taken with severe vomiting, which kept up, the abdomen was distended, and he tried his best to persuade her that a section was necessary. She refused to undergo an operation. Later she was operated on, and a large stone, two and one half inches in diameter, was found in the intestine, about six inches from the gallbladder. The intestine was gangrenous and ready to burst. In making the resection a portion of the contents escaped into the abdominal cavity. The patient went into a state of collapse and died about three hours after the operation.

Dr. JOHN F. ERDMANN, of New York, had five cases of intestinal obstruction from gallstone in the past ten years, and of this number four were fatal. Strange to say, the recovery was in a woman.

seventy-two years of age, upon whom he did an enterostomy and appendectomy. She also had a large tumor of the right ovary which was mistaken for appendicitis.

Dr. HERMAN E. HAYD, of Buffalo, recalled a patient, a woman, seventy-nine years of age, who had practically no symptoms. So far as the passage of a stone was concerned, she never had an attack of violent pain, and yet the stone found was as large as a small hen's egg. He was called to see her when she was having fecal vomiting. She vomited for two days. Finally, he operated, removed the stone, and she lived five days after the operation. There was no history of ulceration nor of an inflammatory attack. The stone was found in the bowel and the symptoms were those of intestinal obstruction.

Dr. ALBERT VANDER VEER, of Albany, in his collection, had a specimen which he obtained many years ago. A patient whom he had attended some fifteen years previously, was taken very ill and had what he supposed to be acute jaundice. The patient recovered from this attack and lived fifteen years afterward in good health. At the time of death, he was allowed to make an autopsy. He suspected the patient had some malignant disease of the intestinal tract. He found a direct communication between the neck of the gallbladder and the beginning of the transverse colon. He believed this man in his previous illness had passed through a form of sickness that had resulted in relieving the gallbladder of stones, and they had passed out through the large intestine. The fistulous tract gave him no great inconvenience.

Dr. CHARLES L. ILL, of Newark, stated that in forty cases operated in by his brother and himself, they found three large gallstones in the small intestine. In one case they found a mass between the small intestine and the gallbladder. In three cases large gallstones were passed through ulceration into the intestine, caused obstruction, and killed the patients.

Dr. D. TOD GILLIAM, of Columbus, said that when they spoke of being unable to find a gallstone or gallstones near the lower part of the ileum, there was reason for it. The upper part of the intestinal canal was larger in calibre than the lower, and a gallstone would pass down pretty well toward the entrance of the ileocecal region before it became inspissated, and the lower part of the ileum was less distensible than the upper part. This should teach them the lesson that whenever they found great distention of the abdomen along with obstruction, it should always remind them there might be gallstones at the bottom as a factor.

Dr. JOHN NORVAL BELL, of Detroit, asked the question, How do these large stones get into the bowel? The case he had would perhaps elucidate that in a measure. A woman, sixty-seven years of age, who had never had any pain, but simply heaviness and fullness, had a palpable tumor of good size. It was hard to determine its nature. On opening the abdomen he found it was a large thickened gallbladder full of stones. There was one stone four times the size of the one Doctor Hall had described.

Dr. WILLIAM EDWARD DARNALL, of Atlantic City, recalled a case he saw a year or two ago in

which he operated on the diagnosis of appendicitis with all of its symptoms, and when he got inside he found a small puddle of pus and fished out a stone about the size of a goose egg. It was about one eighth of an inch thick, with a hard shell of calcium salts. This enterolith, which it was undoubtedly, had got several accumulations of bile salts which under some circumstances went on to a full gallstone. The question they needed to think about was, What was the composition of the stone?

**Cholecystectomy versus Cholecystostomy.**—Dr. L. W. SWOPE, of Pittsburgh, said no absolute rule could be laid down to guide them in determining when cholecystectomy was preferable to cholecystostomy, yet there should be some way of ascertaining why there was so much higher percentage of cures after removal of the gallbladder than after draining. From the former cases in the patients who survived operation and answered his inquiries, he got a report of 96.8 per cent. cures, and the remainder suffered from symptoms which probably indicated associated gastric or pancreatic disease. On the other hand, in cholecystostomy there were only 74.8 per cent. of cures, the remainder being no better and many of them worse than before operation. In considering the latter it was of course true that in many of them the disease was so advanced and adhesions were so extensive that removal of the gallbladder was out of the question because of the high mortality in such cases. There were still a large number where it seemed to be reasonable to suppose that better permanent results would have been obtained by removal of the gallbladder instead of drainage. This argument received verification in the results obtained in the two stage operation, where for some reason he decided to drain the gallbladder at the first operation and remove it four to eight weeks later.

The question was how to decide intelligently between these operations. It was again a matter of mortality which was slightly higher in cholecystectomy than in cholecystostomy, 2.3 per cent. compared with 2.5 per cent. The former was cut down by choosing the drainage operation, whereas the conditions indicated increased risk from removal of the gallbladder. The dangers of cholecystectomy included the possibility of injuring the ducts, vessels, and surrounding viscera from the manipulations necessary to free the adhesions. When adhesions were so extensive that the removal of the gallbladder would be attended with marked traumatism and left large areas of raw surfaces to be covered, then because the primary mortality was so high and the hope that subsequent complications would not arise was so uncertain, that he believed better results were obtained by drainage of the gallbladder. While he believed that a diseased gallbladder, like a diseased appendix, should always be removed when possible, still there were exceptions.

Because primary removal of the gallbladder opened up so many tracts for the possible extension of infection, and because experience had shown that occasionally a patient did die from acute sepsis in infections of this kind, he was convinced that such a gallbladder should be drained with as little manipulation as possible. Then at the end of four to eight weeks, if recovery was comparatively com-

plete, the gallbladder should be removed, as these were the patients who were left with a chronic infection which advanced so insidiously that years might elapse before the return of symptoms; but when they did return, the involvement of the upper abdomen was frequently too extensive to permit complete removal and ultimate cure. These cases also offered favorable sites for subsequent malignant degeneration. In advocating cholecystostomy in infective cases he did not include hydrops and chronic empyema of the gallbladder in a quiescent state, as cholecystectomy was safer where the infection had ceased to be active.

Dr. JOHN F. ERDMANN, of New York, presented to the association last year three hundred and some odd cases of gallbladder operation, with a mortality rate that to him was rather shocking because he did not feel that he had secured such a low mortality as he should have done. He was speaking more of the mortality rate in association with that presented by the author of the paper. As to cholecystectomy versus cholecystostomy, he said that activity, efficiency, and morbidity were the things they all should consider to reduce the mortality to the lowest point. Anything that would increase efficiency must of necessity decrease morbidity, and cholecystectomy without any question limited morbidity and increased efficiency. As a result of his statistics last year, he had been doing cholecystectomy practically in every case. There were some cases, however, in which they must do cholecystostomy.

Dr. C. S. FOSTER, of Pittsburgh, said there was an indication for taking out gallbladders that were without symptoms. For instance, if they suspected the ducts to be enlarged and the glands enlarged down along the ducts, independently of pancreatic disease or of involvement of the viscera or the stomach, they knew that such a gallbladder was infected and ought to be taken out.

Dr. JOHN W. KEEFE, of Providence, said that they ought not to operate during the acute stage of inflammation in gallbladder disease. Occasionally, they would have a perforation and gangrene, and there would be a few cases in which it was necessary to operate during that period, but if they could keep away from operation and wait until convalescence was established, they would meet with greater success when they did operate.

Dr. FRANCIS REDER, of St. Louis, said that in regard to feeding a patient on ox gall who was deprived of bile salts, if they were reasonably certain that the patient's bile was in a normal condition, they could feed that patient with his own bile by simply making him drink it. He would reject it at first, but by introducing the bile through a stomach tube, the patient would retain it.

**Unusual Contents of Inguinal Hernia.**—Dr. CHARLES W. MOOTS, of Toledo, after reviewing extensively the literature upon hernia, reported the following case: Mrs. S., aged thirty-eight years, resident of Detroit, family history unimportant. She had never suffered any illness necessitating her remaining in bed. She never had any suggestive urinary symptoms; furthermore, her first menses occurred at twelve years of age, were always pain-

ful, periods too frequent, with profuse flow, the hemorrhages being increased during the past year. About nine years previously, she noticed a lump the size of a hickory nut in the region of the right internal abdominal ring. It remained about the same size for eight years, when it came lower and appeared to double in diameter. At this time it also became very painful. Operation was performed August 22, 1914, under preliminary hypodermic injections of morphine and scopolamine, nitrous oxide and oxygen, and field blocking anesthesia. He made the usual skin incision and then found that the mass could not be pushed upward into the inguinal canal, as it was adherent to the labium majus. An elliptical portion of the labium majus was excised in order to free the mass, which now gave him the impression that he was dealing with a kidney. However, it being almost beyond the point of identification, an opening was made in the peritoneum, when the right kidney space was explored and found deserted. It then occurred to him that it was well to know something at least of the left kidney. Sweeping the hand across the peritoneal cavity, the left kidney was found normal as to size, site, and feel. Dropping the hand into the pelvis, he found what proved to be a parovarian cyst, three and one half inches in diameter, a subperitoneal fibroma the size of a walnut situated on the fundus uteri, and a hydrosalpinx of the right tube. The exploratory incision into the peritoneum was quickly closed, followed by a nephrectomy of the useless right kidney, and the inguinal canal closed in the usual manner. The time consumed after starting the gas was forty-two minutes. A median incision was then made, the parovarian cyst, the uterine fibroid, and the right tube were removed, and this was followed by the usual closure. The time of this latter operation was twenty minutes, making in all one hour and two minutes for the period of anesthesia. The kidney was composed of a mass of small cysts about one half inch in diameter. The recovery of the patient was uneventful, and she left the hospital at the end of two weeks in fine physical and psychical condition.

(To be continued.)

## Letters to the Editors.

### ADVENTURES OF A SHOE BUTTON.

NEW YORK, D. C.

To the Editors

In the last issue of your JOURNAL I notice you quote McMillan in the *Lancet* on his method for removing beans from the nostril. It reminded me of a roundabout way taken by a case that came to me some years ago when I was at the seashore during the summer months. A girl about twelve years old had pushed a shoe button into her nostril. The father, in his efforts to dislodge it, had pushed it farther along. The druggist who was then consulted, put it still farther on its way. I was the last resort. The only thing I could do was to push it through into the pharynx.

The button was promptly swallowed. I assured the father there would be no serious trouble, so the child left in a happy frame of mind and went in bathing. She swallowed some salt water, was nauseated, and vomited the button.

F. J. BOWLES, M. D.



## Book Reviews.

[As a public list of books received, we are a knowledgeable as well as a pleasure to receive them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*The Principles and Practice of Medical Treatment, Part II. Methods of Treatment. Part II. Agents in Treatment.* Edited by W. LAMBSON BROWN, M.D., F.R.C.P., Assistant Physician to St. Bartholomew's Hospital and Physician to the Metropolitan Hospital, and J. EDWARD MURPHY, M.C., F.R.C.S., Surgeon to the Miller General Hospital for South-East London and to Paddington Green Children's Hospital. With an Introduction by Sir THOMAS CLIFFORD ALLIBON, K.C.B., M.D., F.R.S. London: Henry Frowde (Oxford University Press); Hodder & Stoughton, 1915. Pp. xxiii-874.

This is another monumental work on medicine or medical treatment, as the authors put it, but there is evidently always something new to say, and the two editors have collected the contributions of many skillful writers, whose names appear in an introduction. We note that these writers are all, in their specialties, in the front rank of British authors, and hence in the various portions of this work we find an abundance of careful and practical writing. They are also quite up to date, an important element of success and of real use in a book of this kind. The first part is devoted to the dietetic factor in treatment; in the course of this exposition we find many new and even striking observations on protein and carbohydrate metabolism, on the functions of fat, on the disadvantages of fat, on vitamins, on rectal and subcutaneous feeding. These subjects were in need of sound discussion. There is a section devoted to infant foods. In the next part, the nonoperative treatment of cancer is described, with chapters on radioactivity and palliative measures; good sense and experience have evidently guided the writers. Chapters on climate and disease, on the treatment of elementary school children are included in this part. How seldom have we had an occasion to find such subjects adequately treated in textbooks! In these respects this work is remarkably advanced. Technical subjects are not neglected; there are valuable chapters on serums, the specific treatment of pneumonia, uses of quinine in malaria. Medical treatment proper takes up the greater part of the book, and there is a corresponding space given up to surgical treatment, that is, to the treatment of appendicitis and other kindred maladies exclusive of the purely operative treatment. As a work for the physician anxious to know what is the practice of the immediate present, we find this book most informing.

*Diseases of the Digestive Organs.* With Special Reference to Their Diagnosis and Treatment. By CHARLES D. AARON, Sc.D., M.D., Professor of Gastroenterology in the Detroit College of Medicine and Surgery; Consulting Gastroenterologist to Harper Hospital. Illustrated with 154 Engravings, 48 Röntgenograms, and 8 Colored Plates. Philadelphia and New York: Lea & Febiger, 1915. Pp. xxxviii-790. (Price, \$6.)

To render available to the practitioner all the resources of gastroenterology and stomatology, as well as of hepatic and pancreatic diagnosis and treatment, was the author's aim in writing this book. That he has succeeded in producing a very useful and practical work cannot be gainsaid, the clinician's needs being satisfactorily met, and due attention paid to recent progress in various lines. Special care was evidently taken in the preparation of the preliminary sections on the methods of diagnostic examination and on treatment by dietetic, physical, hydrotherapeutic, and medicinal measures. These sections on general subjects occupy over one third of the book. Chapter iv, on Röntgen ray examination, with numerous photographs illustrating the interpretation of x ray plates in gastric, intestinal, and hepatic affections, is well calculated to convince the practitioner of the value of this modern method of diagnostic exploration. The technic of massage in gastrointestinal disorders is minutely described. Stress is laid on American mineral waters in treatment; insufficient appreciation having, in the author's estimation, been given them in comparison with the European waters. In the sec-

tions on special diseases, separate chapters are devoted to enteritis membranacea, strictures of the intestine, and intestinal parasites. The paragraphs on treatment are usually complete, and the volume as a whole is of corresponding utility.

*A Manual of Surgery.* For Students and Physicians. By FRANCIS T. STEWART, M.D., Professor of Clinical Surgery, Jefferson Medical College; Surgeon to the Germantown Hospital; Out-Patient Surgeon to the Pennsylvania Hospital. Fourth Edition. With 580 Illustrations. Philadelphia: P. Blakiston's Son & Co., 1915. Pp. xi-774.

There are so many excellent works on surgery written for the undergraduate and the medical practitioner desiring a guide to present day surgery that further multiplication of such literature seems hardly necessary. Should an author, however, have some new method of dealing with surgical topics or some original matter to present, a work containing such novelties is always acceptable. The present volume, however, seems to have no such excuse. It is a collection of chapters dealing with surgery, general and regional, in which the material is taken from other authors and in which the main idea seems to be conciseness. Its main value will probably be in giving to the students at the author's medical school an idea of the surgical methods there in vogue and thus to supplement the lectures and clinics. As a book presenting the general theory and practice of surgery, it is greatly surpassed by many, notably of German and English origin. It seems likely that this will not fill more than a local need.

*Beyond Marriage.* By JOHN VEIBY. South Bend, Indiana, 1914. Pp. 20.

As far as we can judge from the somewhat rambling style of the author, this book is a plea for a revision of our domestic life along the lines evolved by the bees. The author seems to hesitate between this arrangement and that of a more or less permanent triangle, the third side of which is to be an accepted lover of the wife. H. G. Wells has already worked this out better than Mr. Veiby. The latter's plans for the nuptial chamber are distinctly original; it is to have no windows, for the reason, apparently, that most clandestine lovers have made their entrée through those openings, and is to be provided with a padlock, yet to be invented, of undreamed of strength and unpickable-ness—if that is the right word. Mr. Veiby asserts that he has based his plans mainly on the recommendations of Lycurgus, which is unkind, since the eminent Spartan is not here to answer back.

## Interclinical Notes.

A skilled writer can get excellent results from the use of only the oldest machinery; The Lady Who Didn't Understand, by Owen Oliver, in *Leslie's* for December 2d, is built solely of the commonplaces of Christmas stories for the past fifty years, but the effect is very good indeed—quite tear compelling, in fact. Among many interesting illustrations there is a touching picture of soldiers blinded in the great war; another interesting feature, that we have mentioned before, is the reprinting of illustrations from *Leslie's* of the incidents of our own civil war.

\* \* \*

Don Marquis, columnist of the *Evening Sun*, irradiates the grave pages of the *Outlook* with a department entitled, A Glance in Passing. In the issue for December 1st, he lampoons Richard Harding Davis, representing him as advising President Poincaré how to conduct the war. There are some interesting reminiscences of John Hay. Of great interest to anyone with a taste for literature, is the account of the presentation of the gold medal for fiction by the National Institute of Arts and Letters, to William Dean Howells.

\* \* \*

A writer in the *Fatherland* for December 1st, takes exception to President Wilson's recent statement that our chief allegiance is to the great government under which we live, and points out that the oath of allegiance reads, "I do solemnly swear that I will support the Constitution of the United States, etc." "Ours," he says, "is a government

of laws, not of men." He thanks the President and asks to be impeached for making such a mistake.

The *Survey* for December 4th is an uncommonly interesting number. Discussion of the Bellinger baby occupies its first attention, then Mr. Ford's peace ship. It is alleged in another column that all the houses of ill fame in Baltimore have been closed; "yet," remarks Dr. O. Edward Janney, of that city, "only a beginning has been made, and the persistent efforts of the friends of good order . . . must be steadily continued." Until a general massacre, we suppose. An interesting series, *Life's Clinic*, by Edith Houghton Hooker, a former medical student and the wife of a physician, is started with *The Scapgoat*; this series will discuss the problem of venereal disease from its most tragic side. *The Fighting Instinct* is an admirable article by the recreation director at Harvard, George E. Johnson.

A writer in the *Evening Sun* for November 30th, probably by a slip of the pen, used the phrase, "a discriminate women," instead of the proper discriminating or discriminative. The trouble is that numbers of young writers will seize upon that improperly used word and add it to their vocabularies without taking the trouble to look it up in a dictionary. "Lay" for "lie," "deduct" for "deduce," and similar horrors are constantly appearing in the newspapers on account of the hurry in which the latter are issued; the effect on the youthful reader is bad. We commend to the ambitious child a careful study of the words "sit" and "set" as applied to hens; if he is naughty as well as ambitious, he can have a lot of fun catching father. We set a hen, but the bird herself sits.

## Meetings of Local Medical Societies.

**MONDAY, December 13th.**—New York Ophthalmological Society; Society of Medical Jurisprudence, New York (annual); Roswell Park Medical Club, Buffalo; Williamsburg Medical Society, Brooklyn (annual); New Rochelle, N. Y., Medical Society.

**TUESDAY, December 14th.**—New York Academy of Medicine (Section in Neurology and Psychiatry); Federation of Medical Economic Leagues of New York; Medical Society of the County of Schenectady (annual); Medical Society of the County of Rensselaer (annual); Buffalo Academy of Medicine (Section in Medicine); New York Obstetrical Society; Onondaga Medical Society (annual).

**WEDNESDAY, December 15th.**—New York Academy of Medicine (Section in Genitourinary Diseases); Alumni Association of City Hospital, New York (annual); Schenectady Academy of Medicine; Medicolegal Society, New York (annual); Buffalo Medical Club; Northwestern Medical and Surgical Society of New York (annual); Bronx County Medical Society.

**THURSDAY, December 16th.**—New York Academy of Medicine (stated meeting); Auburn City Medical Society; Geneva Medical Society; German Medical Society, Brooklyn; Æsculapian Club of Buffalo; New York Celtic Medical Society.

**FRIDAY, December 17th.**—New York Academy of Medicine (Section in Orthopedic Surgery); Mount Vernon Medical Society; Clinical Society of the New York Post-Graduate Medical School and Hospital (annual); New York Microscopical Society.

## Official News.

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending December 1, 1915:*

**Clark, Tahaferro**, Surgeon. Directed to attend a conference with a commission for the feeble-minded of the State of Arkansas, at Little Rock, December 9, 1915, for the purpose of inaugurating a sanitary survey of schools. **Collins, G. L.**, Surgeon. Directed to proceed to Freder-

ick, Md., for duty in connection with the Sanitary survey of schools in Frederick County. **Currie, D. H.**, Surgeon. Directed to proceed to the Island of Molokai when necessary for the proper conduct of the station. **Freeman, A. W.**, Epidemiologist. Detailed to attend the conference of health officers at Louisville, Ky., December 8-10, 1915, and present an address on Rural Sanitation. **Frost, W. H.**, Passed Assistant Surgeon. Detailed to attend a conference of health officers at Louisville, Ky., December 8-10, 1915, and present an address on Public Water Supply. **Hume, Lea**, Acting Assistant Surgeon. Directed to proceed to Batesville, Texas, for the medical examination of a detailed alien. **McKeon, F. H.**, Passed Assistant Surgeon. Detailed to present a paper on tuberculosis at the meeting of the Southwest Medical and Surgical Association, at El Paso, Texas, December 9-10, 1915. **McMullen, John**, Surgeon. Directed to attend the conference of health officers at Louisville, Ky., December 8-10, 1915, to present an address on trachoma and other preventable diseases of the eyes. **Michel, Carl**, Assistant Surgeon. Directed to report to the chief quarantine officer, at San Juan, P. R., for duty when the Coast Guard Cutter *Iasca* is in port. **Rucker, W. C.**, Assistant Surgeon General. Directed to proceed to Minneapolis, Minn., for conference with the executive officer of the Minnesota State Board of Health relative to the certification of water furnished to passengers in interstate traffic by common carriers, also to Rochester, Minn., to deliver an address on Interstate Quarantine Regulations. **Stiles, C. W.**, Professor. Directed to proceed to New Hanover, Robeson, and Columbus Counties, N. C., to make studies of methods of sanitation put in practice in those communities. **Thompson, L. R.**, Passed Assistant Surgeon. Granted seven days' additional leave of absence from December 1, 1915. **Trask, J. W.**, Assistant Surgeon General. Directed to deliver an address on Vital Statistics at the conference for health officers at Elkins, W. Va., November 30, 1915. **White, J. H.**, Senior Surgeon. Authorized to deliver two lectures on public health subjects before the students of the University of Mississippi.

### Boards Convened.

**Surgeon J. B. Stoner** and Assistant Surgeon **T. E. Hughes** detailed as members of a Coast Guard Retiring Board at Wilmington, N. C., November 24, 1915.

Board of medical officers convened to meet at the Marine Hospital, San Francisco, Cal., Saturday, December 4, 1915, for the physical examination of an officer of the Coast Guard for promotion. Detail for the board: **Surgeon L. L. Williams**, chairman; **Surgeon John M. Holt**, recorder.

### United States Army Intelligence:

*Official list of changes in the stations and duties of commissioned officers serving in the Medical Corps of the United States Army for the two weeks ending December 1, 1915:*

**Church, James R.**, Major, Medical Corps. Directed to proceed to Fort Preble, Maine, and report to the commanding officer thereof for duty. **Cowles, C. D. Jr.**, Captain, Medical Corps. Granted one month's leave of absence, effective November 22d, with address, Army and Navy Club, New York, N. Y. **Edwards, George M.**, Captain, Medical Corps. Granted two months' leave of absence, effective November 18th, with address, General Delivery, Russellville, Ky. **Ford, Clyde S.**, Major, Medical Corps. Granted one month's leave of absence, effective November 21, 1915, with address, 660 Market Street, San Francisco, Cal. **Hill, F. R.**, Captain, Medical Corps. Reports arrival at Fort Myer, Virginia, for duty, November 26, 1915. **Jordan, E. H.**, First Lieutenant, Medical Reserve Corps. Directed to proceed to Presidio of San Francisco, Cal., and report to the commanding officer of that post for duty. **Kammerer, Frederic**, First Lieutenant, Medical Reserve Corps. Resignation of his commission in that corps has been accepted by the President, to take effect November 27, 1915. **Kremers, Edward D.**, Captain, Medical Corps. The leave of absence granted in Special Orders, November 26th, is extended one month. **Owen, Leartus J.**, Captain, Medical Corps. On November 15th reported for duty at the Letterman General Hospital, San Francisco, Cal. **Parce, A. D.**, Captain,

**Medical Corps.** Granted one month's leave of absence, effective November 18th, with address, Letterman General Hospital, Presidio of San Francisco, Cal. **Pinkston**, Omar W., Captain, Medical Corps. Granted three months' leave of absence, effective November 25, 1915, with address, Columbus Barracks, Ohio. **Robinson**, James L., Captain, Medical Corps. Granted two months' leave of absence, effective November 16th, with address, Box 567, Palestine, Texas. **Rutherford**, H. H., Major, Medical Corps. Granted fifteen days' leave of absence, effective November 25th, with address given as Hotel Astor, New York. **Thrasher**, Benjamin O., First Lieutenant, Medical Reserve Corps. Ordered to proceed to Fort H. G. Wright, New York, and report to the commanding officer, Coast Defense, of Long Island Sound, N. Y., duty at that post.

### United States Navy Intelligence:

*Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Navy for the five weeks ending November 7, 1915.*

**Abeken**, F. G., Surgeon. Commissioned a surgeon from June 18, 1914. **Allen**, D. G., Passed Assistant Surgeon. Detached from the *New Hampshire* and ordered to the Marine Brigade, Haiti. **Asserson**, F. A., Surgeon. Ordered to duty at Newport Hospital, Va. **Beddoe**, A. E., Assistant Surgeon. Detached from the *Tennessee* and ordered to the Marine Brigade, Haiti. **Bowman**, F. H., Assistant Surgeon. Detached from the *Delaware* and ordered to the Marine Brigade, Haiti. **Brooks**, F. H., Passed Assistant Surgeon. Detached from the Marine Barracks to the Navy Yard, Norfolk, Va. **Bunker**, C. W. O., Passed Assistant Surgeon. Ordered to duty at the New York Hospital. **Ceres**, F., Assistant Surgeon. Detached from the Marine Brigade, Haiti, and ordered to the Norfolk Hospital for treatment. **Clifton**, A. L., Passed Assistant Surgeon. Detached from duty at the New York Hospital and ordered to the *Melville*. **Crandall**, R. P., Medical Inspector. Ordered to duty at the New York Supply Depot. **Crawford**, R. L., Assistant Surgeon. Detached from the *Nashville* and ordered to the United States. **Dodge**, A. H., Passed Assistant Surgeon. Detached from the *Salem* and ordered to duty at the Portsmouth Hospital. **Dragoo**, C. H., Assistant Surgeon. Detached from the *Nebraska* and ordered to the *Salem*. **Espach**, W. C., Assistant Surgeon. Detached from the *New York* and ordered to the *Nashville*. **Haigler**, F. H., Assistant Surgeon. Detached from the *Dixie* and ordered to the *Texas*. **Higgins**, S. L., Passed Assistant Surgeon. Ordered to duty at the Las Animas Hospital, Colorado. **Jenkins**, H. E., Passed Assistant Surgeon. Detached from duty at the Disciplinary Barracks, and ordered to the Port Royal Marine Barracks, South Carolina. **Jones**, R. F., Passed Assistant Surgeon. Detached from duty at the Disciplinary Barracks, Port Royal, S. C., and ordered to the Marine Barracks, Port Royal, S. C. **Lee**, A. E., Passed Assistant Surgeon. Ordered to duty at the training station, San Francisco, Cal. **Leys**, J. F., Surgeon. Detached from the *New York*, December 1, 1915, and ordered to duty as fleet surgeon, Atlantic Fleet. **McDowell**, R. W., Passed Assistant Surgeon. Detached from the *Ozark* and ordered to the *Fulton*. **Priest**, H., Assistant Surgeon. Detached from the Marine Brigade, Haiti, and ordered to the Norfolk Hospital for treatment. **Reed**, E. U., Passed Assistant Surgeon. Detached from the New York Recruiting Station and ordered to the Marine Brigade, Haiti. **Riker**, C. A., Passed Assistant Surgeon. Detached from the *Texas* and ordered to the Marine Brigade, Haiti. **Riordan**, F. J., Assistant Surgeon. Detached from the *Tonopah* and ordered to the *Ozark*. **Ross**, A. W., Assistant Surgeon. Detached from the *Maryland* and ordered to the *Yorktown*. **Shiffert**, H. O., Surgeon. Detached from the Navy Yard, Norfolk, Va., and ordered to the *New York*. **Sprating**, L. W., Surgeon. Detached from duty as fleet surgeon and ordered to the Navy Yard, Norfolk, Va. **Stuart**, A., Surgeon. Ordered to duty at the recruiting station, Lowell, Mass. **Torrence**, R. A., Assistant Surgeon. Detached from duty at the Portsmouth Hospital and ordered to the Marine Brigade, Haiti. **Walton**, D. C., Passed Assistant Surgeon. Detached from the *Yorktown* and ordered to the Asiatic Station, via army transport of January 5,

1916. **Warner**, R. A., Passed Assistant Surgeon. Detached from the Newport Hospital and ordered to the *New York*. **Waterhouse**, R. M., Assistant Surgeon. Detached from the *Montana* and ordered to the Marine Brigade, Haiti. **Williams**, R. B., Surgeon. Detached from the Norfolk Hospital and ordered to the Marine Brigade, Haiti.

### Births, Marriages, and Deaths.

#### Married.

**Brown**—**Byxbee**.—In Norwalk, Conn., on Tuesday, November 23d, Dr. Franklin G. Brown and Miss Viola May Byxbee. **Lothron**—**Sturk**.—In Cambridge, Mass., on Wednesday, November 24th, Dr. Oliver Ames Lothron and Miss Edna M. Sturk. **Schuster**—**Crawford**.—In Brooklyn, N. Y., on Tuesday, November 30th, Mr. Edward Schuster and Dr. Mary Crawford. **Tolman**—**Hayes**.—In Swampscott, Mass., on Thursday, November 25th, Dr. George Averill Tolman and Mrs. Flora Clapp Hayes.

#### Died.

**Bray**.—In London, Ont., on Tuesday, November 23d, Dr. John L. Bray, aged seventy-four years. **Brunelle**.—In Cloquet, Minn., on Thursday, November 25th, Dr. Adelar M. Brunelle, aged fifty-nine years. **Caldwell**.—In Slatsburg, N. Y., on Thursday, November 25th, Dr. Dimont M. Caldwell, aged seventy-seven years. **Gray**.—In Milwaukee, Wis., on Thursday, November 25th, Dr. Nathaniel A. Gray, aged seventy-five years. **Griffith**.—In Trenton, N. J., on Wednesday, November 24th, Dr. William Henry Gesner Griffith, aged eighty-two years. **Hendrick**.—In Houston, Texas, on Tuesday, November 23d, Dr. Jesse P. Hendrick, of Huntsville, Texas. **Hill**.—In Ovid, Mich., on Thursday, November 25th, Dr. J. Benson Hill, aged seventy-one years. **Johnson**.—In Belfast, Me., on Monday, November 22d, Dr. Samuel W. Johnson, aged seventy-three years. **Kennedy**.—In New York, on Friday, November 26th, Dr. John T. Kennedy, aged seventy-five years. **Lanzer**.—In Brooklyn, N. Y., on Friday, December 3d, Dr. Lewis Lanzer, aged fifty years. **Lindabury**.—In Philadelphia, on Monday, November 22d, Dr. Albert A. Lindabury, of Scranton, aged fifty-three years. **Martin**.—In Buffalo, N. Y., on Wednesday, November 24th, Dr. Andrew J. Martin, of North Tonawanda, aged fifty-five years. **Morse**.—In New York, on Friday, November 26th, Dr. William H. Morse, aged sixty-five years. **Muller**.—In Brooklyn, N. Y., on Thursday, December 2d, Dr. Jonas Muller, aged twenty-six years. **Myer**.—In Waterloo, Iowa, on Monday, November 22d, Dr. Silas C. Myers, aged sixty-four years. **Newkirk**.—In Ellicottville, N. Y., on Wednesday, November 24th, Dr. Merle Newkirk, of Sherman, N. Y., aged twenty-eight years. **O'Neill**.—In Grand Rapids, Mich., on Friday, November 19th, Dr. Charles F. O'Neill, aged forty-three years. **Pennock**.—In Philadelphia, on Sunday, November 28th, Dr. Walter I. Pennock, aged fifty-one years. **Reuling**.—In Baltimore, Md., on Thursday, November 25th, Dr. George Reuling, aged seventy-six years. **Riegel**.—In Catsasagua, Pa., on Thursday, November 25th, Dr. Henry H. Riegel, aged eighty years. **Robinson**.—In Ogden, Utah, on Saturday, November 20th, Dr. Henry E. Robinson, aged thirty years. **Roe**.—In Philadelphia, on Sunday, November 28th, Dr. William J. Roe, aged forty-six years. **Smith**.—In Madison, Md., on Tuesday, November 23d, Dr. Benjamin L. Smith, aged seventy-eight years. **Stanton**.—In Wilkes Barre, Pa., on Thursday, November 25th, Dr. John P. Stanton, of Scranton, Pa. **Stewart**.—In Tampa, Fla., on Thursday, November 11th, Dr. Edward L. Stewart. **Suesholtz**.—In Brooklyn, N. Y., on Friday, November 26th, Dr. William L. Suesholtz, aged forty-three years. **Tucker**.—In Raleigh, N. C., on Wednesday, November 24th, Dr. Henry McKee Tucker, aged forty years. **Upshaw**.—In St. Louis, Mo., on Monday, November 22d, Dr. Thomas Jefferson Upshaw, aged seventy-two years. **Van Auklen**.—In Watervliet, N. Y., on Saturday, November 27th, Dr. U. Lansing Van Auklen. **Wynne**.—In Redlands, Cal., on Sunday, November 21st, Dr. Sydney Y. Wynne, aged forty-five years.



# New York Medical Journal.

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WHOLE No. 1933

### Lectures and Addresses.

#### MATERNITY INSURANCE.\*

By LEE K. FRANKEL, Ph.D.,

New York,

First Vice-president, Metropolitan Life Insurance Company.

#### INTRODUCTORY.

The growing interest in adequate and scientific care of women during pregnancy and maternity is manifested by the request of the National Association for the Study and Prevention of Infant Mortality to have a paper on this subject included on its program. In view of the comparatively little information obtainable regarding the interesting subject of maternity insurance in literature published in the United States, it has been deemed advisable to prepare a paper viewing the subject from various angles, and to attempt to record the historical sequence and development of maternity insurance as a basis for any action that may be deemed desirable in the United States.

Practically all the literature that is at present available is from foreign sources, owing to the fact that, aside from Australia, maternity insurance, along either private or semipublic lines, has developed only in continental Europe and particularly in Germany.

The subject is of particular interest to the people of the United States because of the social insurance legislation in England, under which maternity benefits are a part of the National health insurance scheme. As yet there are not sufficient data available to indicate the results of this experiment.

The subject of maternity insurance will be presented in this paper under the following headings:

1. History of motherhood protection through voluntary philanthropic agencies and through maternity insurance.
2. Legislation affecting motherhood.
3. Philosophy of maternity insurance.
4. Present methods of protecting motherhood, particularly along lines of social insurance in European countries.
5. Cost of maternity insurance.
6. Developments in the protection of mothers in the United States, and possibility of organizing a scheme of social insurance under which cash benefits and medical attendance will be given to women during the period of maternity.

\*Read at the meeting of the National Association for the Study and Prevention of Infant Mortality, Philadelphia, November 10, 1915.

#### HISTORY.

Organized effort for the protection of motherhood is not a thing of the immediate past. Because of the need existing among the dependent classes and the desire on the part of the more prosperous in the community to give provision to dependent women at the time of maternity, agencies for this purpose developed in the Middle Ages. As early as the thirteenth century there is a record of free hospital aid being given to poor women in confinement at Pfullendorff, Germany. Among the many activities of the societies for the relief of the poor existing in the Roman ghetto in the thirteenth century, the care of lying-in women was included. In 1339 the hospital at Nürnberg admitted maternity cases free and also provided for home care. In order to make the latter work effective, a public midwife was employed by the city. These measures were taken in order to reduce the custom of begging on church steps by pregnant women. Nevertheless, patronesses of the charities gave badges to poor women permitting them to beg at church doors during pregnancy. In 1428, Frankfurt a. M. began to give home aid to mothers through the appointment of public midwives. This example was followed in other parts of Germany during the fifteenth century.

The movement to give maternity care to lying-in women extended to other parts of Europe. In France there is a record of the founding of the Society for the Aid of Nursing Mothers in 1714. Thirty-eight years later, the *Campagna delle puerpere* came into being at Turin, Italy, for the benefit of pregnant women. In 1784, the *Société de charité maternelle* was founded at Paris. Like its predecessor, it had the purpose of providing for nursing mothers, and was destined to have a long period of usefulness. Between 1788 and 1904, it aided 116,034 mothers, turning over to them 9,915,812 francs in benefits.

In 1796 the French convention decreed that all mothers were entitled to public hospital care. In the following year a lying-in hospital, the *Maternité*, was founded in Paris. Since that time, numerous lying-in hospitals, day nurseries, and similar institutions have sprung up all over France. Among these may be mentioned the *Secours d'allaitement*, established by the city of Paris, which furnishes a nursing benefit of thirty francs to indigent women at the time of maternity.

An attempt to introduce an insurance, or rather, a mutual aid feature was made in Paris, in 1891, by the founding of the *Mutualité maternelle*. This society, in return for an annual contribution of

three francs by the insured, furnishes a confinement benefit of forty-eight francs, and a nursing benefit of ten francs. At the end of 1908 it had a membership of 26,008. In that year its total expenditures amounted to 100,615 francs, of which 98,752 francs, or 39.67 francs for each case, were given as maternity benefits. The precedent established at the capital has been followed extensively in other municipalities of the French provinces. It should be noted here, however, that the organizations, while apparently mutual, are in reality largely philanthropic. Only a small portion of the income is received from the dues of members. To a large extent, the income is made up of State and municipal subsidies, and donations and bequests from philanthropic persons.

Another characteristic of French development has been the so called *Gouttes de lait*, corresponding to the infant welfare stations in the United States. These are found not only in France, but have been transplanted to the French sections of Canada, and are quite common in Montreal and Quebec. The primary purpose of these societies seems to be to supply infants with sterilized milk.

Provisions for maternity care along philanthropic lines, similar to those indicated above, have been instituted in practically all civilized countries. In Germany a society known as the *Hauspflege-Verein* has attempted the organization of a corps of trained women to send into homes during the confinement period. These women carry on the ordinary duties of the household, during the incapacity of the mother. The lying-in hospital has become an accepted fact, particularly in the large cities. Many of these institutions not only give indoor service, but have arranged to care for the patient in her own home. Lying-in relief societies, which give cash and material benefit, as well as medical care, to indigent women during the lying-in period are quite common.

#### LEGISLATION AFFECTING MOTHERHOOD.

Legislation directed toward the protection of motherhood is a result of the industrial revolution. Before the introduction of machinery, the management of the home as well as the manufacture of many articles now made in factories was the work of women. Spinning and weaving were home occupations. Home industries are still quite common in Germany and other European countries; in fact, the number of such independent workers is still so large that special consideration has had to be given to this group in the sickness insurance legislation.

The development of the machine, however, meant the transfer, from the home to the factory, of many industries in which women had been employed. Economic pressure, the inability of the chief male wage earner to support the family under existing industrial conditions, the ability of the employer to obtain female labor at a lower rate of wages than male labor, and the lack of sufficient employment in the home to keep all of its female members occupied, eventually brought women into the factory and mill. So long as this new factor was limited to unmarried women, no particular principle was involved other than the regulation of the hours and conditions under which they might work. The introduction of the married woman and the prospective

mother into industry outside of the home, in which she naturally belonged, precipitated problems of legislation necessary to protect both the working mother and her child. The detailed philosophy of this legislation will be considered later.

In Europe laws forbidding employers to allow women to work for a definite period prior or subsequent to maternity are general.

The industrial code of Germany forbids women's work during four weeks after confinement, and permits it during the next two weeks only on the certificate of a physician. In Austria the law requires a rest period of four weeks after childbirth, and in Switzerland there is a rest period of two weeks before and six weeks after childbirth. France has also enacted a compulsory rest period of eight weeks, which are to be equally distributed before and after childbirth. Seven weeks of rest are required in Italy. A rest of four weeks after childbirth is demanded by the Belgian and Portuguese laws, and the same period, which may be extended by one or two weeks through a medical certificate, is required under the law of Spain. Holland and Norway have both instituted a compulsory rest period of four weeks, and Sweden has a six weeks rest period law. Great Britain prohibits the employment of women within four weeks after childbirth. It is of interest to note that in the maternity insurance legislation which has resulted from these attempts to protect motherhood, the unmarried mother, as a rule, is given the same consideration as her married sister.

In the United States legislation directly affecting motherhood is much less common than in Europe, owing in all probability to the more recent entrance of married women into factory life. Laws regulating rest periods before and after confinement have been enacted in Connecticut, Massachusetts, New York, and Vermont. In Connecticut a compulsory rest period of four weeks before and four weeks after childbirth is provided. In Massachusetts there is a compulsory rest period of six weeks, two weeks of which are before childbirth. New York does not provide for a rest period before childbirth, but the employment of women is forbidden for four weeks after this time. The requirements of the Vermont statute are the same as those of Massachusetts.

Indirect provision for the protection of motherhood is found in the statutes of various States. Conditions of labor of women are carefully regulated in a great many. Women are forbidden to engage in certain occupations. For example, in Alabama mine work is not allowed; in Arizona women are not allowed to work in saloons. Colorado, Illinois, and Indiana have a provision similar to that of Alabama. Iowa and Louisiana forbid work in saloons. These laws, as well as many others for the protection of the woman wage earner, while not primarily designed to protect working mothers, have, it is safe to say, the indirect effect of protecting the children of the next generation.

Another group of laws more general than these limiting occupation, but with probably the same indirect intent and effect, are those specifying the maximum working day. These laws are general in almost all States. California and Washington limit

the working week of eight hours a day, while South Carolina has a maximum of twelve hours a day and sixty hours a week.

It is interesting to note in these various laws that the lowest number of hours and the most stringent regulations of the conditions of work are found in the far west. Specific regulations forbidding work during and after pregnancy, however, appear only in a few of the most densely settled manufacturing States in the east.

Minimum wage legislation, although not specifically directed toward the protection of mothers, aims very definitely to provide women with a sufficient salary so that their health and morals may be preserved. It seems reasonable to suppose that one of the underlying purposes of this is to protect the future mothers. The following States have enacted such legislation: California, Colorado, Massachusetts, Minnesota, Nebraska, Oregon, Utah, Washington, and Wisconsin.

The newer development in child protection—mothers' pensions—cannot fairly be considered under the group of legislation affecting motherhood. The aim in this case is to provide a substitute for the wage earner, in order that children may have the home care of the mother. The fundamental purpose is to provide adequate protection for children rather than to protect women or women workers.

#### THE PHILOSOPHY OF MATERNITY INSURANCE

Fully to appreciate the need and the desirability of maternity insurance it is necessary to point out the fundamental principles upon which this plan of protection is based. This was most satisfactorily done by Professor Mayet, of Berlin, than whom no one has done more to develop maternity insurance. In a paper which he read before the International Congress on Social Insurance at Rome, in 1908, Mayet developed the following theses:

1. *The physiological needs of the mother and of the child are fundamental at the threshold of the infant's life.* If they are not observed, both mother and infant suffer; sickness and death are the punishments for neglect. He continues: "We need healthy mothers, healthy infants, if the members of the coming generation are to be equal even to the ordinary tasks of economic, civil, and national life as workmen, husbands, citizens, and soldiers, and as workingwomen, wives, and mothers; we need healthy mothers and healthy infants if the coming generation is to lead the human race farther along the road to perfection. It is the task of maternity insurance to assure the great working classes of the fulfilment of the physiological needs of the pregnant woman and the fetus, the mother and the infant."

2. *Industrial work, if protracted to the time of childbirth, is clearly injurious to the mother.* Mayet cites J. Pelc, in the Bohemian sanitary report for 1899-1901, according to whom the high rate of stillbirths in northern Bohemia is explained by the fact that women work up to the end of pregnancy, in order not to forfeit their membership in the societies: the results are manifested in premature births, faulty presentations of the fetus, and umbilical difficulties.

Bachimont found, in France, that the average

duration of pregnancy was 260 days among women who observed a rest period before confinement, but only 247 days among those who did not; the duration was normal in the case of the former, but twenty-two days too short among those who worked up to the very time of childbirth.

It is well known that a large measure of the abdominal disease of women of the working classes is attributable to the fact that they are unable to obtain that rest after confinement which nature peremptorily demands. It is very difficult, however, to obtain any statistical basis for determining the extent of the injuries suffered.

3. *The vitality of the unborn child is impaired through continued industrial work by expectant mothers.* At the Tenth International Congress on Hygiene and Demography, in 1900, Professor Pinard announced the results of 4,500 observations, from which it appeared that the children of women who worked up to the time of confinement were either born too early, or had a lower weight than the children of women who had been enabled to rest before confinement. He came to the conclusion that the children of mothers who had stopped work two or three months before childbirth were, on the average, at least 300 grams heavier than infants born to mothers who had worked in a standing position up to the last moment.

At the Maternité and at the Clinique Baudelocque—two lying-in institutions occupied chiefly by working women—out of a total of 188,000 children born and weighed, more than 72,000 weighed less than 3,000 grams, and almost 30,000 prematurely born infants weighed less than 2,500 grams.

George Reid, medical officer of health for Staffordshire, has studied the correlation of abnormalities with factory work. In 1906, reporting in the *Lancet* on the experience of twenty-three years, he said that, in districts where more than twelve per cent. of the married population are employed in factories, there are fifteen abnormalities in 1,000 births; in districts, however, where less than six per cent. of the female married population is so occupied, there are only six abnormalities per 1,000 births.

4. *Pregnancy, birth, confinement, and breast feeding have been intended by nature to form an undisturbed sequence.* Mayet points out the fallacy that artificial nourishment can ever be equal in value to the natural nourishment of the mother. This has been so amply demonstrated in the United States that further discussion here is unnecessary. European statistics that may be cited are those of Kriege and Seutemann, showing a mortality in Barmen of 6.8 per cent. of breast fed infants among workers earning less than 1,500 marks, but of 11.1 per cent. of bottle babies among workers earning more.

5. *Infant mortality is determined, not only by the factor of breast feeding, but also by the duration of the breast feeding.* Roesé, of Dresden, found that the extent of dental decay and rickets varied inversely with the duration of breast feeding. On the basis of statistics of military recruits it has been proved that the weight, and the chest and other measurements of adults vary directly with the duration of the period during which, as infants, they were fed at the breast. The same relationship is evident be-



tween breast feeding and efficiency in school. These facts have been made clear by Friedjung, Groth, and Hahn.

6. *Breast feeding is decreasing both in duration and in frequency.* This is to be attributed, in large measure, to interference with nursing by the industrial activity of women. It may be noted that in the United States the number of married female wage earners increased from 511,740 to 773,363 between the years 1890 and 1900. The number of such workingwomen at the present time is probably over one million.

As a result of the foregoing facts Mayet infers the necessity for a scheme of maternity insurance which will give to the insured the following benefits and protection:

1. A rest period before childbirth, with full compensation for wages lost;
2. Aseptic conditions of birth, and obstetrical aid by a midwife and, if necessary, by a physician;
3. A rest period after childbirth, with full compensation for wages lost;
4. In case of necessity, maternity care, either at home or in an institution;
5. Extension of the period of breast feeding by means of nursing benefit, and, if necessary, a pecuniary aid toward the nourishment of the infant.

#### MATERNITY INSURANCE LEGISLATION.

Attention has been directed toward legislation forbidding women to work for definite periods prior or subsequent to childbirth. The operation of these laws worked hardships in many cases. Frequently, when the mother was one of the principal breadwinners of the family, the latter was deprived of the main part of its income during her period of enforced rest. The law made no provision against such a contingency.

Attempts have been made to meet the situation through maternity insurance to provide for the loss of wages, and for the payment of the financial costs of maternity. Schemes of this kind have been organized by private societies and insurance companies, but with no measure of success. For the sake of the record mention may be made here of two such attempts.

A birth insurance society was founded in Boston, in 1905. In exchange for dues of three dollars a month, and, in addition, one dollar a year, it undertook to pay \$200 on the birth of a living child after the first ten months of membership, \$300 after nineteen months of membership, \$400 after twenty-eight months of membership, and \$500 after thirty-seven months of membership. After a few months the organization died a natural death.

#### GERMANY.

The Iduna, an insurance company of Halle, Germany, recently entered the field of maternity insurance. The company is prepared to make contracts with benefit societies and mutual organizations. Confinement benefit is given, after a waiting period of nine months; if the birth occurs within that period the premiums are returned. A special nursing benefit, supplementing the regular maternity benefits, may be given to a mother who has nursed her infant at least four weeks. The plan is too young to enable us to form any judgment on the basis of its experience.

The important, and, indeed, the main development of maternity insurance, however, has been, not along the line of a separate and distinct form of insurance, but as a phase of sickness insurance, the foundations for which were laid in Germany. National sickness insurance was made compulsory in that country by the act of June 15, 1883. Under this law the existing mutual sickness societies were continued and were permitted to give benefits in addition to those required under the law, which included childbirth benefit. In 1903 the duration of maternity benefits was increased from four weeks to six weeks.

The Imperial Insurance Code was passed on July 19, 1911; it embodied a compilation and unification of the existing statutes and decrees. Maternity benefits were standardized and their further development was provided for. Under the code, maternity insurance is compulsory for members of most of the commercial and industrial pursuits, as also for homeworkers, whose annual income does not exceed 2,500 marks. Insurance is voluntary for members of these occupations if they are exempt from compulsory insurance, as also for small entrepreneurs and their families. The insurance is administered by local, factory, building, guild, or miners' sick benefit societies. The local society is the official organization, and other societies are permitted to exist only if they do not endanger its vitality. A special form of the local society is the agricultural society, which provides principally for agricultural workers and domestic servants.

Under the German law there is a waiting period of ten months, after which confinement benefit, to the amount of the weekly sick benefit, is given for a period of eight weeks; at least six of these must be after confinement. In the agricultural funds, however, the duration of benefit may vary from four to eight weeks, according to the statutes of the society. With the consent of the mother, institutional care or home care may be given. In the former case, "house money" is given to the dependents of the insured to the amount of half the weekly benefit; in the latter case an amount may be deducted up to the same proportion. Statutes of societies may give medical and obstetrical services of midwives and physicians. They may also grant benefits to uninsured wives of insured persons. In the case of women who have been members for at least six months, physicians and midwives' services may be given for ailments of pregnancy. In case of disability from the same cause, pregnancy benefit may be given, to the amount of the confinement benefit, up to a total duration of six weeks; this period may be deducted from the prenatal period for which confinement benefit is given. The societies may furnish, to mothers insured six consecutive months before confinement, nursing benefit up to the amount of half the sick benefit and up to the duration of twelve weeks after confinement. Compulsory members pay two thirds of the dues; one third is borne by the employers. Voluntary members must bear the total burden of the dues themselves.

The war has brought into existence a number of legislative acts in Germany designed to cope with the resultant change in conditions. The act of August 4, 1914, concerning the Assurance of the Solvency of Sick Benefit Societies, limited considerably

the welfare work on behalf of mothers. Only the regular benefit required by law could be furnished, unless the insurance authorities had been convinced that the solvency of the society would not be affected by the giving of greater benefits. Confinement, pregnancy, and nursing care to the wives of insured persons were abolished. It soon appeared that the sickness societies were less shattered by the war than had been expected, and it appeared practicable to impose upon them once more a part of those burdens of which they had been relieved. It was then found, however, that even the full scope of confinement benefit, as it had existed under the code before the beginning of the war, was not sufficient to meet the new contingencies which had arisen. Maternity benefit, as stated above, was limited to mothers who were themselves subject to compulsory insurance. The Imperial Government came to the conclusion that the protection of uninsured wives of soldiers could not be dispensed with, but that this burden ought to be imposed, not upon the societies, but upon the Empire. Hence the Reichstag, in voting the second war credit on December 2, 1914, provided 200,000,000 marks for confinement benefit during the war, as well as for the aid of communal and communal unions in the field of war relief.

On the following day the Federal council enacted a law extending materially, for the duration of the war, the scope of the maternity insurance. Under this law uninsured wives of insured participants in the war are entitled to a single payment of twenty-five marks toward the costs of confinement; confinement pay of one mark a day for a period of eight weeks, of which at least six must be after the actual confinement; aid, up to the amount of ten marks, toward the costs of treatment for the ailments of pregnancy; and nursing pay, up to the conclusion of the twelfth week after confinement, to the amount of half a mark a day. As regards the monetary benefit in connection with the ailments of pregnancy, free treatment by midwives and physicians, as well as the necessary medicines, may be furnished instead. The maximum expenditure permissible in each case is 133 marks. All costs are borne by the Empire.

Under this act the insured wives of insured participants are entitled to the same benefits as have been enumerated above; however, they may receive larger confinement benefit, if this is provided for by the statutes of the society. In the case of women in this class the confinement pay is furnished by the society, while the remaining benefits are given by the Empire.

The insured wives of uninsured participants are entitled only to the benefits guaranteed by the statutes of the society, even if these are less than those provided for by the act. All costs in this case must be borne by the societies themselves.

This act was supplemented by others of January 28, 1915, and April 23, 1915, which clarified the interpretation of the earlier legislation. It was stated expressly that its provisions were to apply to the merchant marine, the agricultural industry, and domestic service, as well as to other occupations. Moreover, relief was extended to persons whose income did not exceed 2,500 marks a year before the beginning of the war, or whose income after the entry of the husband into service does not exceed

1,500 marks plus 250 marks for every child already born and not yet fifteen years of age. The expression "of small means" (*minderbemittelt*) was employed, instead of "needy" or "indigent" (*bedürftig*), in order that the aid might not bear the stamp of poor relief.

#### AUSTRIA

The action of Germany, in the enactment of the initial legislation of 1883, had a marked bearing upon the policy of other countries. In 1883, the situation of the sickness insurance societies led to a necessary revision of Austrian legislation on the subject. The resulting act included provisions for the compulsory maternity insurance of workers and administrative officials in trade and industry. The insurance was made voluntary for agricultural workers, forestry workers, and homeworkers. As in Germany, two thirds of the dues are borne by the employees, and one third by the entrepreneur. However, employers are not required to contribute in cases where the income of the insured is 2,400 marks per annum or more, or where the insurance is voluntary. The contribution of employees must not exceed two per cent. of the basic wage; that of employers must not exceed one per cent. After a waiting period of six months, maternity benefit, to the amount of one and a half times the basic wage, is given for a period of four weeks. Medical and obstetrical aid, and medicines and therapeutic measures, are also furnished.

#### NORWAY.

The first Norwegian commission to investigate the subject of sickness insurance came into being in 1885. After a long period of discussion, an act was passed in 1909, and was amended in 1911. The law includes maternity provisions. Insurance is compulsory for all workers and salaried employees. Here again, as in Germany and in Austria, and, indeed, in most other countries, societies—originally entirely voluntary in character—are utilized for the administration of compulsory insurance. There is a waiting period of ten months. Recognized societies must furnish sixty per cent. of the basic wage for six weeks, as well as medical benefit, if this is necessary. Six tenths of the dues are borne by the insured, one tenth by the employer, two tenths by the State, and one tenth by the community. The limits of income are 1,400 Norwegian kroner a year for compulsory members and 1,000 for voluntary members, in the cities, and 1,200 kroner for compulsory members and 800 for voluntary members, in the country.

#### DENMARK.

The Danish law was passed in 1892, and was amended in 1915. Insurance is voluntary. Societies granting home or hospital care, as well as medical and obstetrical service, receive, upon recognition, State subsidies of one quarter of their expenditures. The minimum maternity pay is one Danish krone a day, and it is given after a waiting period of ten months.

#### BELGIUM.

The Belgian law was passed in 1894. Here, as in the case of Denmark, subsidies are given to recognized mutual aid societies furnishing maternity benefit.

## HUNGARY.

The Hungarian act of 1907 is again modeled after German legislation. Maternity insurance, associated with sickness insurance, is compulsory for all workers in industry, trade, and commerce, except in so far as it is voluntary for agricultural workers, homeworkers, domestic servants, and persons exempt for special reasons. The limit of income is 2,350 Austro-Hungarian kronen. Half the contributions are borne by the insured, half by the entrepreneurs. Confinement benefit must be equal at least to sick benefit, although it may be increased by the statutes of the society. It is payable for six weeks; this period may be extended to eight weeks. Free medical and obstetrical aid is furnished, not only to the insured, but also to dependents of the insured, for a period of six to eight weeks.

## LUXEMBURG.

Maternity insurance has been known in the little State of Luxemburg since the passage of the act of 1908, based upon the bill of 1901. It is compulsory for workers in all occupations if they do not earn more than 2,400 German marks a year. There is a waiting period of six months. Maternity benefit, equal to the sick benefit, must be given for four weeks; this period may be extended by statute to six weeks. The scope of the benefit may also be widened to include the uninsured wives of members.

## ITALY.

In 1910 Italy passed a law which called into being a national maternity fund, devoted entirely to the compulsory maternity insurance of all female industrial workers of childbearing age. Insured persons and employers contribute in equal amounts. At ages fifteen to twenty the worker and the employer each contribute one half lira a year; at ages twenty-one to fifty each party contributes one lira a year. In addition there is a State subsidy of ten lire for each confinement. The government also remits taxes and fees, and bears the expenses of administration. There is a confinement benefit of forty lire.

## SERBIA.

The Serbian act was passed in the same year. Sickness insurance, which is compulsory for commercial and industrial workers, includes maternity insurance for six weeks before and six weeks after confinement. Half the dues are borne by the insured person, and half by the employer; in addition there is a State subsidy.

## SWITZERLAND.

Switzerland fell into line in 1911. Swiss recognized societies receive a federal subsidy toward confinement benefit and nursing benefit. Membership is voluntary, but may be made compulsory in the individual cantons. The law requires that recognized societies pay a maternity benefit of at least three Swiss francs a day, for a period of at least six weeks, as well as an additional benefit of twenty francs for nursing during the four subsequent weeks. Medical aid and medicines may be furnished beside the maternity pay, or instead of it, according to the statutes of the society. There is a waiting period of nine months. The federal subsidy

consists in a payment of twenty francs toward the confinement benefit and of the entire nursing benefit.

## GREAT BRITAIN.

The year 1911 also marked the passage of the British National Insurance Act, under which sickness insurance, including maternity insurance, is compulsory for commercial, clerical, and industrial workers; it is voluntary for workers who have been exempted for special reasons. The annual income of the insured must be less than £160 a year, except in the case of manual laborers. The minimum age of entrance is sixteen years; the maximum sixty-five. The insurance is administered by approved societies, although there is also a place for private friendly societies. Those contributors who do not wish to join any society are placed under the supervision of insurance committees for the various districts. The dues are sixpence a week. If the income of the insured is one shilling and sixpence or less a day, fivepence are paid by the employer and one penny by the State; from that point up to and including two shillings of income a day, one penny is paid by the insured, fourpence by the employer, and one penny by the State; from this point on, threepence are paid by the insured and threepence by the employer, and there is no State subsidy. There is a maternity benefit of three pounds to insured mothers, and of half that sum to mothers who are not themselves insured, but who are the wives of insured persons. In case of institutional treatment, benefit is paid to the dependents of the mother. The physician or midwife is paid out of the benefit. There is a waiting period of twenty-six weeks for compulsory members and fifty-two weeks for voluntary members.

## RUSSIA.

The Russian Workmen's Insurance Act of 1912 provides for maternity benefit, varying in amount between half the wage and the full wage, for two weeks before and four weeks after childbirth. Under earlier legislation, the funds obtained from the accumulation of fines in industrial establishments are devoted partly to pregnancy benefit. Employers are required to furnish hospital or dispensary treatment, also, in large establishments, the services of midwives. The new social insurance is administered by mutual aid societies and establishment funds.

## SWEDEN.

Under the Swedish act of the same year, maternity insurance is required of the voluntary societies if they are to obtain recognition. The minimum maternity benefit is ninety öre a day, payable for at least two weeks. However, hospital treatment may be furnished as an alternative for pecuniary benefit. The State subsidy consists of fifty-eight öre a day of benefit, for a maximum period of forty-two days and upon a maximum insured sum of four kronor a day.

## AUSTRALIA.

In Australia an entirely different philosophy underlies the maternity allowance provision, which also dates from 1912. In all other countries there are salary limits to the employment benefits; contributions are made by the workers, or by the employers and employees, and, in some cases, there are State



subsidies. In Australia, however, a gift of five pounds is made by the Commonwealth to each mother upon the birth of a child. This covers all classes in the community, and cannot properly be classed as insurance.

#### RUMANIA.

Under the legislation of 1912 and 1913 all Rumanian industrial workers are compulsorily insured, through the medium of the guilds and free societies. The contributions of the insured vary between five and sixty bani. After a waiting period of twenty-six weeks, confinement benefit is given for six weeks, with subsequent nursing benefit for the same period.

A number of points are clearly brought out by the brief summary of legislation that has been given above. Provision for maternity insurance is general in European countries. In almost all instances the contingency of childbirth is classed as sickness, and provision is made to give care and to provide a benefit to compensate for the wages lost. All members of a society, irrespective of age, sex, and conjugal condition, contribute to the insurance funds. These points must be carefully considered if foreign experience is to be of value in analysis and comparison.

#### COST OF MATERNITY INSURANCE.

Professor Mayet has endeavored to determine what the cost of maternity insurance would be, upon the basis of giving certain pecuniary benefits to the insured, together with the necessary medical care and attention. He has outlined his scheme, not as a separate maternity insurance proposition, but as part of a general scheme of sickness insurance. The estimate which he gives is interesting, and is submitted here, not as a statement of what might be possible in the United States, but simply as evidence of what was deemed necessary in Germany at the time Professor Mayet's thesis was prepared.

He assumes that the annual earnings of a female worker are about 580 marks, or about 11.20 marks a week. Compensation for a rest period of twelve weeks (including time before and after birth) will then be 134.40 marks.

The midwife's fee, on the basis of Saxony, he puts at ten marks.

He does not calculate a physician's fee for every birth, and consequently puts an average for all births at five marks.

Medicines and minor needs for asepsis will amount to five marks.

Nursing benefit is to be given, even if not in all cases. The first benefit, to the amount of twenty-five marks, will be given to mothers nursing their children for the thirteen weeks immediately after birth; the second benefit will be given, to the same amount, if nursing is continued during the next three months. Thus the total amount will be fifty marks.

Cost of home and institutional care, not necessary in all cases, will average fifteen marks.

Administrative expenses are estimated at one mark.

Adding up the various items, Mayet obtains an average total cost, for each maternity case, of 220.40 marks.

Mayet says that these requirements are prac-

ticable on condition that no distinction is made, in the payment of dues, between male and female and between married and unmarried members. Such a regulation would be just, since men and women are equally concerned in the child; even unmarried men may properly be called upon to bear their share, in expectation of the benefits which, as married men, they will later draw. Further, the principle of the uniform treatment of large groups is one which is already prevalent in German sickness insurance. He also says that the introduction of a fully developed maternity insurance will be easily practicable if it is to be extended only to female members. Taking into account, as a denominator, the membership of both sexes, there was one confinement among fifty-one members in Austria; one in 52.6 in Munich in 1906; and one in sixty in Leipsic, during a considerable period. On a basis of one birth to fifty members, and on an estimate of 220.40 marks a case, the average expense for each member would be only 4.41 marks a year or 8.5 pfennigs a week. The average weekly contribution of the members of local, factory, building, and guild sickness funds in Germany was fifty pfennigs in 1906, and an addition of 8.5 pfennigs would be thoroughly practicable; it would involve an increase of dues only from three to 3.5 per cent. of the wage.

The problem will be more difficult if maternity insurance is to be extended to the dependents of members. The insurance of dependents has hitherto been a voluntary addition on the part of the societies to the benefits required of them by law. Doubtless it has not yet been made compulsory because of the lack of confidence of the legislators in the ability of the smaller societies to bear the financial burdens involved. As the fusion of the 23,000 sickness societies into a limited number of large centralized societies is contemplated, however, this obstacle will be done away with.

Mayet points out the necessity of the protection of female dependents of members—the overwhelming majority of whom would be the wives of members—and next goes into the question of cost. Instead of the full compensation of 11.20 marks a week, however, only the standard local wage for unskilled female workers, which is estimated at six marks a week, is taken into consideration.

On this basis he calculates the expenses, under the head of maternity insurance, of a society of 100,000 members, as follows:

|   | Marks.    |
|---|-----------|
| 2,000 births among members at 134.40 marks compensation (12 times 11.20 marks) .....  | 268,800   |
| 5,200 births among dependents of members at 72 marks benefit (12 times 6 marks) ..... | 374,400   |
| Midwives' fee for 7,200 births at 10 marks .....                                      | 72,000    |
| Physician's fee at 5 marks .....  | 36,000    |
| Medicine and minor remedies at 5 marks .....  | 36,000    |
| Nursing benefit at 25 marks .....   | 180,000   |
| Home treatment, welfare stations, maternity homes, etc., at 15 marks .....            | 108,000   |
| Costs of administration at 1 mark .....   | 100,000   |
| Total .....   | 1,080,400 |

Even if insurance of dependents is included, Mayet estimates that maternity insurance will involve an increase of only 1.5 per cent. of the wages of members. On the basis of more liberal provisions than those which he has described, he has arrived at the figure of two per cent.

As an illustration of the experience of a German city the Leipzig figures may be cited. The Leipzig Sickness Insurance Society, in addition to the regular benefits for members, furnishes medical care for the wives and children of members. With a membership of 206,180, expenditures were as follows in 1912:

|                            | Expenditures<br>in marks. | Average<br>expenditure<br>in marks for<br>each member. |
|----------------------------|---------------------------|--|
| All items .. . . .         | \$913,153.28              | 43.24  |
| Medical treatment .. . . . | 1,097,210.24              | 9.25   |
| Medicines, etc. .... .     | 961,351.57                | 4.66   |
| Maternity pay .. . . .     | 172,511.66                | 0.84   |

Under the items "medical treatment" and "medicines" the annual report does not separate the amount expended for maternity cases. It is not probable that this amount would appreciably increase the per capita cost of lying-in care. If the figures were obtainable, they would probably show that the cost of maternity in the Leipzig society, based on percentage of wages, was well within Mayet's estimate.

Any attempt to estimate the cost of a maternity insurance scheme in the United States is fraught with difficulty, owing to the absence of statistics of birth rates in a group which might be included in a sickness insurance society similar to those which have developed in Europe. If we assume the population birth rate of twenty-five per mille, we may construct a hypothetical table of costs approximately as follows, in a society of 100,000 members with an average income for each member of ten dollars a week.

|  |                |
|--|----------------|
| Maternity benefits for 2,500 members at \$10 a week for eight weeks .. . . . | \$200,000      |
| Physician and nurse at \$25 a case. .... .                                   | 62,500         |
| Incidental expenses at \$4 a case. .... .                                    | 10,000         |
| Total .. . . .   | \$272,500      |
| Annual cost each member .. . . .   | \$3.725        |
| Proportion of wage .. . . .  | 0.52 per cent. |

It should be noted here, however, that in Mayet's estimate he assumes a birthrate of twenty per mille for the female members of his society, and of fifty-two per mille for the dependent wives of members. If, therefore, we double the birthrate in the foregoing estimate, the cost of maternity insurance would be 1.04 per cent. of wages, instead of 0.52 per cent. The estimate of twenty-five dollars for each case for the services of the physician and nurse is based upon the experience obtained in the maternity nursing service which the Metropolitan Life Insurance Company gives to its industrial policy holders. If the amount were doubled, the cost for each member in the estimate given would be \$3.35, instead of \$2.72, and the proportion of wages would be 0.64, instead of 0.52 per cent. I think it quite safe to assume that in a scheme of sickness insurance in the United States composed of the same proportionate elements as are found in the Leipzig Sickness Insurance Society, the cost of maternity benefits and medical care would not be over one per cent. of wages. If, however, the greater number of maternity cases were not of members, but of the dependent wives of members, and as such would not receive cash benefits, the cost of such an insurance scheme would be materially reduced.

It should be noted in passing that in Italy the

maternity scheme is a more narrow one, membership being limited to women between ages fifteen and fifty years. Doubtless the Italian maternity insurance organization was created because of the lack of a sickness insurance system, with which maternity insurance could be articulated. Whether such a maternity insurance can be made practicable and economical is an open question. It is as yet too early to make any definite statement with regard to the results obtained in Italy. The dubious efficiency of this plan is pointed out now for the reason that, if any scheme of maternity insurance is developed in the United States, the probability is that it will have to be a phase of a larger scheme of sickness insurance.

#### THE POSSIBILITY OF DEVELOPMENT IN THE UNITED STATES.

It is reasonable to assume that this paper on maternity insurance would not have been asked for unless the need and the desire had been felt for the organization and development of some form of maternity insurance applicable to American conditions. The extent to which such a scheme will develop depends upon our attitude toward the general proposition of an extension of the work of mothers in industry.

While the number of women in industry has grown year by year, according to the Census reports, I think I may safely say that it has been the wish and the desire of economists, social students, and others, that industrial conditions in the United States be of such a kind that the father and the unmarried members of the family of working age may obtain wages sufficiently high to support the family. Thus the mother would be permitted to attend to her natural duties at home—namely, the bearing and rearing of children, and the proper care of these children along the lines of efficient citizenship. This, in the minds of the American people, is the normal American family. We have not yet reached the point in our development where we are willing to admit that our industrial conditions are so bad, or our wage standards so low, that the earnings of the mother must supplement the wages of the other members of the family.

This attitude on our part has gone to the extent of legislation directed toward the care of mothers and children, through State aid, if they have lost their wage earner. Whatever may be the value of the legislation coming under the head of widows' pensions, there can be no doubt as to the purpose in view in enacting laws of this kind. The people of the United States hold that women who are mothers have the distinct function of bringing children into the world and of rearing them properly. It is recognized that the mother who has performed this duty to the State should not be burdened with the additional responsibility of the support of her children. This attitude is the definite basis of existing widow pensions legislation. For the present, at least, we have not accepted the European principle that the wife's earnings must be an element in the family budget. We still hold that a proper living standard should be maintained, if necessary, by wage increases of the other employable members of the family.

With this thought in mind, the question arises







The third dog, after the preliminary operation with compression of the cord at the same level as the first two dogs presented also all the evidences of traumatic myelitis, namely, motor and sensory paralysis of the posterior portion of the body with involvement of the sphincters. Ten days later the wound was reopened and an injection of twenty-five micrograms in two c. c. solution was made into the spinal canal below the compressed area and in a downward direction. All the precautions were taken as in the first two dogs so that no damage was done to the cord itself. Twelve hours later, a spasticity was observed in the paralyzed hind legs, which kept on increasing. At the same time the penis was noticed to be in a state of erection. The sphincters remained the same as prior to the last operation, viz., in a state of incontinence. The spasticity of the paralyzed legs and genital erection continued for the following eight days, when the animal died suddenly. At no time was the front part of the body involved; the limbs and respiration remained intact during the entire surgical life of the animal.

The phenomena observed in this dog tend to prove a direct effect of the radium solution on the fibres of the pyramidal tract and on the erection centre in the lumbar segment of the cord. The appearance of a spastic state of the legs following an intradural injection of radium solutions in the two last animals was so striking in its similarity that it seemed to me opportune to test the physical agent on a healthy dog whose spinal cord was not previously damaged.

The fourth dog accordingly underwent but one operation, viz., exposure of the spinal cord at the same level as the other three, and it received only one injection of twenty-five micrograms of radium in its spinal canal. Four hours later, the hind legs were found in a markedly rigid state (See Fig.) The sensations and the sphincters were intact, but orgasm was distinctly manifest. Otherwise the dog is in excellent state of health. It takes food ravenously, sleeps well, and is animated.

For four weeks no amelioration of the condition could be noticed. At the beginning of the fifth week an exceedingly slight flexion of the affected limbs was observed on rare occasions. Whether the animal will recover or not, it is difficult to say at present.

#### COMMENT.

In my personal experience with human cases in which the spinal canal was manipulated for various therapeutic purposes, I have never observed a spastic phenomenon in the limbs. Neither do I recall in the special or general literature similar observations. Could the fluid injected *per se* produce a compression of the cord or a mechanical irritation of the meninges and cause the symptoms observed? I had opportunities to inject sterile distilled water or physiological saline solution without withdrawing any of the spinal fluid, nevertheless I observed neither spasticity in the limbs nor any other abnormal phenomenon except in certain cases some paresthesias which rapidly disappeared without leaving any trace. The striking identity of this special manifestation, viz., spasticity in the last three dogs; the interesting localization of the spasticity in portions of the body in which the solution had the facility of

becoming localized in accordance with the area injected and with the direction of the flow at the time of the manipulation—these two factors speak strongly in favor of the radium itself being the direct factor in causation of the disorder, but not the fluid containing the radium emanations.

It is therefore interesting and of practical importance to know, first, that no matter how feeble the emanations of radium may be, they are not of an indifferent character when brought into contact with living tissue. Secondly, the effect of very feeble emanations of radium have a damaging effect on nervous substance. This effect appears to be, at least in animals, of a stimulating or irritating character. The absence of sensory disturbances (as tested with the pin prick) and the presence of exclusive spastic phenomena in the last healthy dog, tend to prove that the above mentioned stimulating or irritating influence of radium is carried chiefly to the motor neuron of the cerebrospinal system. The case above described of Doctor Staller may be mentioned again in this connection.

Caution consequently is to be exercised in using soluble radium salts in organic diseases of the nervous system, at least by the intradural method. I am indebted to Doctor Staller, Doctor Rubenstone, and the resident physicians for their cooperation in carrying out these experiments.

1812 SPRUCE STREET.

#### THE ROENTGEN RAY DIAGNOSIS OF GASTRIC LESIONS.\*

By J. W. SQUIRES, M. D.,

Charlotte, N. C.,

Röntgenologist, Charlotte Sanatorium.

The Röntgen ray study of the stomach involves the consideration of two important groups of lesions. The first group consists of tumors, chronic ulcers, adhesions, and syphilis, or lesions producing permanent defects in the contour of the stomach. The second group consists of acute simple ulcers and exogastric lesions or the lesions producing spasmodic defects of the stomach. A positive diagnosis of these two groups of lesions cannot be made without the aid of the Röntgen ray. It is, of course, understood that the clinical symptoms are not to be ignored; they must always occupy an important place. Of the first group of lesions, I will discuss carcinoma and ulcer.

In the early stages of carcinoma, the radiographic findings are very similar to those in ulcer, and at this stage it is impossible to determine by the x ray whether or not malignant degeneration has occurred. However, this border line differentiation between ulcer and early malignant disease is not as necessary as the determination of the stage when medical treatment should end and surgery should begin. From an x ray standpoint, the division should not be benign and malignant, but rather medical and surgical. When the lesion has progressed sufficiently to be considered a surgical one, there will be present sufficient induration or adhesions to produce permanent defects in the contour

\*Read before the Eastern Medical Association at the University of Virginia, Charleston, S. C., February, 1915.

of the stomach, six hour stasis, and interruption of the normal peristalsis. The recognition of the lesions as having reached this stage is essential, as the changes are now so great that medical treatment is useless, and valuable time will be lost if

stage of ulcer, and if the lesion is diagnosed during this stage it can be successfully treated. For this reason, we should be on the alert for gastric lesions, and give them our careful attention until they have



FIG. 2.—Normal stomach; A, pyloric antrum; B, duodenal cap; C, splenic notch.

surgical procedure is not employed. At this stage it is not too late for radical surgery, and by its use there still remains a possibility of obtaining permanent relief. Even if cancerous cells have appeared, surgery is still indicated. This fact is emphasized by Dr. W. J. Mayo (1), who in a recent report of his operative cases of gastric carcinoma, shows that with an early diagnosis and radical operation the mortality can be considerably reduced.

It is also to be emphasized that if a most careful examination of patients with gastrointestinal symp-

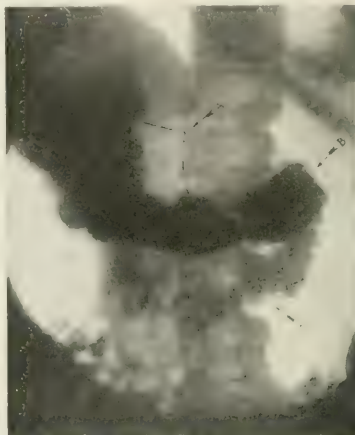


FIG. 3.—Carcinoma of lesser curvature of stomach. A, Multiple indentations on the lesser curvature; B, dilatation of duodenum; C, site of metastasis which produced an obstruction in the descending duodenum. The indentations resembled peristaltic contractions, but they were persistent in a number of radiograms, and could be superimposed. This finding is characteristic of malignancy. Operation.

been cured, and thus reduce the probability of malignancy in later years.

The technic for the Röntgen ray examination of the stomach consists in giving the patient a contrast meal of seventy grams of barium sulphate in 400 c. c. of buttermilk. This is given with a light breakfast, or just after the morning meal. No laxative is prescribed the evening before, nor is spe-

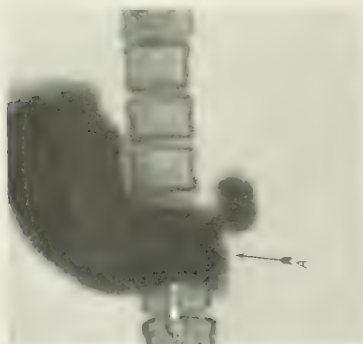


FIG. 4.—A, Carcinoma of pylorus; B, filling defect on the greater curvature. Examinations made at different intervals showed that the defect was constant. Note the rigid appearance of the pylorus. Operation.

tombs could be made in every case, there would result more intelligent diagnosis, and this would be followed by a more successful treatment for eradication. This fact is especially worthy of consideration when it is recalled that there is a precancerous

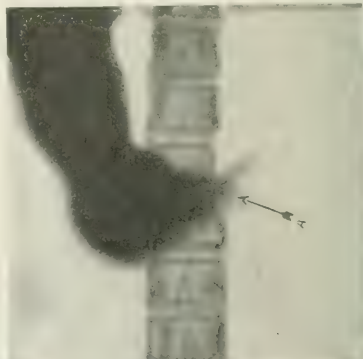


FIG. 5.—A, Carcinoma of pylorus. Note the wormeaten appearance of the edges, which is characteristic of carcinoma. The obstruction was slight in this case. Operation.

cial preparation advised. A radiogram is taken immediately after this meal, and one every half hour, or more frequently, until the operator is satisfied that he has obtained sufficient knowledge of the size, shape, position, peristalsis, and motility of



the stomach, and the appearance of the duodenal cap; and if a defective filling of the cap is observed, serial radiographs of this portion are made. It is possible that this will require only a few radio-

grams, and the position of the stomach, the regularity of the stomach shadow, the peristalsis, mobility, and the site of pain are observed. The size and position of the normal stomach varies considerably, and some latitude must be given for its variations. The

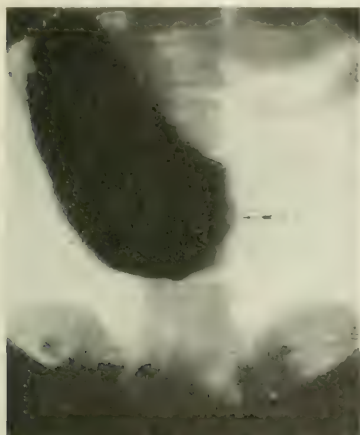


FIG. 5.—Carcinoma involving pylorus and constricting the lumen. Stomach dilated owing to pyloric obstruction. A, Scalloped outline of the edges of the tumor. This is frequently seen in carcinoma.

grams, or it may require a great number. The radiograms are taken in the prone, oblique, and right side position. There is no ironclad rule as to the technic to be followed; it should be a flexible one, and adapted to the requirements of the individual case.

Fluoroscopy is employed after the radiographic examination has been completed. A contrast, simi-

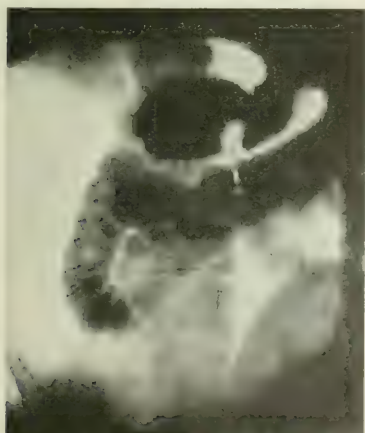


FIG. 6.—A, Carcinoma of stomach, defect persistent in a series of radiograms; could be superimposed. Note small, contracted stomach. Operation.

lar to the first, is given, and observations of the esophagus are made as the meal passes through, and following this a careful fluoroscopic study of the stomach is made. In this examination, the size

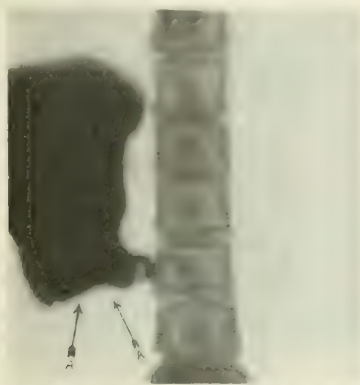


FIG. 7.—A, A, Carcinoma of stomach. This is a typical picture of carcinoma of the stomach. The eight signs of carcinoma described in the text were readily detected in this case. Operation.

stomach shadow, consisting of the pars cardia, media, pylorica, and the greater and lesser curvatures and duodenal cap, should show no persistent irregularity in outline. If irregularities are observed, an effort is made, by palpating the stomach, to cause these to fill out evenly. If they disappear, they are spasmodic; if persistent, they are due to organic changes.

The peristalsis of the stomach should always be observed, even though at times it has very little



FIG. 8.—A, Carcinoma of stomach.

significance. It should be noted whether the contractions are normal, diminished, increased, or of the hourglass type, and whether there is an interruption of the waves as they progress toward the pylorus. It should also be observed whether there

is normal motility, hypermotility, or hypomotility of the stomach.

The normal stomach has considerable mobility, but in ulcer and carcinoma there may result limited movement or complete fixation due to adhesions to

firmly in the mind of the roentgenologist. These, I will give in the order of their relative importance as I have found them.

1. Filling defects.
2. Absence of peristalsis in part involved.

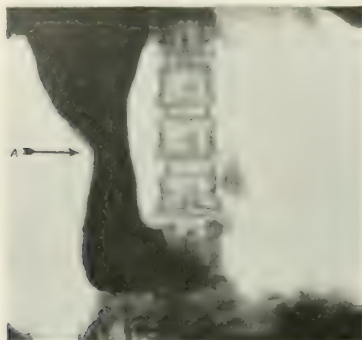


FIG. 10.—A, Ulcer of stomach, with considerable contraction from cicatrix.

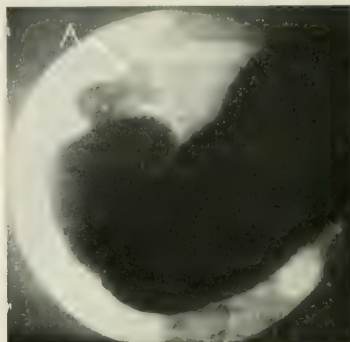


FIG. 11.—A, Duodenal ulcer. Note the marked deformity of duodenal cap. This deformity persisted in a large number of radiographs, and the diagnosis of duodenal ulcer was confirmed by operation.

adjacent structures. The location of pain is important. By palpation, it can be determined whether or not the pain area corresponds to the site of the filling defect. It should also be observed whether the pain is diffuse or sharp, and localized in its distribution.

Only a few minutes should be consumed in a fluoroscopic examination. Prolonged screening is unnecessary, and the operator should train himself to make a systematic study with the greatest rapidity possible. The examination is most satisfactory when the operator takes sufficient time to see that all sources of light are eliminated, and when he has

3. Mobility.
4. Superimposing test.
5. Pain at site of filling defect. This sign is observed during the fluoroscopic examination.
6. Changes in pylorus, which may be gaping or obstructed.
7. Residue in some cases; in others, none.
8. Advanced position of opaque meal, in six hours, the barium being in the transverse or descending colon.

1. The filling defect is the most valuable sign. It is constant, and not affected by the peristalsis of the stomach. The defect varies considerably with the type of malignancy. In the medullary types, it



FIG. 12.—A, Normal duodenal cap; B, pyloric spasm; C, filling defect. Compare the normal outline of the regular cap of duodenal ulcer illness.

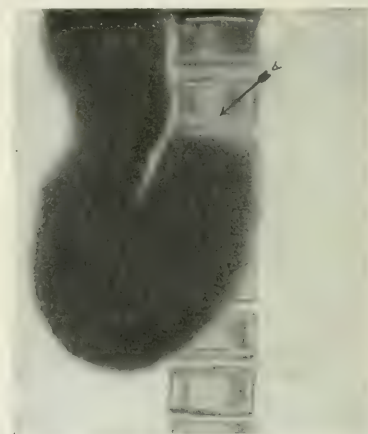


FIG. 13.—A, Duodenal stenosis due to chronic ulcer, with considerable cicatrix, stomach dilated. In this case, the emptying time of the stomach was longer than thirty hours. Operation, gastroenterostomy.

remained in the room sufficiently long for his eyes to become adapted to the dark.

The diagnosis of gastric carcinoma requires a very careful consideration of both the radiographic and fluoroscopic observations. However, there are certain characteristic findings that fix this diagnosis

is large, and presents a scalloped contour. The scalloped or finger print appearance associated with the other signs, and confirmed by fluoroscopy, makes the diagnosis certain in almost every case.

The scirrhus type presents a small contracted stomach; and the papillary type a small defect resembling that of chronic ulcer.

In the study of these defects, the fluoroscopic

defects due to pressure of adjacent structures are eliminated by pushing the surrounding parts aside, thus giving the stomach an opportunity to fill out evenly. If it does not fill out, this procedure proves a true filling defect.



FIG. 12.—Case four months after operation. Note that the musculature of the stomach has regained its tone, and the size of the stomach is normal. A, shows lumen passing through gastroenterostomy opening.

examination is as essential as the radiographic. Guided by direct observation under the fluorescent screen, the different parts of the stomach and adjacent organs can be palpated. This is a very important procedure, as it is necessary to differentiate between true filling defects, and those due to pressure of adjacent structures, such as tumor of colon or enlarged spleen. The accuracy of the radiological diagnosis depends entirely upon whether or not these defects are traced out to their real origin. The defects of the stomach produced by spasm can be eliminated by palpation during the screen examination, or by giving belladonna for several days before the second examination. For instance, in a case recently under observation, there was observed

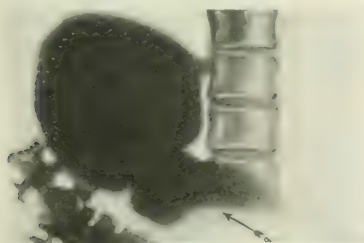


FIG. 14.—A, Postoperative adhesions of pylorus.

a filling defect with an irregular outline. This appearance persisted under the fluoroscopic examination, regardless of vigorous palpation; atropine, however, given three times a day for a week, resulted in a complete disappearance of the defect. This proved to be a spastic phenomenon, and not an organic lesion as was originally suspected. These spasmodic contractions are usually clear cut. The



FIG. 13.—A, Spasm of pylorus and duodenum, with secondary obliteration of the duodenal cap. This condition is frequently associated with the patulous appendix.

2. Peristalsis will be absent in the portion involved. The waves as a whole are diminished in force and number, and skip over the indurated area. In the early stage of obstruction, there is a compensatory hyperperistalsis; but as compensation fails, the waves diminish in frequency and force. Regardless of peristalsis, the parts involved will be found constant in contour, both radiographically and fluoroscopically.

3. The mobility of the stomach is eventually lessened, owing to the involvement of adjacent structures with subsequent fixation. This condition is determined by fluoroscopy.



FIG. 15.—A, Peristalsis of the stomach and duodenum, difficult to differentiate it from ulcer. See Fig. 16.

4. The superimposing test consists in superimposing the radiograms, and noting whether or not the defect of each corresponds in contour and location. It is surprising how closely the defect



corresponds, even in a series of radiograms taken at different intervals *post cibum*. In three cases recently examined, this test proved very satisfactory.

5. The pain of gastric carcinoma is dull and



FIG. 17.—A. Adhesions of transverse colon to cecum. This condition very frequently results in reflex hyperistalsis of the stomach, and spastic defects of the duodenal cap. Operation, appendectomy, and colon released from adhesions.

diffuse. This is in direct contrast to that of ulcer, which is sharp and localized. During the fluoroscopic observation particular effort is made to discover whether or not the pain area corresponds with the site of the filling defect.

6. The pylorus may be obstructed by the size and site of the tumor. However, in some instances,



FIG. 18.—A. Reflex spastic defect of pylorus. This defect was not persistent, hence the clinical diagnosis of ulcer which was not confirmed by the x-ray. Operation.

it may be found gaping, which results in hypermotility rather than stasis. The explanation is that the stomach walls become thickened, the pylorus infiltrated, and in some cases secretory changes occur which cause it to remain patulous. The ob-

struction may occur at any point in the stomach. In seventy-five per cent. of the cases it is located at the pylorus (2).

7. The residuum may be small or large, depend-

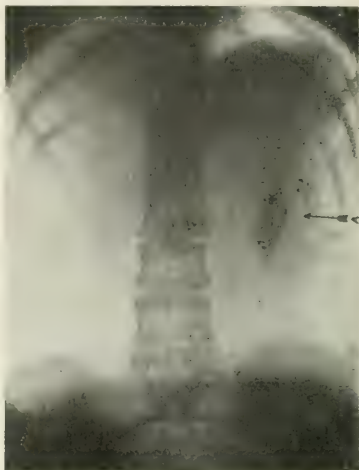


FIG. 19.—A. Gallbladder filled with gallstones. In this case there was considerable reflex pylorospasm and hyperperistalsis of the stomach.

ing upon the degree of obstruction. In some instances there will be found no residue, on account of the gaping of the pylorus, which is accompanied by a hypermotility of the stomach.

8. Advanced position of the opaque meal is frequently seen. This alone is of minor importance,

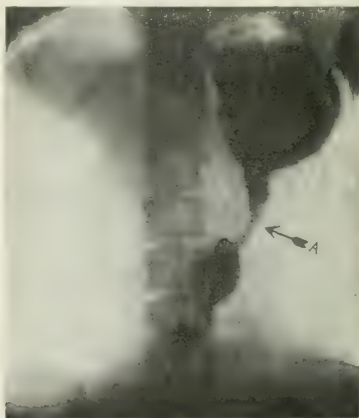


FIG. 20.—Stenosis of stomach. A. Area of sclerosis. The cardiac end is dilated, and connected with the pylorus by a constricted arm. Antisyphilitic treatment has resulted in marked improvement of symptoms. Patient refused operation.

but associated with other signs of carcinoma it has positive value.

A careful consideration of these findings gives not only a most accurate insight into the patholog-



## A NEW TONSIL DEPRESSOR.

*Designed to Facilitate the Sluder Method of Operation,*

BY JAMES H. HEACOCK, M. D.,  
New York,

Sluder, N. Heacock, Depressor, Surgical Staff, St. Mary's  
Hospital, Out-Patient Department.

In doing the Sluder operation for the removal of tonsils, as is experienced by all operators, there should be the feel of a depression when the tonsil is pushed through the fenestrum of the tonsillotome, but I have found that the procedure can be made much easier by instrumentation.

As all surgeons who are familiar with the Sluder method know, the two essential steps are, first, seeing that the tonsillotome is directed transversely across the mouth with the opened fenestrum back of the tonsil to be removed; secondly, seeing that the tonsil is manipulated or pushed through the opening, feeling the depression beneath, this to be followed by the blade being pushed home. The sensation felt with the ball of the operating finger



FIG. HEACOCK'S TONSIL DEPRESSOR.

can be likened to the sensation noticed when one pushes a marble into a piece of dough.

Now I have found that the whole operative procedure can be made much easier by an original metal device adjusted to fit the mould of the first or index finger and having the width of the thumb, hence, allowing greater surface to manipulate the tonsil through and not interfering with the feel in the least. Owing to the fact that some tonsils are hypertrophied and much larger than the opening through which they are to be forced, the No. 2 Sluder instrument being most frequently used, the procedure can be greatly facilitated by a firm or solid substance like the tonsil depressor.

In children up to six and seven years of age I have found the No. 1 Sluder instrument to answer the purpose in most cases, but from eight years onward the size of the fenestrum must be adapted to the size of the tonsil, the No. 2 Sluder being most universally used. Naturally a tonsil half the size of a spleen will not go through a small opening.

Using ordinary care in the technic, perfect pillars are preserved; there is no stripping of the anterior pillar and no shredding of the posterior pillar.

The instrument should not extend beyond the end of the index finger, but remain just flush with it. It is adjustable to any size finger.

114 WEST SIXTY-FOURTH STREET.

**Red Tape in French Army.**—An American surgeon states that a drawback to surgery in the French army is the red tape involved in obtaining tetanus vaccine.

## TREATMENT WITH MIXED VACCINES.

*A Study of the Leucocytic Formula and Opsonic Indices of Some Patients So Treated.*

BY ALPHONSE A. THIBAUDEAU, M. B. (TORONTO),  
Buffalo,

Instructor in Hygiene, University of Buffalo; Assistant Clinical  
Pathologist, Buffalo General Hospital; Pathologist,  
Buffalo Emergency Hospital; Etc.

The purpose of this study was to investigate the claims of, and to supply, if possible, a logical explanation, conforming to present day views of the mechanism of immunity, of therapeutic results reported by numerous clinicians following the use of the phylacogens,<sup>1</sup> as well as to satisfy a reasonable demand that clinical treatment with products of biological origin be based upon scientific laboratory finding.

A partial and hypothetical explanation of the physiological action of mixed vaccines was an assumption that it was in a degree similar to that of bacterial vaccines. It was believed that the opsonic power of patients receiving injections would be increased.

We were acquainted with the results of experiments on laboratory animals which showed that injections of bacterial derivatives resulted in an increase of the opsonic index of the animals, and that the increase in this index was specific, being raised to those germs only which were used in the preparation, but not to other species. We expected also to find the increase in the leucocytic count which was found by Alden (8) in his study of cases. Our study was an endeavor to correlate these assumptions with two definitely accepted theories of immunity, the opsonic theory of Wright and the phagocytic theory of Metchnikoff; the principles upon which these two theories depend being demonstrable scientific facts, and not mere assumptions, were selected as our guide.

The importance of the polymorphonuclear leucocytes, in both natural and acquired resistance to bacteria, has been well shown by Metchnikoff and his pupils (1). Most of the work on the leucocytes in immunity has dealt with the qualitative rather than the quantitative response of these cells to the infecting microorganism.

Gay and Clappole (2, 3) have pointed out the existence and importance of a quantitative leucocyte response in cases in which recovery from the acute infection occurs promptly. Their work also shows that the injection of foreign protein gives rise to a hyperleucocytosis which may or may not be preceded by a leucopenia. This has been confirmed by others. Simonds and Baldauf (4) found that the intraperitoneal injection of heated cultures of *Bacillus coli* or *Bacillus pyocyaneus* in rabbits produced a leucopenia in from twenty minutes to four hours, followed by a hyperleucocytosis amounting sometimes to nearly twice the original count.

Gay and Clappole have proved that a differential count in immunized animals shows that both the leucopenia and hyperleucocytosis affect largely the polymorphonuclear type of cell. Metchnikoff has stated that the principal locus of origin of immune bodies is in the leucocytes. Numerous workers have



believed, as a result of their experimental studies, that the leucocytic crisis is followed by an increase in antibodies; that, in other works, the leucocytic crisis (and destruction?) would seem to liberate antibodies.

Dorchez (5) has found that the protective value for mice, of serum from human cases of pneumonia, is greater after the crisis has taken place in the human subject. Hektoen (6) also suggests that the leucocytic crisis in pneumonia is of curative value. Hamburger (7) has reported leucocyte counts of children suffering from gonorrheal vulvovaginitis following intravenous injection of small amounts of a polyvalent gonococcus vaccine. His counts showed that there was a hyperleucocytosis ranging from 15,000 to 28,000 at the eighth hour, preceded by a hypoleucocytosis of from 6,000 to 7,000 at forty-five minutes.

We determined, therefore, to ascertain what changes, if any, were produced by the injection of phylacogen, selecting for the study of the blood surgical patients who had proved refractory to regular treatment.

Realizing that leucocyte formula, to be instructive, should be taken in such a manner as to indicate any changes due to the action of the therapeutic agent employed, we first made, in each case preliminary to the phylacogen injection, a number of total as well as differential leucocyte counts to determine the patient's averages as controls. We made total leucocyte counts every two hours for the first twenty-four hours in each of the first two cases, or twenty-four total leucocyte determinations during the first twenty-four hour period. Afterward the determination was made every four hours following the injection of phylacogen until the time of rise and return to the preinjection count could be assumed with a fair degree of certainty, and thereafter counts were made as frequently as our previous experience indicated to be necessary.

In each case studied the infecting organism, or organisms, were ascertained by careful bacteriological methods, and the germs found were afterward obtained in pure culture and used in determining the patient's opsonic index. Prior to the injection, the index was determined in each instance as a control. During this study the opsonic index of each patient was determined with sufficient frequency to give a clear picture of the result of the treatment upon the opsonizing power of the patient.

The amount of work necessitated by this study is evident when it is realized that the investigation of the five patients hereafter cited required 163 total leucocyte counts, twenty-three differential leucocyte counts, and twenty-five opsonic indices.

CASE I. L. S., aged eighteen years, Pole, boiler maker, single, entered the hospital May 18, 1914, complaining of great pain in his left hip. Previous history: Had never been ill except when he broke his arm at the age of three years. Denied venereal disease. Drank beer moderately; appetite good, bowels constipated, no urinary disturbance, slept well. Family history: Father living and well, mother died at thirty years, cause unknown, three sisters alive and well, two brothers died in infancy, cause unknown.

Present illness: On May 17, 1914, the patient first experienced pain in the left hip, but worked at his trade as boiler maker for the entire day. Pain continued and he was obliged to stop work and came to the hospital. Examination disclosed a swollen left hip presenting all the

signs of an abscess. May 19th operation, incision in left hip, large amount of pus was evacuated.

From May 19th until May 26th (twelve days) patient was given a regulation surgical treatment. The abscess continued to drain, no apparent effort at cessation. On May 26th a bacteriological examination of the pus from the abscess showed that it was practically a pure culture of *Staphylococcus pyogenes aureus*. All subsequent opsonic indices in this case were taken from the organism obtained from this case.

Control leucocyte counts were taken on May 26th as follows: 12 noon, 22,000; 4 p. m., 21,800; 9 p. m., 21,600.

Leucocyte count in this case was high as might be expected from the pathological condition.

The differential count on May 26th at noon was as follows: Polymorphonuclear, 78 per cent.; small mononuclear, 15 per cent.; large mononuclear, 7 per cent.; eosinophiles, 1 per cent.; basophiles, none.

The opsonic index to *Staphylococcus pyogenes aureus* was 0.8.

On May 27th, 8 a. m., four minims of mixed infection vaccine was injected into the median basile vein. No constitutional reaction was perceptible. There was very little rise of temperature, little disturbance of the pulse, and no chill. The following blood phenomena were observed however:

Just before the injection the leucocyte count was 15,000; 10 a. m., two hours later, 15,000; 12 noon, 25,000; 2 p. m., 22,000; 4 p. m., 17,000. The counts taken at two hourly intervals, until 8 a. m. the next morning, showed the leucocytes to vary from 15,000 to 20,000; 2 p. m., six hours after the first injection, differential leucocyte count was as follows: Polymorphonuclear, 72 per cent.; small mononuclear, 22 per cent.; large mononuclear, 6 per cent.; eosinophiles, none; basophiles, none.

At 8 p. m., or twelve hours after the injection, the differential count was as follows: Polymorphonuclear, 75 per cent.; small mononuclear, 14 per cent.; large mononuclear, 7 per cent.; eosinophiles, 3.5 per cent.; basophiles, 0.5 per cent.

At 2 p. m., or six hours after the injection, the opsonic index to the *staphylococcus aureus* was 0.66. At 8 p. m., or twelve hours after the injection, the opsonic index had risen to 1.0, indicating that the cycle of "negative and positive phases" had been completed in twelve hours.

On May 28th at 8 a. m., before the injection was made, the leucocyte count was 18,000 and the opsonic index was 1.4. Eight minims of mixed infection vaccine was injected into the median basile vein. There was very little constitutional disturbance, as evidenced by the temperature, pulse, and respiration; there was no chill. At 12 noon, four hours after the injection, the leucocyte count had risen to 30,000 and the differential count was as follows: Polymorphonuclear, 83 per cent.; small mononuclear, 10 per cent.; large mononuclear, 7 per cent.; eosinophiles, none; basophiles, none.

At 4 p. m. the leucocyte count had dropped to 22,500, and at 8 p. m. it had dropped to 18,000. Leucocyte counts every two hours for the remainder of the twenty-four hours showed very little change, the leucocytes rising very gradually indeed.

May 29th, 8 a. m., before injection, leucocyte count was 21,000. Twelve minims mixed infection vaccine was injected into the median basile vein; again no constitutional disturbance, but constitutional reaction was indicated by the pulse, temperature, and respiration; no chill. At 2 p. m., the leucocyte count had risen to 25,000, dropping to 20,000 at 4 p. m., remaining practically stationary throughout the twenty-four hour period.

May 30th, 8 a. m., before injection, leucocyte count 21,000. Sixteen minims mixed infection vaccine was injected into the median basile vein. No fever, raised pulse or respiration, no chill; at 12 noon, leucocyte count 26,000. Two hourly counts for the remainder of the period showed the leucocytes to be slowly dropping. On May 31st, at 8:30 a. m., leucocyte count was 20,400. Sixteen minims mixed infection vaccine was injected into the median basile vein; no chill followed. At 1 p. m. leucocytes rose to 25,600. At noon the opsonic index was 1.0.

June 1st, sixteen minims injected into the vein; no chill. Leucocyte count at 10 a. m. was 28,200; at 5 p. m. 32,000.

June 2d, leucocyte count 10 a. m. 32,000.  
Pain developed in the right hip; investigation showed

another abscess, which was opened and drained. Sixteen minims of vaccine was injected into the vein.

On June 3d, 4th, 6th, and 8th, the same amount (sixteen minims) was given in the vein. No chill followed at any time. This constituted the course of treatment.

On June 27th, the patient was discharged perfectly well in all respects.

Throughout the course of the patient's stay in the hospital, daily urinalyses were made, but no abnormality was observed. We intentionally gave small doses very carefully and slowly so as not to provoke a heavy constitutional reaction and to ascertain if minimum doses would alter the blood picture and produce the desired therapeutic result, and in this case the result was much more satisfactory than was expected. The discharge rapidly changed in character, becoming much thinner, and soon ceased.

The patient recovered after the institution of this vaccine much more rapidly than has been usual in similar cases in the hospital.

CASE II. H. M., aged forty-six years, American, blacksmith, single. Entered the hospital, February 3, 1913, complaining of an injury to his right hip. Present illness: On February 1, 1913, was struck by an automobile and knocked down, his right hip coming in violent contact with the curbstone. A great deal of pain ensued, but he walked home with the assistance of two men. Pain gradually grew worse, he could not bear any weight on his injured leg, and he was brought to the hospital for treatment.

Previous history: Measles and whooping cough when a child. Gonorrhea at the age of thirty-two years (1899), cured in one month. Acute "rheumatism" in 1912, sick three months at this time, otherwise he had always been healthy. Present history: His appetite was good; bowels regular; slept well; drank a good deal of coffee, and from eight to ten glasses of beer a day; he had noticed no urinary disturbance. Family history: Father and mother died of old age; two brothers and one sister alive and well; two brothers and one sister dead, cause unknown. No history of tuberculosis or cancer in the family.

February 5th, x ray examination showed fracture of the neck of the right femur, impacted, and with marked external rotation. Malposition corrected, limb placed at rest. February 15th, progress of the case to this time had not been satisfactory. As the result of an examination, the bone was refractured and held in place by wire nail and plaster spica. The progress of the case was not satisfactory. March, 1913, the operation wound was breaking down and discharging pus; a sinus developed. Alcohol dressings and potassium permanganate irrigations were unavailing.

April 24th, operative interference; the nail removed and the sinus curetted, but the wound continued to discharge. May 25th, third operation, necrotic tissue and piece of dead bone removed. May 26th, wound continued to discharge. Decided to begin the use of mixed vaccines.

The pus from the discharging sinus was examined bacteriologically and found to contain *Streptococcus pyogenes*; all opsonic indices were taken to this organism isolated from the case. The opsonic index on May 26th was 0.6. The control leucocyte counts taken on this date were as follows: 12 noon, 7,600; 4 p. m., 7,100; at 9 p. m., 7,000.

May 27th, 8 a. m., leucocyte count 8,200. Differential count: Polymorphonuclear, 72 per cent.; small mononuclear, 23 per cent.; large mononuclear, 4 per cent.; eosinophiles, one per cent.; basophiles, none.

Four minims of mixed infection vaccine injected in the vein. Temperature rose, pulse increased in rate, but there was no chill. At 10 a. m. there was a decided drop in leucocyte count, to 6,600; 12 noon the count had risen to 9,800; at 2 p. m., 10,400; 4 p. m., 9,200; 6 p. m., 8,800; 8 p. m., 7,800; at 10 p. m., 7,200; 12 midnight, 7,800; 2 a. m., 9,000; 4 a. m., 6,400; 6 a. m., 7,200; at 2 p. m., six hours after the first injection, and the time of the highest leucocyte count of the day, as shown above, the differential count also showed a change: Polymorphonuclear, 74 per cent.; small mononuclear, 21 per cent.; large mononuclear, 4.5 per cent.; eosinophiles, 0.5 per cent.; basophiles, none.

At 8 p. m., twelve hours after the injection, when the leucocytes had dropped to 7,800, the differential count again showed a change: Polymorphonuclear, 68 per cent.; small mononuclear, 19 per cent.; large mononuclear, 8 per cent.; eosinophiles, 5 per cent.; basophiles, none.

At 2 p. m., or four hours after the first injection, the opsonic index had risen to 0.8, and at 8 p. m., twelve hours after the first injection, the index had risen to 1.5.

May 28th, 8 a. m., leucocyte count 8,200. Eight minims mixed infection vaccine was injected into the vein. Slight rise in temperature and slight chill, increase in pulse rate. At 12 noon, four hours after the injection, leucocyte count had risen to 13,800. Differential count showed decided change: Polymorphonuclear, 85 per cent.; small mononuclear, 10 per cent.; large mononuclear, 4 per cent.; eosinophiles, 1 per cent.; basophiles, none.

At 8 a. m., before the injection, the opsonic index was 0.8. Owing to an accident to the blood tubes the index was not taken again during this day or the next. At 4 p. m. the leucocyte count had dropped to 10,000, and at 8 p. m. to 7,000.

May 29th, at 8 a. m., leucocyte count 6,800. Twelve minims of mixed infection vaccine injected. Rise in pulse and temperature and a chilly feeling; 4 p. m., leucocytes 7,800; 10 p. m., leucocytes 6,800.

May 30th, 8 a. m., leucocytes 8,200. Sixteen minims of mixed vaccine injected into the vein; at 12 noon leucocytes 11,800; 8 p. m., 8,400. May 31st, 8 a. m., leucocytes 7,400. Sixteen minims injected into the vein; no chill. At 1 p. m., leucocytes 11,600; at noon opsonic index 0.9. On June 1st, 10 a. m., leucocytes 8,000. Sixteen minims injected into the vein; no chill; 4 p. m., leucocytes 10,000; 5:30 p. m., leucocytes 8,800.

June 2d, 10 a. m., leucocytes 6,600. Sixteen minims injected into the vein. June 3d, 4th, 6th, and 8th, sixteen minims injected intravenously; no chill. On June 8th, twelve hours after the last injection of phylacogen, the opsonic index was 1.3. From May 27th to June 8th, the temperature ranged from 98° to 99° F., pulse from 80 to 110. Daily urinalyses were negative.

Within the first three days of the treatment patient felt better and looked better, had much less pain and less discharge.

It will be noted by an examination of these two patients (Cases I and II) that while the leucocyte count reached the maximum four hours after the injection, usually the opsonic index took a much longer period to rise and did not seem to reach the maximum until twelve hours after the injection. In both cases the opsonic index was raised and was higher after the period of treatment than before the vaccine was used.

CASE III. G. D., compound fracture of left tibia and fibula. Admitted to the hospital July 6, 1914. History: While racing a motorcycle in another town, the leather legging of the patient caught in the chain of the machine; he fell and was dragged a number of feet, suffering a compound fracture of both bones of the left leg. On arrival of the ambulance both bones were found to be fractured at the junction of the middle and lower third and were protruding through the skin. He received first aid and was removed to the hospital, arriving one hour after the accident. Three days later, infection developed and became progressively greater, causing abscesses to form and to point in several directions. These were opened to afford drainage and subsequently became connected by sinuses. The infection continued until October 18th, remaining about stationary, but discharging large quantities of pus.

On examination, October 18th (nearly fourteen weeks after the accident), several of the sinuses were still open; there was a large ulcerated area regularly round, about three inches in diameter, on the inner aspect of the leg. This area was bathed in pus. Pressure on the calf of the leg caused pus to the quantity of ten to fifteen c. c. to well out of the various sinuses. Smears and cultures made from the pus at this time showed the presence of *Staphylococcus pyogenes aureus* and *Streptococcus pyogenes*. These organisms were obtained in pure culture for the taking of the opsonic indices.



The treatment up to this time had consisted in the use of potassium permanganate irrigations, two daily, with wet alcohol dressings. On October 21st, blood examination showed red corpuscles 3,800,000, hemoglobin sixty per cent. Examination of stained smears showed some irregularity in the staining of the reds and some slight poikilocytosis. There were no nucleated red cells. The leucocyte count was 17,000. The differential count was: Polymorphonuclear, 82 per cent.; small mononuclear, 14 per cent.; large mononuclear, 4 per cent.; eosinophiles, none.

The opsonic index to *Staphylococcus aureus* was 0.6, to *Streptococcus pyogenes* 0.5.

On October 22d treatment with mixed infection vaccine was instituted. The initial dose was four minims of the phylacogen injected into the median basilic vein, no chill following. This dose was increased until 1.5 c. c. was being given. For the first three days of treatment the discharge remained about the same. After this time, however, it became more serous in character and gradually less. Healthy granulations appeared, the discharge ceased entirely, and the sinuses closed.

October 22d, at 10 a. m., the leucocyte count was 16,000; at 12 noon it was 38,200; 2 p. m., 26,600; 4 p. m., 21,000; 6 p. m., 16,000; 8 p. m., 17,400; 10 p. m., 18,000. The differential count at noon was: Polymorphonuclear, 88 per cent.; small mononuclear, 9 per cent.; large mononuclear, 3 per cent.

Twelve hours after the injection the opsonic index to *Staphylococcus aureus* had risen to 0.9 and to *Streptococcus pyogenes* 0.8.

October 23d, 10 a. m., leucocyte count 18,000. Eight minims of phylacogen was injected into the vein; slight chill twenty minutes after the injection. At 1 p. m. leucocytes had risen to 38,400; at 9 p. m. to 18,400. Differential count at 1 p. m.: Polymorphonuclear, 89 per cent.; small mononuclear, 8 per cent.; large mononuclear, 3 per cent.

October 24th, 10 a. m., leucocyte count 16,000. Eight minims phylacogen into vein, no chill, but a chilly sensation. At 2 p. m. leucocytes had jumped to 30,000; 9 p. m. down to 15,000; at 2 p. m. the differential count was: Polymorphonuclear, 86 per cent.; small mononuclear, 11 per cent.; large mononuclear, 3 per cent.

October 25th, 11 a. m., leucocytes 18,000; injection of ten minims in the vein. Patient chilly. At 4 p. m., 15,000; 9 p. m., 17,400. Twelve hours after the injection the opsonic index to *Staphylococcus aureus* had risen to 1.3 and to *Streptococcus pyogenes* 1.1.

October 26th, 10 a. m., leucocyte count 18,000. Twelve minims phylacogen into vein; 2 p. m. leucocytes had jumped to 31,000, dropping back, at 10 p. m., to 16,000. October 27th, 10 a. m., leucocyte count 15,000. One c. c. injected into vein; 9 p. m., leucocyte count 20,000. October 28th, 10 a. m., leucocyte count 8,800; 1.5 c. c. injected into vein. At 2 p. m. leucocytes had jumped to 24,800, and the opsonic index had jumped in twenty hours to 1.7 for *Staphylococcus aureus* and 1.5 for *Streptococcus pyogenes*. October 29th, 10 a. m., leucocyte count 8,800, followed by an injection of 1.5 c. c. of phylacogen into vein; 4 p. m. leucocyte count 10,000.

On November 4th the patient left the hospital. There was no evidence of bone necrosis, and union was apparently firm. A study of the laboratory findings in this case, particularly the blood picture, is very interesting. The intravenous method of administration seems to be the ideal method, affording both greater accuracy of dose and greater rapidity of results. In the next, the fourth case, in which we were forced to change to the subcutaneous method, the leucocyte counts did not rise as promptly as when the intravenous method was employed, the maximum count being reached in eight to twelve hours, compared to four hours for the intravenous.

The opsonic index in this case was promptly raised, a marked increase being noted at the end of the first twelve hours after the first injection, and it is of particular interest to note that while the bacteriological diagnosis showed the presence of

two organisms, *Staphylococcus aureus* and *Streptococcus pyogenes*, a single injection of mixed infection vaccine promptly raised the index to both organisms simultaneously. It did this invariably, thus showing the ability of mixed infection phylacogen to stimulate the production of antibodies specific to both of these organisms. The results of the injection, so far as the increase in leucocytes is concerned, is strikingly shown as follows: On October 22nd, following the first injection into the vein, the leucocyte count was more than doubled in two hours. Again on October 23rd, the leucocyte count was more than doubled in four hours. On October 24th it nearly doubled in four hours. On October 26th again it nearly doubled in four hours, and on the 28th the leucocyte count showed an increase of 300 per cent. in four hours.

It will also be noted that in the differential count there was a marked increase in the polymorphonuclear leucocytes. The combination of increase in leucocytes and coincidental rise in opsonic indices provides a theoretically favorable condition for the recovery of the patient and the patient did improve under the treatment, the clinical picture becoming markedly better.

In one or two instances, when, owing to an error in technic, only a part of the phylacogen was injected into the vein, and the remainder into the tissues around the vein, this fact was shown in the blood picture; the leucocyte count rising much more slowly and the rise in opsonic index being more delayed than where the intravenous injection was correctly made.

The clinical improvement of this patient under phylacogen compared with his lack of improvement under routine treatment, was striking. He had been in the hospital practically fourteen weeks without improvement and in less than fourteen days the mixed vaccine treatment produced a result which was decisive and satisfactory enough to suit the most exacting.

CASE IV. H. M., aged fifty-three years, admitted to the hospital July 30, 1914, with a compound fracture of the right tibia and fibula. History: While unloading a wagon on an embankment, the wagon slipped, the patient's foot was caught between two levers, and he was thrown violently, producing a compound fracture of both bones of the leg close to the joint. On August 1st the wound showed infection and this condition persisted in spite of treatment until the patient was first seen in the course of this investigation on October 18th, or ten weeks later. The patient's condition was said to have been stationary for some time. His previous and family history were of no consequence in this connection.

Smears and cultures made on October 18th showed the infecting organism to be *Streptococcus pyogenes*, and his opsonic index to this organism, as recovered from the discharge, was 0.7.

October 21st, blood examination showed the red corpuscles to number 3,400,000; hemoglobin was fifty-six per cent. Examination of stain smears showed no nucleated reds and but slight changes in the shape of the reds. There was no apparent irregularity of staining, but all the red cells stained lightly. Leucocyte determinations: At 9 p. m., 7,200; differential count: Polymorphonuclear, 75 per cent.; small mononuclear, 22 per cent.; large mononuclear, 2.5 per cent.; eosinophiles, 0.5 per cent.

Up to October 22d the patient had received daily irrigations of potassium permanganate one to 1,000, together with wet alcohol dressings. The treatment, however, did not seem to affect the discharge. The phylacogen treatment was instituted. On this day four minims were given intra-



venously; no chill. This was followed on the three succeeding days with increasing doses intravenously; 10 a. m., leucocyte count 8,000; 12:15 p. m., white cells 18,600; 2:15 p. m., 21,800; 4:15 p. m., 17,000; 6:15 p. m., 13,800; 8:15 p. m., 11,000; 10:15 p. m., 10,000. Differential count 12 noon (time of the high tide): Polymorphonuclear, 80 per cent.; small mononuclear, 17 per cent.; large mononuclear, 3 per cent.

Twelve hours after the first injection of phylacogen opsonic index to *Streptococcus pyogenes* was 0.95.

October 23d, leucocyte count, 10 a. m., 10,000; followed by intravenous injection of phylacogen eight minims. Chill; sensation; 1 p. m., 19,000; 9 p. m., 7,000; differential count: Polymorphonuclear, 81 per cent.; small mononuclear, 16 per cent.; large mononuclear, 3 per cent.

October 24th, 10 a. m., white cells, 8,200; followed by intravenous injection of twelve minims; chill; 2 p. m., 10,000; 9 p. m., 10,000; differential count: Polymorphonuclear, 80 per cent.; small mononuclear, 16 per cent.; large mononuclear, 4 per cent.

October 25th, 11 a. m., white cells 10,000. Intravenous injection of ten minims; no chill; 4 p. m., 12,000; 9 p. m., 11,000. Twelve hours after the injection, opsonic index was 0.9. October 26th, 10 a. m., white cells 8,200; subcutaneous injection, eighteen minims; 2 p. m., 8,800; 11 p. m., 12,000. A large plaque of bone was removed. October 27th, 10 a. m., white cells 8,000. Subcutaneous injection, twenty-two minims; 9 p. m., 12,000. October 28th, 10 a. m., white cells 9,000. Subcutaneous injection, twenty-four minims; 2 p. m., 10,000. Differential count: Polymorphonuclear, 74 per cent.; small mononuclear, 22 per cent.; large mononuclear, 4 per cent. Opsonic index 1.1.

October 29th, 10 a. m., white cells 8,000. Subcutaneous injection of thirty minims; 4 p. m., 9,000.

November 4th, because of the presence of necrotic bone, a curettage of the bone was carried out.

In this case there did not seem to be much improvement locally, though the general condition of the patient was much better after treatment, and his opsonic index to the invading organism was more than doubled. We believe the failure of results in the local condition to have been due to the presence of necrotic bone in the wound.

After the fourth intravenous injection, owing to the extreme difficulty experienced in getting into the vein, the mixed vaccine was given subcutaneously, larger doses (up to two c. c.) being used, and the results in this case, we believe, clearly demonstrate the greater advantage and efficacy of the intravenous method over the subcutaneous. The patient remained in the hospital, his general condition greatly improved. He is fat and happy, and if one did not see his leg his appearance would not indicate that there was anything abnormal about him. Vaccines, of course, cannot replace the necrosed bone which was removed and which was very extensive in this case.

CASE V. G. A., aged forty-two years, teamster, admitted to the hospital November 9, 1914. History: As he was getting on his wagon, the team started suddenly, he was thrown to the ground, and the front wheel of the heavy truck passed over his left elbow and on to his left side, fracturing the second and third ribs. The fractured ends of the ribs penetrated the lung, causing emphysema of the surrounding tissues. At the elbow, compound fractures of the humerus and of both bones of the forearm were produced. The wound showed infection in three days, which continued until November 26th, the date of the first examination of the patient in the course of this study. At this time three sinuses, all discharging freely, were to be seen in the region of the compound fracture of the arm. Dressings were changed twice and sometimes three times daily because of the amount of the discharge. The pus was thick and creamy, and cultures for diagnosis yielded *Streptococcus pyogenes*.

Previous to this study the regular hospital surgical treatment, consisting of potassium permanganate irrigations with alcohol dressings, etc., proved unavailing, and on

November 28th treatment with mixed infection phylacogen was begun, the initial dose being four minims intravenously. This was gradually increased until a dose of two c. c. was given. The temperature, which had ranged from 101° to 103° F. formerly, came down to 99° with an occasional rise to about 101° which condition was promptly reduced by a cathartic.

The discharge after the first day's treatment became thinner, and after a day or two more copious, after which it decreased rapidly in quantity. After a few days' treatment an abscess developed just above the elbow, which on draining promptly healed. On December 22d, four splints of necrotic bone were removed.

On November 27, 1914, blood examination showed red cells 3,500,000, hemoglobin fifty-two per cent. White blood cells 12,000. On November 28th, 10 a. m., total white cells 12,000. Four minims mixed infection vaccine was given intravenously, followed by a chill. At 12 noon total white cells 14,000; 2 p. m., 19,000; 4 p. m., 16,000; 6 p. m., 15,000; 8 p. m., 14,000; 10 p. m., 13,000. Before injection the differential count was: Polymorphonuclear, 80 per cent.; small mononuclear, 14 per cent.; large mononuclear, 6 per cent.

On November 28th, before injection, the opsonic index to *Streptococcus pyogenes*, taken to the organism isolated from the case itself, was 0.7. Twelve hours after the first injection, the opsonic index had risen to 0.85.

November 29th, 10 a. m., previous to injection, total white cells 12,400. Six minims were injected intravenously, followed by chill; 12 noon, total white cells 13,000; 2 p. m., 18,000; 4 p. m., 20,000; 6 p. m., 17,000; 8 p. m., 13,000; 10 p. m., 11,000.

November 30th, 1 p. m., previous to injection, total white cells 16,200. Eight minims of phylacogen were injected intravenously, followed by chill; 2 p. m., white cells 20,000; 10 p. m., 11,800; at 2 p. m. on this day, four hours after the injection, the differential count was: Polymorphonuclear, 85 per cent.; small mononuclear, 11 per cent.; large mononuclear, 4 per cent.

On December 1st, 11 a. m., before injection, total white cells 10,800. Twelve minims were injected intravenously, followed by a chill; 2 p. m., total white cells 16,600; 11 p. m., 10,800.

December 2d, 10 a. m., before injection, total white cells 12,000. Ten minims injected in the vein, followed by chill; 5 p. m., 17,000; 12 p. m., 14,000. At 10 a. m. the differential count was: Polymorphonuclear, 78 per cent.; small mononuclear, 18 per cent.; large mononuclear, 4 per cent.

December 3d, 10 a. m., before injection, total white cells 10,000. Twenty minims were injected intravenously; 10 p. m., 13,000. At 10 a. m. the differential count was: Polymorphonuclear, 75 per cent.; small mononuclear, 20 per cent.; large mononuclear, 5 per cent.

Twelve hours after the injection, the opsonic index had risen to 1.1.

December 4th, 10 a. m., before injection, total white cells 13,400. Twenty-four minims were injected intravenously, followed by chill; 2 p. m., 22,200.

December 5th, 10 a. m., before injection, total white cells 12,000. Twenty minims phylacogen intravenously, no chill; 2 p. m., 21,000. Twelve hours after the injection the opsonic index had risen to 1.3.

December 6th, 10 a. m., total white cells 13,000. Twenty-four minims of mixed vaccine in the vein; no chill. December 10th, the differential count showed: Polymorphonuclear, 75 per cent.; small mononuclear, 19 per cent.; large mononuclear, 6 per cent.

On December 15th, four hours after the injection, the opsonic index was 1.3. The red blood cells totaled 4,200,000, the hemoglobin seventy per cent. Total white cells were 9,000. By comparing these findings with the first blood findings on November 27th it will be seen that there was an increase in red cells of nearly one million and an increase in hemoglobin of eighteen per cent., a rise of from fifty-two to seventy per cent.

The patient was discharged on January 9, 1915, with no pus, but with one small sinus not quite closed.

#### CONCLUSIONS.

1. The intravenous administration of phylacogen is followed by a prompt (about four hours) and marked leucocytosis, which is seen by making leucocyte determinations at two hour intervals.
2. A considerable increase in the proportion of

polymorphonuclear leucocytes is also noted by the same means; therefore, the actual number of these leucocytes (phagocytes) is markedly increased.

3. The intravenous administration of mixed vaccines in these cases promptly increased the opsonic index to the infecting microorganisms isolated from the patient, when they were of two or more species.

4. These phenomena are usually (not always) synchronous with certain characteristic changes (rises) in the pulse, temperature, and blood pressure, which are followed by a fall to normal or even subnormal.

5. Coincidental with the phenomena noted above was marked improvement in the clinical condition for which treatment had been instituted.

6. Mixed vaccines, in our opinion, represent multiple antigens, their therapeutic efficiency being due to their ability to stimulate the formation of antibodies.

7. Their action resembles in a general way that of bacterial vaccines. The action, however, is more prompt (1, 2, and 3 above), owing probably to the elimination of the delay incident to the splitting of the bacterial cell, the metabolic products (bacterial derivatives) concerned in their action being immediately available. At the same time their action is probably not as permanent as that of the vaccines, because of their more rapid absorption.

#### REFERENCES.

1. METSCHNIKOFF: *L'immunité dans les maladies infectieuses*.
2. GAY and CLAYPOLE: *Journal A. M. A.*, lx, 1950, 1913; *Proceed. Society Experm. Biol.*, xl, 47, 1913.
3. IDIEM: *Archiv. Intern. Med.*, Nov. 15, 1914.
4. SIMONDS and BALDAUF: *Jour. Infect. Diseases*, vi, 38, 1909.
5. DOCHÉZ: *Jour. Experm. Med.*, xvi, 665, 1912.
6. HEKTOEN: *Journal A. M. A.*, lxii, 254, 1914.
7. HAMBURGER: *Deutsch. med. Wochens.*, xi, 759, 1914.
8. ALDEN: *Therapeutic Gazette*.

23 IRVING PLACE.

### RETROVERSION OF THE UTERUS.

#### *A Preliminary Report of Operation on the Round Ligaments,*

By A. N. CLAGETT, M. D.,  
Chicago.

Retroversion is an ailment to which women have been subject since time immemorial. Many plans have been thought out, and operations devised to effect a cure and relieve the symptoms incident to the condition. Kelly, Alexander Hugh Ferguson, Gilliam, Barrett, Webster, Alfieri, Schmitz, and others have contributed their efforts. Notwithstanding all this work, recurrences frequently happened. This led the present writer to try to devise a new method of suspension of the uterus in which he has also combined some of the better points of previous operations. The technic of the operation as done by the writer at the West Side Hospital gynecological clinic, is as follows:

After opening the abdomen, the round ligament is grasped at a point about one and one half inch from the uterus. Here a catgut suture is placed through the round ligament, and the investing fold of the broad ligament, and tied. This is done on the other side. Traction is made upon the suture, making tense the round ligament at the internal ring. At a point just distal to the suture, an incision one inch in length is made through the peritoneum, in the long axis of the round ligament, exposing its

muscle fibres. The round ligament is freed from its broad ligament attachment so that a suture can be passed underneath. The remaining distal portion of the round ligament is freed with the finger and a Kocher director to the internal ring. This procedure is duplicated on the other side. A suture is then placed through the free muscular portion of each ligament, and tied at a point one quarter of an inch from the primary sutures placed in the round ligaments. The uterus then is brought into antelexion. An incision one half inch in length is made in the long axis of the uterus on its posterior surface. The bottom of the cut is on a level with a line drawn from one uteroovarian ligament to the other. The Barrett ligature carrier is inserted in this wound and passed between the muscle of the uterus and the peritoneum outward to the side of the uterus, through the broad ligament, emerging at the opening made over the round ligament. The round ligament is now divided between its two sutures and the suture on the distal portion is grasped by the carrier, pulled along the track just made by it, and brought out through the cut posterior to the uterus. The same is done on the opposite side. Traction on the ligatures draws the distal parts of the round ligaments through the wound on the posterior surface of the uterus and exposes the cut ends. The ligatures from each side are tied together, bringing the stumps of the round ligament in apposition. The sutures are cut short and the stumps returned through the wound so that they are extraperitoneal. A suture is now taken through the wall of the uterus, catching the fibres of the round ligament, and tied, closing the cut in the peritoneum.

The next step is to follow the modified Gilliam-Ferguson procedure. A stab is made through the external sheath of the rectus, the Barrett instrument is passed through this stab wound, carried externally to the fibres of the rectus muscle, and brought through the internal ring. Now the ligature on the proximal portion of the round ligament is fed into the carrier and drawn through the internal ring over the rectus and out through the anterior sheath. The same is done on the other side. Traction on these sutures now brings the proximal portion of the round ligament up through the sheath, to which it is stitched with No. 1 chromic catgut, and the process is repeated on the opposite side. It is not necessary to close the cut over the round ligament, as it is pulled up into the abdominal wall with the proximal part of the ligament.

It now only remains to close the abdomen. The necessity for this new operation arises from the reports of the results of the older methods and from case observation. Kelly's fixation sometimes resulted in dystocia, and abortion in pregnant women. Also the strangulation of gut, crawling between the fixed uterus and the abdominal wall occurred. Webster's operation is applicable in cases in which there is version of the uterus without descensus, but it depends for its success upon the weakest portion of the round ligament, and upon adhesions between two peritoneal surfaces, which adhesions are liable to absorption. Alfieri strengthened the adhesion by introducing the raw muscle fibre of the round ligament into the posterior uterine peritoneum, but adhesions of intestine to the raw ligament are almost

certain to take place and likewise the uterus is suspended by the weakest portion of the ligament. Schmitz buried the round ligament behind the uterus extraperitoneally, getting adhesions between the muscle structures, but still depending upon the weakest portion of the ligament for suspension. In the Gilliam operation the entire distal portion of the ligament is not used. The writer's operation was first performed ten months ago and has been repeated a number of times.

#### CONCLUSIONS.

1. Occasionally the operation has seemed to be contraindicated by reason of the scanty amount of round ligament muscle tissue present.

2. The writer is unable to state how pregnancy may be affected by this operation, also as some of these were dispensary cases, opportunity has not been provided for control examinations.

3. In cases where this has been possible, and this includes the first case operated in, the uterus hangs in antelexion and is freely movable.

4. The uterus at operation is shown to be held in such antelexion by the portion of the round ligament carried behind the uterus, so that the tugging on that part sewn to the rectus sheath is almost entirely relieved.

5. In case infection should take place in the rectus sheath there is still a support provided for the uterus.

6. The uterus is suspended, not only by the strong proximal portion of the round ligament, but a second suspension and normal antelexion are obtained from the distal portion.

25 EAST WASHINGTON STREET.

## THE ALLEN TREATMENT IN DIABETES MELLITUS.\*

By ARTHUR BOOKMAN, M. D.,  
New York.

Assistant Physician, Mount Sinai Hospital; Chief, Internal Medicine, Mount Sinai Dispensary; Assistant in Physiological Chemistry, Mount Sinai Hospital.

During the past year I have treated twenty-four severe cases of diabetes mellitus, according to the method of Doctor Allen, at Mount Sinai Hospital and Dispensary, at the Montefiore Home and Hospital, and in private. In discussing this treatment, I shall consider mainly its clinical applications; but a few words are necessary as to its experimental basis. By partial pancreatectomy in animals, Allen produced "simple lowering of sugar tolerance without diabetes, or diabetes varying in intensity from the mildest to the very severe. In the milder types, the measures ordinarily used in human diabetes, mainly restriction of carbohydrate or protein and brief fasting, if necessary, suffice to keep the animals sugar free and in good condition indefinitely. But in a more severe type these measures do not suffice and the animal quickly passes into a hopeless condition if more radical treatment is delayed. In this type the initial fast must sometimes be measured in weeks rather than in days. The subsequent diet must be such as to keep the animal at a low level of

weight and metabolism. Certain influences which increase either weight or metabolism tend to bring back glycosuria in these animals as in human patients. If glycosuria persists in any animal, the result is a downward sequence of lowered tolerance, emaciation, weakness, cachexia, and death, with parallel degenerative changes in the islands of Langerhans. If glycosuria is prevented, the animals may remain lively and strong, though thin, and they may improve somewhat with time, and the islands seem to be spared. This evidence supports the hypothesis that one set of influences overtakes and injures the internal function of the pancreas, and the opposite set of influences protects and rests the internal function of the pancreas."<sup>1</sup> In a few words this is Doctor Allen's own statement of the experimental basis of his treatment.

The treatment may be divided into: 1. The initial fast; 2. the aftertreatment. There are no rigid rules; the treatment throughout is adapted to the individual patient.

The initial fast lasts until the urine is sugar free and at least twenty-four hours longer. The patient is best kept quiet, but not necessarily in bed. He may have water freely, one or two cups of tea or coffee, citric acid lemonade with saccharin, and a cup of meat broth daily. If diacetic acid is present, alcohol, usually in the form of whisky, is given in small amounts, well diluted, every two or three hours during the fasting period. Alcohol is continued after the fast if the acetone reaction remains marked. Instead of fasting until the glycosuria disappears, we have at times found it desirable to interrupt the fast by a single day of very limited diet.

During the fasting the acidosis rapidly diminished. Even in the severest cases the ferric chloride reaction often disappears by the end of this period. An acetone reaction is usually obtained for some time longer. Allen<sup>2</sup> and Joslin<sup>3</sup> have found that the blood sugar decreases during the treatment. Determinations in a few of my cases by the method of Lewis and Benedict have given the same result.

During the first day or two the patient is often somewhat uncomfortable, but he may be assured that there is no danger in carrying out the fast as recommended.

The most difficult period of treatment begins when the patient is sugar free. He then learns under our guidance his tolerance for various food constituents for carbohydrates, proteins, and fat in that order. The more severe the case, the smaller the amount of food given at the start, and the more cautiously the additions are made. At this time the patient should learn a simple test for glucose. We have used the Haines solution. He begins to test his urine and to become familiar with the composition of his food.

The first food given is carbohydrate in the form of vegetables containing up to six per cent. of carbohydrate. Usually we start with from 100 to 250 grams and increase by 200 grams daily to about 1,000 grams. The additions are then made every other day up to about 2,000 grams. Then vegetables containing a larger percentage of carbohydrates and

\*<sup>1</sup>Allen, *Amer. Jour. Med. Sci.*, cl, 480, 1915.

<sup>2</sup>Allen, *ibid.*, cit.

<sup>3</sup>Joslin, *ibid.*, cl, 485, 1915.



later fruits and in the mildest cases potato, cereal, and bread may be added. At this time not over 150 grams of carbohydrate daily have been given. Proteid is added usually on the third day in the form of two eggs, and is increased by ten grams daily in the form of meat or eggs; seventy-five grams of proteid is the most we have given at this stage.

Where the carbohydrate tolerance even for the five per cent. vegetables is low, they are cooked in three changes of water. In this way considerably larger quantities can be given.

The patient is already receiving some fat with the meat and eggs. If the urine does not show sugar, sufficient fat is now given, adding thirty grams a day to bring the total calories up to thirty-five to forty to the kilo of body weight. During all this time the urine is tested daily. The reappearance of sugar is the signal for a fast, usually of twenty-four hours' duration, but always sufficiently long to render the urine free from sugar. Immediately after the fast the patient receives less food than before. The carbohydrate is reduced to about one half, the proteid to about two thirds. The proteid is rapidly increased to its former level. Carbohydrate is added more slowly. Reappearance of sugar in the urine is always an index of excess in the diet, and as each addition is small it is usually clear which constituent is at fault. Within a short time we gain a detailed and exact knowledge of the patient's tolerance. Excess in the diet as a whole or in a single constituent causes glycosuria. Too large an amount of proteid is in addition particularly likely to cause acetone bodies to appear in the urine or to increase an acidosis already present.

Having our patient on a diet suited to his caloric requirements, we may now attempt to introduce more variety, particularly to increase the carbohydrate and proteid at the expense of the fat.

Patients must be given exact directions as to the amount of each food constituent they may take. They readily learn to weigh their food and make the necessary rough calculations. A weekly fast day is necessary in many cases. In milder ones the intervals are longer. To insure the carrying out of the treatment, the patient must be followed up even after he is receiving the full amount of food suitable to his case. It is important to remember that the maximum amount of food we can allow a severe diabetic is often well below what is considered adequate for a healthy person. A number of my patients, although engaged in active occupations, have been for months on a diet averaging but little over twenty-five calories to the kilo, and this with frequent fast days.

During the early part of the treatment there is usually a loss of weight which may be considerable. For a time there may be a feeling of weakness. The weight soon reaches a fairly constant level. After a varying time, the patient gains in strength and usually feels stronger than before beginning treatment, while the weight often increases substantially. An increase in weight above a certain point will often be followed by a return of glycosuria.

What are the practical results of this treatment? Do patients treated in this way live longer? The method is too recent for positive proof to be given on this point. My own conviction is that for severe

diabetics it is a great advance on previous methods of treatment. This is based on the results published by Allen and by Joslin and on my own experience, particularly with juvenile patients, of whom I have treated eight. Seven of them, at the time treatment was begun, were between fourteen and twenty-three years of age, the other patient being twenty-nine years old. All had been previously treated by various methods and in none had glycosuria disappeared for more than a short time. Most of them had a marked acetone reaction and several had a decided ferric chloride reaction. On ordinary starch free diet not quantitatively controlled they all excreted sugar. On the Allen treatment, glycosuria rapidly disappeared and remained absent for months, except for that caused by experimental additions to the diet. The ferric chloride reaction did not reappear as long as the patients were kept under observation. Two of them have a trifling acetoneuria, the others have none. The amount of urine has diminished decidedly in all, though several still pass from two to three litres a day. Such complications as eczema, pruritus, furunculosis, and xanthoma disappeared rapidly. All but one of these cases has been under observation for at least four months, most of them more than twice this time. In all there was a preliminary loss of weight. They have regained this and have even added to their original weight. They all feel stronger than before beginning treatment. Five of them are working.

The older patients have not been followed up to the same extent, but those still under observation are sugar free and appear well with one exception. This is a woman of sixty years with by far the mildest diabetes of my series. After a short preliminary period she was put on liberal diet containing 250 grams of bread and over a pound of meat daily, with fat in such amount as she would take. She manifested pulmonary tuberculosis three months after beginning treatment, probably from a pre-existing focus.

For what cases should the Allen treatment be used? I have had no cases of impending coma and cannot therefore speak of its effect in this condition. We should scarcely expect, however, anything beyond temporary improvement in the vast majority of cases which have reached this stage. With any method of treatment we shall continue to have deaths in coma. It is likely that the best means of combating this complication in its early stages will not be the same in every case. Both Doctor Allen and Doctor Joslin have reported deaths in coma. Most of these occurred in patients in whom treatment was not undertaken until premonitory symptoms of coma had appeared or in patients who, when no longer under observation, had broken the dietetic rules. On the other hand, Allen has had patients with impending coma in whom the treatment was satisfactorily carried out.

The treatment may therefore be used in all cases. In older persons who are passing small amounts of sugar and have little or no acidosis, less drastic measures will usually be preferred. In such patients the glycosuria will frequently disappear if sugar is abstained from or if, in addition, the starches are moderately restricted. In all other cases the treatment is advisable. It is especially in-

dictated in all youthful diabetics, in all patients who are passing larger amounts of acetone bodies, and in all those whom for any reason it is especially desired to make aglycosuric as quickly as possible.

It may be thought that special facilities are necessary for carrying out the treatment. In severe cases it is certainly desirable at the beginning to have patients under close observation, but successful treatment is perfectly feasible under the ordinary conditions of private practice. In the way of laboratory examinations only the usual tests for acetone, diacetic acid, and glucose are indispensable. The food can be weighed and prepared as well in the home as in the hospital. The patient must become familiar with the details of the treatment, and this knowledge can best be gained if the treatment is given at home. In six of my cases, treatment was instituted and followed up exclusively at the Mount Sinai Dispensary; this number includes one of my first cases, an Italian woman of twenty-nine years. During the entire treatment she has continued to look after her household of seven young children. Before treatment, she had a sugar excretion of 400 grams daily and a strong reaction for diacetic acid; she has now been sugar free for several months without acetonuria and has gained thirty pounds in weight.

To sum up, then, my results agree with those obtained by Doctor Allen and by others who have worked with the method. The patients have rapidly become sugar free and with few exceptions have improved in every way. The results in the juvenile cases are most convincing. In the management of severe diabetes, this method is a great step in advance. As a routine measure in all diabetics it brings excellent results and brings them quickly.

It is a great pleasure to express here my obligation to a number of my colleagues at Mount Sinai Hospital and Dispensary and at the Montefiore Home and Hospital for their valuable cooperation, and especially to thank Dr. Alfred Meyer and Dr. Morris Manges for the privilege of supervising the treatment of the diabetics in their wards at Mount Sinai.

254 WEST EIGHTY-SECOND STREET.

### WEIGHT INCREASE.

BY ROBERT HUGH ROSE, M. D.,  
New York.

There is no sufficient reason for the prevalent belief that a person not actually diseased should be unable, by a proper selection of food, to increase his weight to the point of health and strength. This statement is not made rashly, but after due consideration and considerable observation. I have tried out this theory on a number of thin patients, some of the most extreme type, with only good results.

In this communication I do not wish to discuss acute cases of undernutrition. They generally take care of themselves in the period of convalescence. The appetite is at such times often much above normal, so much so, indeed, that this is frequently the beginning of a period of upbuilding which continues

till the patient reaches a weight much above any which he has ever before attained. Familiarity with caloric feeding, however, frequently renders a physician's advice at such times of great value. Notwithstanding the importance of acute cases and their close relation to my present subject, I feel that it would unduly lengthen this article to include herein other than chronic cases.

Undernutrition of a chronic nature is more common, and in its management requires greater skill on the part of the physician, for in all these cases appetite has already failed, and the health of the patient depends upon proper advice being obtained from a physician.

The question at once arises, Why do so many persons fail to gain in weight though anxiously making every effort to bring about this desired result? In the first place, I wish to state that there is little difference among various persons in assimilative power. There may be a few who, because of gastrointestinal atrophy, fail to assimilate what is eaten, but they are too few to play an important part in the group of patients who are so desirous of being fattened. Certainly most of our patients desirous of weight increase do not belong to this class. On the contrary, most of the patients we are called upon to treat will assimilate practically all the nutriment contained in the food ingested. It is a well established fact that in typhoid fever, which, it must be borne in mind, is associated with marked lesions of the alimentary tract, the assimilation of foodstuffs is ninety-two per cent. against ninety-six per cent. in health. The assimilation of proteins is 88.8 per cent. against ninety-six per cent. in health; that of fats is ninety-two per cent. against ninety-five per cent. in health; that of carbohydrates is ninety-seven per cent. against ninety-eight per cent. in health.

It is necessary, therefore, to look elsewhere for the causes of the variation in weight among different types of people. From an etiological standpoint, persons who are thinner than normal may be grouped as follows:

A. Those who demand an excessive amount of nutriment on account of great activity, and other causes.

B. Those who ingest a small amount of food.

We must not overlook the cases of hyperthyroidism, though I will not discuss here their treatment, because it leads into fields foreign to the subject in hand. Such patients, owing to the increased catabolism caused by the overactivity of the thyroid gland, burn up from twenty to thirty per cent. more fuel than normal. As cases of hypothyroidism burn up twenty to thirty per cent. less than normal, we see that between the two classes there is a difference of fifty per cent. in the amount of food used up by the body after it has been assimilated. Next comes the difference in activity. If we bear in mind the fact that a person who is working hard requires twice the food used by one who is lying quietly in bed, we see at once what an important factor the matter of activity really becomes. Now consider for one moment how activity varies among different individuals. Some sleep long hours, go about slowly, take no more steps than absolutely necessary and, even though they accomplish a great deal, do so with

very little exertion. Others are of a restless temperament, not quiet even when asleep. If we undertook to follow them around for a day, we could see how their activity might account for the consumption of an amount of food approximating the diet required by a day laborer.

Those who do not eat sufficient food to maintain their bodies at a point of health and efficiency may be subdivided as follows:

1. Those who eat an apparently large amount of food, containing, however, a preponderance of proteins and an insufficient proportion of carbohydrates and fats.

2. Those who have subnormal appetites.

A large majority of the latter really have gastroparesis and atony of the gastric and intestinal musculature. They are the most difficult class to treat, because it is hard for them to do the very thing that is needed for their upbuilding.

Another fact of importance has a bearing here. If a person's ideal weight is 150 pounds, and he weighs 175 pounds, his body contains about forty-seven and a half pounds of fat. This fat serves him as so much fuel in case of emergency. If he misses a few meals, or passes through a period of unusual physical strain, it is drawn upon to supply energy for this particular occasion. Fats as fuel go twice as far as carbohydrates or proteins, so that one pound of fat performs the work of two pounds of flesh. A thin person falls back on his own muscular tissue more quickly in an emergency than a fat one, and loses weight twice as rapidly and with more weakening effects. Consequently the fat gain and the thin lose more readily. A certain Scriptural quotation is appropos: "For he that hath (fat), to him shall be given; and he that hath not, from him shall be taken even that which he hath." The conclusion with regard to the causes of thinness would then be that it is not due to lack of ability to assimilate food, but either to a consumption of food insufficient in carbohydrates and fats, or a demand for fuel greater than the person is able to supply.

From the standpoint of treatment, the following classification may be found useful:

A. Those who are healthy, but eat too little of the fattening foods (carbohydrates and fats).

B. Those who are healthy, good eaters, but very active.

C. Those who have difficulty in eating a sufficient quantity, because of some weakness in the digestive organs.

Now as to the method of procedure in treating these cases: On the first visit of the patient, obtain the height, weight, length of time spent in sleeping, and degree of activity. Next, inquire in detail as to what the patient eats, and estimate its caloric value. If what is eaten is approximately correct for one of his height, weight, and activity, and he is not losing, the natural conclusion will be that to increase his weight either an addition to the diet or a curtailment of his activity will be necessary. This may be done by adding to the daily diet five calories to the pound, figured on his ideal weight. If it is found that the patient has been taking twenty calories to the pound, and just keeping his body weight, it may be assumed that he is very active (in the absence of

hyperthyroidism) and requires more food to cause a gain. If he is eating from fifteen to sixteen calories to the pound and not losing, it may be known that his weight is easily maintained, probably activity is not very great, and it will not be necessary to go above twenty calories to the pound to cause a satisfactory gain. When the weight of the patient has been established at a higher point, a still further increase in the daily diet may be required to insure a continuance of the upward movement.

There are a number of ways in which the necessary amount of food may be given. The fats, when well taken, may easily be depended upon to run up the caloric value of the diet to a point sufficient for our purpose. If they are only fairly well taken, the carbohydrates may be supplied in a quantity which will give the result with only an average amount of fat in the diet.

Now I will illustrate these points: First, it will be necessary to consider the values of some of the important fattening foods.

| FATS.  |         |     |
|--|---------|-----|
| Cream (20%) 5iv                              | Protein | 4   |
| Butter—3 balls                               | Protein | 4   |
| Olive oil—1 tablespoon                       | Protein | 14  |
| CARBOHYDRATES.                               |         |     |
|  | Grams   |     |
| Bread—2 slices                               | 40      | 140 |
| Rice—medium helping                          | 30      | 100 |
| Oatmeal—large helping                        | 35      | 100 |
| Shredded wheat—1 biscuit                     | 30      | 110 |
| Potato—100 gms.                              | 20      | 100 |
| Unecda biscuit—one                           | 5       | 30  |
| Sponge cake (2x2x1 in.)                      | 15      | 75  |
| Custard—2 tablespoons                        | 50      | 140 |
| Ice cream—2 tablespoons                      | 30      | 270 |
| Pudding (rice, bread, tapioca)—2 tablespoons | 40      | 160 |
| Sugar—3 teaspoons                            |         | 100 |
| FATS AND PROTEINS.                           |         |     |
| Eggs (2)                                     | 13.0    | 160 |
| Cheese (American)—2x1 in.                    | 8.0     | 140 |

Now let me take as an example a man five feet six and a half inches tall. He should weigh 150 pounds; his actual weight is 130 pounds. If he is very active, his diet on calculation is found to be about 3,000 calories daily, he is holding his weight, he has no tendency to biliousness, no idiosyncrasy against fats, I will prescribe for him 3,500 calories. This is the type of patient who seems to be eating a very large amount, and yet remains thin—just the type pointed out as a proof of the contention that some are born to be thin, and eating has nothing to do with the matter. I will give him the following amount daily.

|                                      |     |
|--------------------------------------|-----|
| Six slices of bread                  | 420 |
| Six balls of butter on bread         | 480 |
| Two balls of butter on potatoes      | 160 |
| One half pint of cream (20%)         | 480 |
| One tablespoon of olive oil on salad | 148 |
| One potato                           | 100 |
| Breakfast cereal                     | 100 |
| Rice                                 | 100 |
| Sugar (12 teaspoons)                 | 100 |
| Two eggs                             | 100 |
| Two lamb chops                       | 200 |
| Beef (150 gm.)                       | 100 |
| One glass of milk                    | 100 |
| Four unecda biscuits                 | 120 |
| Cheese, 2x1 in.                      | 140 |



To portion these out between the meals of the day, we have for

| BREAKFAST.          |                          |
|---------------------|--------------------------|
| Two eggs            | Butter (2 balls)         |
| Two slices of bread | Sugar (4 teaspoons)      |
| Cereal              | Cream, 2½ ounces         |
| Fruit               |                          |
| LUNCHEON.           |                          |
| Lamb chops (2)      | Butter (3 balls)         |
| Bread—2 slices      | Cream, 2 ounces          |
| Potato (1)          | Sugar (2 teaspoons)      |
| DINNER.             |                          |
| Meat—150 gms.       | Rice                     |
| Bread—2 slices      | Sugar                    |
| Butter (3 balls)    | Cheese, 2x1 in.          |
| Cream, 3 ounces     | Salad and oil, one ounce |
| BEFORE RETIRING.    |                          |
| Milk—1 glass        | Crackers (4)             |

If the person referred to had been six feet tall (ideal weight, 178 pounds), it would have been necessary only to increase each helping till 700 calories (25x28) were added to the day's diet—a little more bread, a little more potatoes, etc.—to make up for the twenty-eight pounds additional weight of the patient.

Next, consider a patient who is five feet two inches tall, actual weight 105 pounds, ideal weight 130. If we find this patient is taking about 1,600 calories and just keeping his weight, we know he is not very active, and a diet of eighteen calories to the pound estimated from his ideal weight (130)—that is, 2,340 calories—will suffice to build up a reserve of adipose tissue.

| BREAKFAST.                    |       | Proteins. | Calories. |
|-------------------------------|-------|-----------|-----------|
| Bread—6 slices (4x4x½ in.)    | ..... | 13.8      | 420       |
| Butter (2 balls)              | ..... |           | 160       |
| Cereal                        | ..... | 3.0       | 100       |
| Cream, 3 ounces               | ..... | 3.0       | 180       |
| Sugar, 3 teaspoons            | ..... |           | 100       |
| LUNCHEON                      |       |           |           |
| Eggs (2)                      | ..... | 13.0      | 160       |
| Bread—2 slices                | ..... | 4.6       | 140       |
| Butter (2 balls)              | ..... |           | 160       |
| Sugar, 1 teaspoon             | ..... |           | 33        |
| Cream, one ounce              | ..... | 1.0       | 60        |
| Cheese (2x1 in.)              | ..... | 8.0       | 140       |
| Crackers (2)                  | ..... | 1.0       | 60        |
| DINNER.                       |       |           |           |
| Meat—100 gms.                 | ..... | 23.0      | 300       |
| Bread, 2 slices               | ..... | 4.6       | 140       |
| Butter (2 balls)              | ..... |           | 160       |
| Rice, medium helping          | ..... | 3.0       | 100       |
| Potato, medium size           | ..... | 2.0       | 100       |
| Bread pudding (2 tablespoons) | ..... | 4.0       | 160       |
| Total                         | ..... | 74.8      | 2,390     |

The foregoing diet is sufficient to cause a gain in weight. It contains enough proteins to increase the muscular strength as the adipose layer becomes greater.

Now we come to the last and most difficult class. We can guarantee results, however, to the patients who comprise this group if they will persist in doing what we ask. It is much easier to decrease the diet of one who is eating too much than to increase that of one who is eating too little. If the amount of food taken by some of these patients at a given meal

is more than that to which they are accustomed, it may lie like a heavy load in their stomachs, and a certain portion may still remain when the time arrives to eat again. In other words, there is an atonic condition of the gastric musculature which prevents the successful administration of forced feeding unless it is carried out under most favorable circumstances, coupled with a very close study of every feature of the case and a careful selection of the diet. By frequent, small meals, consisting of the most nourishing foods, the problem can be solved. In many cases the patient must for several weeks keep forcing himself to take a little more than he really wants before he can finally eat a sufficient quantity daily without feeling stuffed, or even more or less nauseated. With some of these patients the habit is soon formed, and with the resultant gain in strength comes increased ability to eat and digest all that is necessary. Any patient who thus conscientiously tries, but cannot soon respond to such efforts on the physician's part is too sick to come within the scope of this paper. Such patients have ulcer, adhesions, stenosis, cecal stasis, or at least a degree of impairment of gastric motility requiring the initiation of the treatment by rest in bed, with a thorough study of the case from every standpoint.

Some of these persons I find are taking a very small amount of food indeed, less than a maintenance diet. I have been surprised to find that they increase in weight very readily when put upon a diet which is just sufficient to serve as a maintenance diet for one of their height on very light exercise. In such cases a gradual gain takes place, until their ideal weight is nearly or entirely reached. (For a maintenance diet, I refer the reader to my communication to the *NEW YORK MEDICAL JOURNAL* for September 18th, The Maintenance Diet for Adults.)

I might mention the fact that I favor carbohydrates and fats for these people and always try to get them to take two slices of bread and two balls of butter at each meal. I individualize a great deal in writing these diets, but an increase in the amount of bread and butter is always desirable. For fattening purposes, any kind of bread will suffice, although I always prefer whole wheat bread, since it insures a sufficient supply of vitamins, mineral, etc., without which health and strength cannot be maintained. As soon as a patient of this type begins to increase in weight, he feels better. A gain of three or four pounds gives a feeling of well being even in one very much under weight. This is explained by the fact that before a gain can take place, not only must the immediate needs of the body be met, but also a surplus supplied. However small the surplus may be, these facts are obvious—that the patient is getting more than he requires, is on the up grade, and consequently feels stronger and better. Aside from the psychological effect on the patient, a gain of a pound a week is satisfactory, if not more satisfactory than a gain of two or three pounds would be. In fact, the more rapid the gain, the higher will be the proportion of increase in adipose tissue; the more gradual the gain, the higher will be the proportion of increase in muscular tissue and the greater the improvement in the quality of the blood.

40 EAST FORTY-FIRST STREET.

## TETANY IN AN ADULT FOLLOWING POISONING FROM ERGOT.

BY H. W. EMSHEIMER, M. D.,  
New York.

The most common cause of tetany in adults, in this country, is some form of gastric or intestinal disorder, especially dilatation of the stomach. Tetany occurs less frequently in the course of one of the acute infectious diseases, such as typhoid fever or influenza; during pregnancy; after parathyroidectomy; following poisoning from chloroform and various metals; and as a complication of certain organic nervous diseases, such as syringomyelia and cerebellar neoplasm. Its occurrence, however, after excessive doses of ergot is so rare that the following case seems worthy of note.

CASE. M. E., saleswoman, aged twenty-five years, single. Past history negative. There had been no previous similar complaint, no symptoms suggesting organic nervous disorder, and no hysterical manifestations. For two days prior to the onset of the present acute illness, there had been some diarrhea.

While at work, the patient was suddenly seized with severe epigastric cramps, followed immediately by nausea and vomiting. She managed to get to her home, where I saw her about an hour later. At that time, she seemed dazed, semidelirious, and extremely restless. Pressure upon the supraorbital nerve failed to awaken her from her semiconscious state. Attempts to question her brought only incoherent replies. Most striking, on further inspection of the patient, was the position of her extremities. There were a more or less general rigidity of both arms and legs and a typical bilateral carpotarsal spasm. The elbows and wrists were acutely flexed, and the hands drawn toward the ulnar side; the thumbs were adducted beneath the fingers; there was flexion of the metacarpophalangeal joints, extension of the phalangeal articulations. The feet were extended at the ankles, the toes flexed at the metacarpophalangeal joints. The Chvostek sign was easily obtainable. The Trousseau sign could not be elicited. There were no facilities for testing the electrical reactions. The reflexes were difficult to interpret on account of the rigidity of the muscles of the extremities. There were no other abnormal physical signs.

Within ten minutes of the administration of fifteen grains of chloral hydrate and thirty grains of the triple bromides, per rectum, full consciousness returned, and the spasm of the hands and feet began slowly to relax. It was fully one half hour, however, before all evidences of carpotarsal spasm had disappeared. A second examination of the patient at this time revealed normal mentality, normal reflexes, and normal sensations. There were no tremors, local contractures, nor areas of anesthesia.

On questioning the patient as to the cause of her illness, I elicited the fact that, one week before the onset of the present attack, the patient, having passed her menstrual period three days, took a large dose of fluid extract of ergot (quantity unknown, as she had taken a swallow of the liquid directly from the bottle), and continued its use in teaspoonful doses every two hours for five days. She had had some nausea and diarrhea, but no other symptoms of ergotism, up to the onset of the present condition. There was still amenorrhea.

Despite the fact that the symptoms of tetany became manifest only after a period of two days from the date at which the ergot was discontinued, there seemed to be no other etiological factor which could satisfactorily explain the peculiar phenomenon. Autointoxication or acute gastric dilatation as a

cause of the spasm was practically eliminated by the fact that the patient had not eaten an excessive amount of food in the few days prior to the onset of the attack; had not partaken of fish, canned meat, or any other food capable of producing ptomaine poisoning. Moreover no physical signs presented of dilatation of the stomach. The tetany of pregnancy was ruled out by the fact that tetany occurs in this condition only during the later months. The diagnosis of hysterical pseudotetany, with the fear of possible pregnancy as a most important contributing factor, was not so easily precluded. But the lack of previous hysterical manifestations, and the absence of physical signs of true hysteria rendered that diagnosis less likely than that of acute toxic tetany, from the delayed or cumulative action of ergot.

Unfortunately, I was not able to make further observations in this case as I did not see the patient a second time. I was informed, however, about one month later, that she had had no recurrence of her acute attack.

251 WEST NINETY-SECOND STREET.

## Therapeutic Notes.

## Tonsillectomy in the Treatment of Chorea.—

A. Archibald, in the *Saint Paul Medical Journal* for November, 1914, recommends careful examination of the upper air passages in nervous children, and presents evidence to the effect that diseased tonsils are, in the majority of cases, the primary cause of chorea. In his experience, eleven children with chorea were subjected to tonsillectomy within three years, and he gives histories of seven cases, in which reports of the later conditions had been obtained. Six patients had given a history of previous tonsillitis and four of inflammatory rheumatism. The choreic symptoms were marked in five instances; six had very large diseased tonsils, and one medium sized tonsils with crypts. Four had mitral regurgitation. These children were usually very anemic, languid, and in a poor state of health. Upon removal of their tonsils, uniformly favorable results were obtained. Not only was their general health markedly improved, but the choreic movements ceased with remarkable promptness and did not recur.

## Treatment of Adrenal Insufficiency in Febrile

and Other Adynamic Conditions.—E. Sergeant, in *Bulletin de l'Académie de médecine* for September 7, 1915, points out that recent experience in military practice has afforded much evidence of the value of adrenal organotherapy in adynamic states. The existing adrenal insufficiency may occur either as an acute lesion, e. g., infection, severe intoxication, or hemorrhage, of previously normal adrenals, or as a persistent adrenal debility brought on by slight overstrain, trauma, or mild infection or intoxication, acting upon adrenals already the seat of partial chronic changes such as degeneration, sclerosis, or tuberculosis. In typhoid and paratyphoid fevers, the author found much evidence of impaired adrenal activity, and remains satisfied that in many instances life in adynamic cases was saved by hypodermic injections of large doses of epinephrine. In several

cases of choleric form diarrhea with a tendency toward the algid state, a complete transformation in the condition of the patients was effected in a few hours with saline solution containing epinephrine and injections of an extract of the whole adrenal gland. In all conditions in which there are noted signs of acute adrenal insufficiency, such as marked asthenia, low vascular tension, the white line phenomenon, low temperature, and a tendency to collapse, epinephrine should be given—in the absence of an extract of the whole adrenal gland, which the author seemingly prefers—to the amount of at least one thirtieth or one twentieth grain (0.002 or 0.003 gram) hypodermically, divided into four or six doses of 1/120 grain (0.0005 gram) each, together with one sixtieth to one thirtieth grain (0.001 or 0.002 gram) by the mouth. Rapid absorption and intensive action are thus secured in conjunction with slow and continuous absorption. Collapse and adynamia both in typhoid fever and in subjects severely traumatized or overworked may thus be effectually combated.

**Arsenobenzol in the Treatment of Amebic Dysentery.**—P. Ravaut and Kroluniski, in *Bulletins et mémoires de la société médicale des hôpitaux de Paris*, October 21, 1915, refer to an epidemic of dysentery encountered among French troops in the north of France in which, in spite of the finding of the bacillus of dysentery in the stools in a number of cases, administration of anti-dysentery serum in large doses proved a complete failure. The condition later turned out to be a dysentery of amebic origin, in spite of the fact that a number of the soldiers affected had never been out of France, and had merely come in contact with African soldiers in the trenches. Subsequent examinations showed pathogenic amebae almost constantly in the stools, together with dysentery bacilli in a certain proportion of cases. Emetine was therefore tried in the treatment, but with only indifferent results. The condition being due to a protozoan, the administration of dioxidiaminoarsenobenzol, so efficient in many other disorders due to protozoa, was determined upon. The drug was given intravenously at six day intervals in doses of 0.45 gram, increased progressively at succeeding injections. In the intervals an enema of six ounces (200 c. c.) of normal saline solution containing fifteen drops of tincture of opium and 0.45 to 0.6 gram of arsenobenzol was given. Where the bowel movements were not very copious, these enemas were well borne, remaining in some patients more than twenty-four hours. Excellent results were obtained from this treatment. A few hours after the first injection the pains previously experienced along the colon became less or completely disappeared. On the next day the frequency of defecation began to diminish, and even in the more severe cases the characteristic blood stained, glairy material in the stools generally disappeared in a week, and a few days later formed stools were passed. This occurred in the absence of all other medication, though the diet was meanwhile limited to rice, purées, and pastes. In some patients the number of alvine passages dropped from ten or fifteen to two or three within twenty-four hours of the first injection, especially in cases treated soon after the onset of the

disease. In some chronic cases formed stools were passed only after five or six arsenobenzol injections. Prompt improvement in the general condition always followed the use of the drug, mental depression and cachexia rapidly yielding, the appetite returning, and digestion taking place without discomfort. In a few cases in which arsenobenzol was tentatively given in solution by the mouth, fairly good results were at times secured; preference, however, is given to administration of the drug by the other routes mentioned.

#### Treatment of External Varicose Hemorrhoids.

—Alfred Newman, in the *Pacific Medical Journal* for November, 1914, refers to the scanty mention accorded external varicose piles by many textbook authors, some failing entirely to discuss it. While the condition rarely requires operation, it often confronts the physician, and is likely to perplex him as to the proper mode of procedure. No symptoms are produced by these hemorrhoids unless they become exceedingly large, but when nervous or neurotic patients notice such a condition in themselves their chief symptoms become fastened to the affected part, and the necessity of doing something for their relief arises.

The chief measures in this form of piles are to relieve constipation, if present, and to obviate all straining. The patient should be instructed not to remain on the toilet when his bowels fail to move at once. Evacuative enemas, a cold water spray to tone up the veins locally, and perhaps a tannic acid ointment constitute all the requirements in palliative treatment:

℞ Acidi tannici, ..... gr. 1 (3 grams);  
Adipis lane hydrosi, }  
Petrolati, ..... } ..... āā 3ss (15 grams).  
Fiat unguentum.

In the operative treatment of these piles, the Paquelin knife, phenol injections, and electrolysis were all tried by Tuttle, but were given up, although effectual, on account of the excessive pain produced. Newman, in operating in the condition—usually in conjunction with internal piles—merely excises small portions of the mucous membrane in the four quadrants of the anus and ablates the presenting veins. No sutures or ligatures are required. Pressure arrests the bleeding, a phenolized petrolatum dressing is applied, and the patients experience but slight subsequent pain.

#### Treatment of Pneumonia in Children.

—H. W. Dana, in the *Texas Medical News* for April, 1915, is credited with the following formula for the treatment of severe pneumonia in an eighteen months old child:

℞ Ammonii chloridi, ..... 3i (4 grams);  
Syrupi ipecacuanhæ, ..... 3iss (6 c. c.);  
Tincturæ belladonnæ foliorum, ..... 5i (4 c. c.);  
Fluidextracti glycyrrhizæ, ..... 3vss (22 c. c.).  
M. Sig.: Eight drops in a spoonful of boiled water every two hours.

Where the heart action is weak and rapid, Dana administers digitalis, one and a half minim (0.1 c. c.) for each year of age, every four hours. As a still later measure, strychnine sulphate in doses of 1/400 to 1/100 grain (0.00015 to 0.0006 gram) every four hours is used. This drug is discontinued in a day or two, if possible, to be held in reserve in case of further need.



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EDITORS

CHARLES E. DE M. SAJOUS, M. D., LL. D., Sc. D.

CLAUDE L. WHEELER, A. B., M. D.

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SHALL MEDICAL PROGRESS BE  
STRANGLER?

The experience of the medical profession in the past has been such as to tend to produce an excessive conservatism; to avoid being swayed by every popular breeze, the physician is likely to assume a rocklike rigidity, particularly in regard to new remedies, and to give his patients the benefit of discovery only after tedious delay. For many years the NEW YORK MEDICAL JOURNAL has fought this ultraconservative tendency, and instead of awaiting the *ex cathedra* utterances of the high priests of the profession, has hastened to lay before its readers for their own private judgment the pro and con of every therapeutic novelty.

In 1886 when O'Dwyer's intubation tube was introduced to replace the risky tracheotomy, we made immediate favorable comment, having special sources of information; but for an entire twelve-month thereafter we presented both sides of the question with exemplary impartiality. In 1888, when the battle raged around the surgical treatment of appendicitis, we published the report of Dr. Henry B. Sands, subsequently referred to by Dr. Charles McBurney as concerning one of the first successful removals of the appendix. In 1890, Koch introduced his tuberculin; we urged caution, but the ensuing volume was filled with a debate in

which both sides received ample space. In the revolutionary epoch of the discovery of diphtheria antitoxin in 1895, we were again non-committal, but no voice, on one side or the other, remained unheard. In 1902, the operation by Professor Lorenz for congenital dislocation of the hip, performed in Chicago on the child of a well known citizen, was reported in full by wire and published in the JOURNAL for October 25th of that year. Subsequently Lorenz's operations in New York were published in detail, illustrated by special photographs made for the JOURNAL. In accordance with our policy, however, many communications in favor of Lorenz's method and against it followed these reports. In 1910, when the discovery of salvarsan was flashed to this country, we immediately obtained an original communication from Dr. Samuel J. Meltzer on the subject, pending a paper by Ehrlich himself, which was obtained by special cable. Fully two score editorial articles on chemotherapy followed this publication.

An epoch making communication was that of Dr. E. G. Abbott, which appeared in the JOURNAL for April 27, 1912, on his new and ingenious method of correcting lateral curvature of the spine. Expense was not spared in the preparation of this article, no fewer than ninety-nine halftone illustrations being specially made for it. This paper created a widespread sensation and secured well merited honors for the author in Europe, especially in France.

A remarkable paper, the ultimate results of which we have yet to learn, was that of Dr. W. H. Bates, of New York, on the cure of errors of refraction without glasses, which appeared in the JOURNAL for May 8, 1915.

It is only through maintaining an open mind on scientific subjects, through giving immediate publicity to every proposal which seems to have the support of actual results in clinical procedure, that we may hope to enlarge the field of medicine; mere personal prejudice might otherwise annihilate some promising suggestions. It may happen that some of the methods of treatment proposed, though giving apparently favorable results in the initial stages of experimentation, ultimately prove disappointing after extended trial, as did, for example, the Edebohls operation for decapsulation of the kidneys; but unless a way is left open to give a hearing to new methods and new theories, progress in medicine will cease and its practitioners may have to conform to dogmas enunciated by some self elected pontifex of the profession. The references given above show clearly the value to our readers of this open minded policy on the part of the NEW YORK MEDICAL JOURNAL. With this experience as a

guide we shall continue to hold our columns open for discussion of new methods and new theories so long as they are presented by reputable and intelligent practitioners, whose statements are supported by a reasonable amount of clinical evidence. It is only by pursuing this policy that we can give to our readers the benefit of the earliest information regarding advances in medicine.

We are obliged to say—and we say it with regret—that we are the only weekly publication in America that has given anything like a fair hearing to the theories of Freud; whatever may be the outcome of this philosopher's therapeutical system of suggestion to the subconscious mind, let us not forget that he is the first thinker, throughout the ages, who has furnished a tangible and valid theory of dreams, a problem before which Aristotle and Aquinas, Hume and Descartes all were speechless.

As far as the NEW YORK MEDICAL JOURNAL is concerned, there will be no strangling of suggestions which tend toward medical progress; upon this promise our friends may rely.

#### THE NEED OF A DIVISION OF RURAL HYGIENE IN THE STATE DEPARTMENT OF HEALTH.

Our crude index of healthfulness, the mortality rate, shows that in spite of the obvious advantages country people enjoy over the crowded city populations, their health and longevity are but slightly superior to those of urban communities. Moreover, because of the lack of appreciation of sanitary precepts, at times they are a menace to the cities which depend upon them for milk and other food supplies.

The need of adequate rural hygiene has been thoroughly recognized by sanitarians. It is only because of the ignorance and foolish parsimony on the part of those responsible for appropriations that we have no supervision over health matters in the country on a scale at all comparable with that of the cities.

An efficient bureau of rural hygiene would have stimulated thought along health lines, and goaded people on to making individual and collective provision for the prevention of disease and the elimination of human and concomitant economic and social waste.

The survey of sickness in certain representative districts of Dutchess county, New York, recently made by the Hospitals Committee of the State Charities Aid Association, gives a picture of conditions well worth noticing. A house to house canvass disclosed 1,600 cases of seriously acute illness with a loss of 41,244 days. Thirty-three per cent. of the time was lost by school children. The investigation showed that only ten per cent. of the

patients had hospital care, not uniformly good, and that of 1,441 persons treated in their own homes, only fifty-five per cent. were cared for adequately. It was further established that a great deal of the sickness was of a preventable nature and that the insufficiency of the existing hospital, public health, and social service facilities caused unnecessary suffering and avoidable deaths among the poorer classes of the population. Some of the cases instanced are truly pathetic.

To improve the situation, the State Charities Aid Association recommended the organization of a county health association, with trained executive officers, whose business it would be "to bring about cooperation on the part of the existing agencies, to provide facilities that are now lacking, and to stimulate the provision of such new means for the care of the sick and the prevention of disease as may be found desirable." The importance of such progressive self help associations is manifest, and they should be encouraged everywhere. They would hardly obviate, however, the need of organizing a strong division, of rural hygiene in the State Department of Health.

#### PREVALENCE OF SYPHILIS IN THE ARMY.

A recently issued *Bulletin No. 8* by Vedder, of the army, with the title given above contains an interesting array of information upon a vital subject. The inquiry principally concerns the personnel of the army, but the results applied to the civil population, or at least a part of it, lead to striking, not to say startling conclusions.

Vedder has attempted to determine the actual prevalence of syphilis in the army, among both the commissioned and enlisted personnel, largely by means of the Wassermann reaction applied to various groups, each comprising numbers sufficiently large to avoid any great source of error. These Wassermann surveys, where possible, have been supplemented by physical examinations and clinical records. The groups studied include all classes—men just entering the service, soldiers in the service, and soldiers recently out of the service.

In his conclusions Vedder estimates that among army recruits nearly seventeen per cent. are syphilitic when they enter the service, and he believes that about twenty per cent. of the young adult male population of the class from which the army is recruited are infected with syphilis; further, that from two to five per cent. of the commissioned personnel are already infected when they enter the service, which, applied to the civil population from which they are drawn, gives an estimate of five per cent. syphilitic infections among the average group

of college men. He estimates that about sixteen per cent. of white enlisted men in the army are infected, thirty-six per cent. of colored enlisted men, and in the Porto Rico regiment nearly fifty-six per cent., this last being the highest rate encountered. No examinations were made of the Philippine scouts. In studies made at certain military institutions, among military convicts, insane soldiers, tuberculous soldiers, and inmates of the Soldiers' Home, his rates run from nineteen to thirty-nine per cent. Thirteen per cent. of the insanity in the army he regards as directly attributable to syphilis.

In his general conclusions, applying his data to civil life, he says: "Since syphilitic infection is so common, is productive of so much disability, and has so far entirely evaded sanitary control, it is believed that syphilis is a greater menace to the public health than any other single infectious disease, not even excepting tuberculosis."

Even if such a broad conclusion seems unwarranted, data of this character must nevertheless force us to serious reflection. We lack accurate statistics on the venereal diseases, but all thoughtful medical men must be aware of the tremendous and sinister significance of syphilis. Among all the factors which menace the physical integrity and the happiness of the race, syphilis undoubtedly holds front rank; yet at the hands of the sanitarian it receives small consideration. This is due, however, not to any misapprehension as to its importance, but to inability, under present conditions, successfully to grapple with a problem so large and so peculiarly beset with difficulties and perplexities. Signs are not wanting that the insistence of this subject will soon compel the attention it so richly deserves.

#### DOCTORS AND WAR.

Fortunately we are so far removed from the European conflict as to make it difficult for us to conceive of the effect which the war exerts even on the home life of the militant nations. We have read much of the possibility of conscription in England, but nothing brings more vividly before us the effects of the war than the recent announcement of the director general of the Royal Army Medical Corps of Great Britain that before the close of the current year at least 2,500 additional doctors will be required, ready to take commissions and to be sent where needed. This means that at the very least one third of the members of the profession in Great Britain who are within the military age will be called. Without competent medical advice it would be impossible to maintain in the field such huge aggregations of men as go to make the modern army. Without proper sanitary precautions they would be

swept away by epidemics more deadly than the shells and bullets of the enemy.

To supply the needed quota of medical men, Great Britain has been divided into districts, and local meetings of the members of the profession in these districts have been summoned to meet the representatives of the Government and learn the needs of the army in the matter of medical service. The doctors who remain at home are likewise serving their country, for arrangements are being made on a business basis which will, so far as practicable, assure the preservation of the practice of those men who go to the front, so that on their return they will not find themselves shouldered out of the profession. All this furnishes an impressive lesson for the medical profession in the United States, for our social, professional, and military organization is along much the same lines as that which obtains in Great Britain.

#### CANCER STATISTICS.

Statistics on any subject, however carefully gathered and collated, are by no means infallible. A man who is collecting statistics to assist in proving a certain point, and statistics are generally gathered for this purpose, is unconsciously or subconsciously influenced in the direction of having his figures prove this point. It has been said that figures cannot lie. True, neither facts nor figures can lie, but they may be so perverted and distorted as to convey an entirely wrong impression. Statistics should be regarded, if not with distrust, at all events with a certain amount of healthy skepticism. That is, they should not always be taken for granted, but should be dissected and analyzed, before hard and fast reliance is placed in them. For example, cancer statistics in this country are not very accurate, and it would be to the best interests of the community at large and of the medical profession, if the figures could be guaranteed as fairly near the truth. The general public and the medical profession are beginning to recognize that such is the case, and at the meeting of the American Society for the Control of Cancer this view was given prominence.

The Department of Health of the City of New York, with that energy and earnestness which are characteristic of those responsible for its conduct, in accordance with the opinion that cancer statistics need revision and improvement, have divided its statistics into groups depending upon the diagnosis and on the character of the growth. In a letter sent to physicians who report deaths from cancer, the following remarks are made: The first requisite for a nation wide effort to control the mortality of cancer is accurate knowledge of the prevalence of the



disease; the conditions favoring its occurrence; its relation to sex and age; its duration; the organs most frequently affected; and so on. The department therefore requests physicians to follow certain forms of classification drawn up by the department, which will supply almost all the information required.

The New York board of health has taken a long step in the right direction. Statistics which can be relied on are essential for the prosecution of a successful destructive campaign. It is useless to assert that figures with respect to the malady are to be depended on in all the States of the Union. In some States such statistics are carefully and intelligently gathered by competent persons, and in other States the whole question is in an almost chaotic condition. Misleading statements are worse than none, and the object of those engaged in the work of preventing or scotching cancer will doubtless be to gather as accurate information as is obtainable.

### DEAFMUTISM AFTER BATTLE.

Marage, addressing the Académie des sciences on November 15th (*Presse médicale*, November 18, 1915), spoke of the deafmutism observed in soldiers after battle without discoverable lesion; hitherto these cases, apart from spontaneous cure, have lapsed into absolute chronicity. By exercising vibratory mechanical massage on the larynx and the sides of the neck, Marage enabled such patients to talk, and attained in three weeks perfect recoveries in men who had been mute for months in spite of all other methods of treatment.

### News Items.

**Changes of Address.**—Dr. Henry Frauenthal, to 160 West Sixty-ninth Street, New York.

Dr. A. H. Molina de St. Remy, to 148 West Seventy-ninth Street, New York.

Dr. Frank R. Starkey, to Walnut and Seventeenth Streets, Philadelphia.

The editorial office of the *Military Surgeon*, from Chicago, to the Army Medical Museum, Seventh and B Streets, S. W., Washington, D. C.

**The New Thompson Pathological Building**, which forms the west wing of the Woman's Hospital of the State of New York, was formally opened on December 9th, the event being an important feature of the sixtieth anniversary of the institution. The new building, which is well equipped with all modern appliances, is the gift of Mrs. Frederick F. Thompson.

**Changes in the Staff of the New York Hospital.**—Dr. Thomas Howell, superintendent, announces the following changes in the staff of the New York Hospital: Dr. A. H. Wilkinson, assistant superintendent of the New York Hospital, in charge of the House of Relief Branch, 67 Hudson Street, New York, resigned December 1st to accept the superintendency of St. Luke's Hospital, Jacksonville, Florida. Dr. G. W. Zulauf, assistant superintendent of the New York Hospital, has been transferred to the House of Relief. Dr. George A. Parker, of Gloucester, Mass., has been appointed second assistant superintendent at the New York Hospital.

**Massachusetts Surgical and Gynecological Society.**—At the eighty-fifth annual meeting of this society, held in Boston on December 8th, Dr. H. O. Spalding, of Westboro, was elected president, Dr. Ralph C. Wiggins, of Cambridge, vice-president, Dr. Harry C. Lee, of Boston, secretary, and Dr. C. Y. Wentworth, of Newton Highlands, treasurer.

**Southern Minnesota Medical Association.**—Dr. E. S. Judd, of Rochester, was elected president of this association, at the annual meeting held in Mankato, on December 1st, and other officers were elected as follows: Dr. J. S. Holbrook, of Mankato, first vice-president; Dr. H. B. Grimes, of Madelia, second vice-president; Dr. W. T. Adams, of Elgin, secretary; Dr. G. F. Merritt, of St. Peter, treasurer.

**Building Fund for the Hospital for Deformities and Joint Diseases.**—At the ninth annual celebration of the founding of the Hospital for Deformities and Joint Diseases, at 1019 Madison Avenue, New York, \$250,000 was pledged toward the \$1,000,000 fund which is to be raised for a new building. Ten directors of the institution pledged \$10,000 each, one of them being Dr. Henry W. Frauenthal, chief surgeon of the institution.

**Medical Association of the Greater City of New York.**—A stated meeting of the association will be held in Du Bois Hall, New York Academy of Medicine, Monday evening, December 20th, at 8:30 o'clock. Dr. Austin W. Hollis will present reports of cases of typhoid fever treated with vaccines administered intravenously, and the subject will be discussed by Dr. Edward E. Cornwall, Dr. Warren Coleman, Dr. Matthias Nichol, Jr., and Dr. Walter A. Bastedo. Dr. A. Ernest Gallant will read a paper entitled "Removal of the Troublesome, Useless Uterus, which will be discussed by Dr. Edward Wallace Lee, Dr. George L. Brodhead, Dr. Thomas Henry Morgan, and others.

**Goats' Milk in Infant Feeding.**—An interesting experiment in the use of goats' milk in infant feeding has been undertaken at the Sea View Hospital. A herd of twenty-six goats bred by the United States Department of Agriculture, mostly of Saanen and Toggenberg stock, has been placed at the disposal of the hospital by the Federal authorities. This permits of the feeding of 125 children. In order to follow the matter intelligently, Dr. E. S. McSweeney, medical director of Sea View Hospital, has arranged for the cooperation of the Health Department Research Laboratory. This will enable the hospital authorities to supplement their clinical observations with careful laboratory data. The outcome of the experiment will be awaited with interest.

**Personal.**—Dr. L. Duncan Bulkley, of New York, announces that Dr. Paul E. Bechet is now associated with him in practice.

Dr. Robert Baranay, of the University of Vienna, who has been awarded the Nobel prize in medicine for his work on diseases of the ear, is at present a prisoner of war in Siberia.

Dr. H. Finkelstein has been appointed adjunct attending surgeon to the Hospital for Deformities and Joint Diseases, New York.

Dr. Ella B. Everitt, Dr. J. Leslie Davis, Dr. Charles H. Frazier, Dr. E. H. Siter, Dr. T. H. Fenton, Dr. T. H. Weisenburg, Dr. Horace Phillips, and Dr. James M. Anders have been appointed an advisory board by Director Zeigler, of the Department of Public Safety, to improve the housing and medical service in hospitals and other municipal institutions for the care of public charges.

Dr. John A. Pringle has been appointed superintendent of the St. Louis City Hospital; Dr. B. W. Klippel has been advanced to the position of resident physician, and Dr. C. A. Powell has been made resident intern.

Dr. Albion Walter Hewlett, professor of medicine at the University of Michigan, has accepted a similar appointment, beginning August 1, 1916, in the medical school of Stanford University, filling the vacancy left by the appointment of Dr. Ray Lyman Wilbur as president of the university.

Dr. Wilmer Krusen, professor of gynecology at Temple University, Philadelphia, is to become director of public health and charities under Mayor-elect Smith.

Dr. Alexander C. Abbott, of Philadelphia, director of the laboratory of hygiene, University of Pennsylvania, delivered a lecture at the Franklin Institute, Wednesday evening, December 15th, his subject being the Transmissibility of Diseases and the Public Health.

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Monday, December 20th, Philadelphia Clinical Association, Society of Normal and Pathological Physiology; Tuesday, December 21st, West Branch of the County Medical Society; Wednesday, December 22d, County Medical Society; Friday, December 24th, Northern Medical Association and South Branch of the County Medical Society.

**Aid for the Medical Profession in Belgium.**—The treasurer of the Committee of American Physicians for the Aid of the Belgian Profession, Dr. F. F. Simpson, of Pittsburgh, Pa., announces the receipt of the following contributions during the week ending December 11, 1915: Buffalo Medical and Surgical League, \$5; Washington County Medical Society, Calais, Me., \$25; total receipts for the week, \$30; previously reported receipts, \$7,973.84; total receipts, \$7,993.84; balance on hand, \$593.80.

**American Physicians for the Teutons.**—A second unit of the American Physicians' Expedition under Dr. Frederick Kammerer sailed from New York on November 25th. Many German and Austro-Hungarian army surgeons have died, either at the front or in the camps of the Russian prisoners of war, and more surgeons are urgently needed. Other units will be sent as soon as sufficient funds are obtained, \$12,000 being needed to finance each unit. Contributions for these expeditions will be gratefully accepted by Dr. Albert Bernheim, 1225 Spruce Street, Philadelphia.

**Increased Mortality Due to Heart and Kidney Diseases.**—According to the weekly report prepared by the department of health, there were during the past week 182 more deaths in the city than during the corresponding week of last year. The heavier mortality from diseases of the heart and kidneys was responsible for most of the increase, 399 deaths being attributed to these diseases during the past week—an increase of 106 deaths over the corresponding week of last year. There were 1,520 deaths from all causes, with a rate of 13.66, compared with 1,338 deaths with a rate of 12.15 for the corresponding week of last year.

**Examination for Hospital Interns.**—A joint examining board will hold a competitive examination of candidates for internship in the following New York hospitals: New York Hospital, Hudson Street Hospital, Roosevelt Hospital, St. Luke's Hospital, and Knickerbocker Hospital, formerly the J. Hood Wright Hospital. The date of the examination has not yet been selected, but notice of the date will be mailed to candidates at least a week prior to the examination. Application blanks and full information concerning the character of the examination and the number and character of the positions to be filled, may be obtained from the chairman of the examining board. All applications must be in the hands of the committee on or before December 31, 1915. Address all communications to Dr. Charles L. Gibson, chairman of the Joint Hospital Examining Board, in care of the New York Hospital, 8 West Sixteenth Street, New York.

**Navy Medical Corps Examinations.**—The next examination for appointment in the Medical Corps of the Navy will be held on or about February 23, 1916, at Washington, D. C.; Boston, Mass.; New York, N. Y.; Philadelphia, Pa.; Norfolk, Va.; Charleston, S. C.; Great Lakes (Chicago), Ill.; Mare Island, Cal., and Puget Sound, Wash. Applicants must be citizens of the United States and must submit satisfactory evidence of preliminary education and medical education. The first stage of the examination is for appointment as assistant surgeon in the Medical Reserve Corps, and embraces the following subjects: *a*, Anatomy; *b*, physiology; *c*, materia medica and therapeutics; *d*, general medicine; *e*, general surgery; *f*, obstetrics. The successful candidate then attends the course of instruction at the Naval Medical School, which will begin on or about October 1, 1916. During this course he receives a salary of \$2,000 per annum with allowances for quarters, heat, and light, and at the end of the course, if he successfully passes an examination in the subjects taught in the school, he is commissioned an assistant surgeon in the navy to fill a vacancy. Full information with regard to the physical and professional examinations, with instructions how to submit formal application, may be obtained by addressing the Surgeon General of the Navy, Navy Department, Washington, D. C.

**The Society for the Advancement of Clinical Study** announces a continuation of the series of bulletins relative to surgical and medical clinics held in New York city. A bulletin board is maintained for this purpose at the Academy of Medicine, 17 West Forty-third Street, in charge of a competent attendant who will be on duty from nine to twelve o'clock in the morning and two to six o'clock in the afternoon to answer inquiries. The special telephone number is 3375 Bryant. The clinics held at the various hospitals are posted on a special circular of information, which will be mailed to outsiders at fifty cents a week to cover postage, etc. The bulletin board maintained at the academy also contains the daily clinics as well as those held at stated hours in various hospitals. The facilities thus offered afford to visiting physicians who are interested in observing special operations and operators or clinicians, an opportunity to obtain the desired end with the least trouble.

**The Late Doctor Dawbarn.**—The West End Medical Society, at a recent meeting, appointed a committee to draw up resolutions as follows:

Dr. Robert Hugh Mackay Dawbarn died on Bright's disease on July 18, 1915, in the fifty-sixth year of his age.

Of the three oldest and most active hospitals of the West End Medical Society, he was not only a frequent guest at its meetings, but usually, also, took part in the discussions of the papers. There were few meetings at which he did not direct the attention of his fellow members to patients or new instruments or new surgical procedures.

He was by nature a great reader and was endowed with a retentive memory, and being much interested in the past history and development of the surgical art, he thus became often as well informed on its past history, through the older and now perhaps too often forgotten authors, as he was versed in its modern aspects. Nor was his reading confined to medicine, for he was well acquainted with the fields of English literature, and, in consequence, both his written and his spoken word often had a certain cultural and literary charm, which showed itself in some happily turned phrase, or in some apt practical quotation.

These stores of knowledge, conjoined to a mind naturally quick, searching, and imaginative, enabled him to view a subject from many different and original points of view, and as his manner was earnest and impressive—not to say, at times, aggressive—he was always able to command the attention of his hearers. It was those same qualities that made him a good teacher, and enabled him to carry on so successfully an army and navy quiz that was the means of sending men to all parts of the United States. At the Polytechnic Hospital, and at the City Hospital, too, he taught surgery acceptably to a large body of students.

It is to these qualities of his mind, coupled to unremitting industry in the study and the practice of his art, that the success in surgery which he enjoyed to an unusual degree must be ascribed. Probably his best work was done in fields in which imagination and ingenuity have to be combined with thoughtful and painstaking preparation, such as are, for instance, presented by cases requiring plastic repair. His work on the treatment of inoperable tumors of the neck through local starvation by cutting off the blood supply, is quite a marvel of minute and laborious dissection and of accurate study. For this work he was awarded, in 1902, the Gross Prize of \$1,000.

His quality of mental agility made him unusually resourceful, and no surgical emergency found him at a loss as to what could or should be done. He was always equal to the occasion, and often met it with means hastily improvised out of any material that came to hand. He would have been the ideal surgeon to have been attached to an exploring expedition penetrating some wild and dangerous country, for no difficulty appalled him and no catastrophe would have paralyzed his faculties. He was desirous of going to the present field of war, but failing health forbade it.

Doctor Dawbarn was always very tenacious of his rights, and whenever there was a dispute on his title to recognition as the originator of some new procedure, he was ever ready to give battle to all comers. But if he thus fought his own battles, he was equally ready to fight those of others who, he thought, were not getting their dues. It is to this trait of mental honesty that his habit may be traced of giving (often in bewildering profusion) when describing some operation, the names of all those surgeons who had labored to perfect it. To some this habit seemed perhaps a pedantic display of erudition. It really it arose from a much higher motive. His tenderness for the rights of others showed itself, too, in his frequently calling attention to the fact that some widely heralded achievement in surgery from Europe, was in reality the previous work of some American colleague whose labors had perhaps been too little appreciated at home.

Such were a few of the traits of the man Dawbarn as most men knew him. But there was another side of his character, and a very lovable side it was, too, that showed itself in abundance to those who knew him from the human as well as from the professional side. To a nature so warm, so generous, so generous, and so full of sympathy, no case of distress appealed in vain. He was ever and instantly ready with his time, his talents, and, if need be, his money to help whoever needed help. In the service of his patients no trouble of his was too great to relieve their troubles. He was to them, not only a physician, but a friend; and richly did they repay this devotion by love and respect.

In his family he was a devoted husband and father. All through his long illness, of the final outcome of which none knew better than himself, he was a word of complaint or dark foreboding escaped him, and he was at particular pains to keep from his family the knowledge of the fatal end which he foresaw.

This society will miss him much, and his memory will long remain with those who knew him in appreciative remembrance.

For the committee, WALTER MENDELSON.



## Pith of Current Literature.

## MEDIZINISCHE KLINIK.

*(Continued from p. 1615.)*

**Treatment of Acute Intestinal Disorders**, by J. Strasburger.—The following types of acute diarrheal affections were observed: Acute indigestion; typhoid fever; influenza; dysentery and dysenteric conditions; and an acute febrile condition simulating paratyphoid fever. In the course of the observations many cases suggested appendicitis, and it was found that this condition could be differentiated from acute cecal catarrh by the presence in the stools of finely divided particles of mucus in the latter condition. In practically all the conditions named good results were secured from the use of large doses of *bolus alba*. Much larger doses of this aluminum silicate are required than are usually prescribed, and the best results were obtained when single doses of 200 grams (six ounces) were given. The powder should be carefully rubbed with pure water, so that a perfectly homogeneous paste is made which can then be flavored with sugar and peppermint. This very large dose can be taken in two portions with ease. Occasionally even such doses were without effect. Uzara, which has an action somewhat analogous to the local action of epinephrine, was used in many cases, but the results were variable and not very satisfactory. Excellent results were obtained from the oral administration of epinephrine or from its use in colonic irrigations. Cases with mucus or mucus and blood in the stools responded better than those with simple diarrhea. The action of epinephrine seemed to be complex, both as an antagonist to inflammation and as an inhibitor of mucous secretion. The subcutaneous administration of the drug was much less effectual than either of the methods previously mentioned.

**Application of Electricity to Palpation**, by Max Kehane.—A diagnostic method of considerable value has been devised, in which exact localization can be accomplished through the use of minimal galvanic currents applied through exceedingly small, pointed electrodes. Hyperesthesia to such galvanic current over the cervical sympathetic, vagus, spinal accessory, and thyroid gland was found to be of the greatest help in diagnosing latent forms of hyperthyroidism. The exact localization of the painful points in neuralgias could be determined easily, but the most valuable field of all lay in the diagnosis of affections involving the several abdominal organs. Thus, there was a point of hyperesthesia to be found in the right iliac fossa in spastic constipation, while in atonic constipation the hyperesthesia was situated in the left fossa. The method is also applicable to electrical treatment of various conditions and gives better results than the customary mode of using either galvanic or faradic currents.

**Serum Treatment of Dysentery**, by Adolf Klesk.—Using polyvalent serums as a prophylactic injection, it was possible to check a severe epidemic, from which it seems that the injection conferred some degree of immunity. Serum injections proved most effective in modifying the severity of the disease and its duration, when given in the first three days of illness. Later than this they proved nearly

valueless. Even if given in the incubation period, however, the serum was not capable of preventing the development of the disease. The intensity of the pain at the site of injection was found to bear a direct relation to the severity of the case.

## BULLETIN DE L'ACADÉMIE DE MÉDECINE.

*October 5, 1915.*

**Abortive Treatment of Wound Infection**, by Carrel, Dakin, Daufresne, Dehelly, and Dumas.—Wounds by shell fragments, mines, torpedoes, and grenades are all infected, and tincture of iodine has proved totally inadequate to prevent gaseous gangrene, septicemia, and prolonged suppuration. Among 1,000 amputations performed under Tuffier's supervision, about 800 were occasioned, not by severity of the wound, but by infectious complications. Examination of wounds, six hours after their reception, generally revealed but a small number of bacteria, of various kinds, localized especially in the vicinity of projectiles and shreds of clothing. Eighteen hours later, the bacteria had multiplied enormously. Prompt sterilization of wounds is therefore the object to be sought; this should be effected within six hours. Foreign bodies and free bits of bone should first be gently removed with the gloved fingers or dissecting forceps. The wound should be laid open sufficiently for thorough exploration and cleansing, but excessive trauma should be carefully avoided. Sterilization should be effected by the use of a 0.5 per cent. sodium hypochlorite solution, prepared according to Dakin's method. Though strongly antiseptic, this solution can remain in contact with the tissues for days or weeks without causing irritation. Rubber tubes with one or more openings, surrounded by an absorbent, spongy material, should be carried to the bottom of the wound and in each of its recesses. The hypochlorite solution should be injected into the tubes at hourly or two hourly intervals in sufficient quantity, or better, introduced by continuous instillation by the drop method. The dressing should be examined daily and renewed when necessary. The wound margins should not be brought together until bacteriological examination shows that the wound is aseptic; at this time adhesive strips and an appropriate pressure dressing for approximating the deeper tissues should be used instead of sutures. Statistical evidence of the value of this method is not yet available, but comparative experiments clearly showed its superiority in reducing infection and discharges and promoting the formation of a soft, inconspicuous cicatrix. Infected wounds in which the treatment was begun in six to twenty hours were usually freed of the infection in three to five days. Fractures due to shell fragments healed, in spite of infection, like closed fractures.

**Mumps and Cerebrospinal Meningitis**, by P. Sainton and J. Bosquet.—The possibility of a meningitis due to the infection of mumps has been demonstrated by Chauffard and Boidin, Hutinel and Monod, and Dopfer. The meningitis may be of various grades of severity. That meningitis in mumps is always due to the virus of this disease is not, however, to be imagined, as was shown in the case reported by the authors in which, on the seventh day of mumps, meningitis appeared; upon



lumbar puncture the diplococci of cerebrospinal meningitis were found, and upon administration of Dopter's antimeningitis serum the condition immediately cleared up.

#### REVISTA DE MEDICINA Y CIRUGIA PRÁCTICAS

November 14, 1915.

**Tropical Dysentery**, by F. F. Martinez.—Amebic dysentery, like oriental sore and infantile kala azar, is endemic on the coast of Granada. It is marked by a light gastric disturbance at the onset with general fatigue and severe diarrhea; the tongue is coated and there is a slight rise in temperature. In a few days the dysenteric syndrome is established with intermittent or continuous abdominal pain, tenderness on palpation which is localized to the hypochondrium and iliac fossae. Tenderness is most marked at the level of the lesion following frequently the line of the transverse colon. Tenesmus with a sensation of weight, scalding, and constriction of the anal region is incessant. The dejections are mucous, white, translucent, granular, with little rolls of membranous strips of tripe with particles resembling rice grains. Soon blood appears in the movements, at first mixed with mucus, later taking the form of true hemorrhages. The number of stools may be as high as forty in one day, the skin becomes dry, and the countenance takes on a characteristic terrified air. The diagnosis may be made from fresh specimens from the feces, from dried preparations, from cultures, from experimental inoculation into animals, and lastly by the use of emetine. Radiographic examination after the administration of the bismuth meal is sometimes of service in diagnosis.

#### BRITISH MEDICAL JOURNAL.

November 29, 1915.

**The Recrudescence of Local Sepsis**, by R. H. Jocelyn Swan and Kenneth Goadby.—Routine bacteriological examinations were made in a series of wounded men in whose tissues fragments of missiles remained imbedded after complete healing of the wounds. In some cases the fragment was found enclosed in a cavity which was lined with a smooth wall and contained a glairy mucoid fluid. In others the fragment was closely surrounded by adherent tissues and fluid was absent. In one case *Bacillus proteus* was isolated, in others, in which there were smooth walled cavities containing fluid, the bacillus of Welch, streptococci, a large Gram positive diplococcus, etc., were found. These findings explain the recrudescence of local sepsis in perfectly healed wounds when simple surgical operations are subsequently undertaken for the removal of foreign bodies, or when passive movement is employed. In some of the cases there seemed to develop a condition simulating a local anaphylactic state of the tissues in the neighborhood of the imbedded fragment.

**Tartar Emetic in Kala Azar**, by Percival Mackie.—Two cases are reported, in each of which good results were obtained by the intravenous injection of tartar emetic. Doses of four to 7.5 c. c. of a one per cent. solution in normal saline were injected at intervals of two days. These two cases serve to confirm the statements recently made by

several Italian observers who have recorded beneficial results from the use of tartar emetic in Leishmaniasis.

#### LANCET.

November 20, 1915.

**The Cerebrospinal Fever Problem**, by H. Warren Crowe.—The most satisfactory method of diagnosis of this disease is by enriching about ten c. c. of the spinal fluid with glucose up to one per cent., incubating for twenty-four hours, and then examining smears made from the centrifugated deposit. If a serum is used which has antibodies specific to the infecting strain of organism, the treatment will be satisfactory in a large proportion of cases. It might be well always to test the agglutinating power of the serum against the patient's organism, and several different serums might be kept on hand, from which the most suitable could be selected. Vaccine treatment usually has some effect, specially on the temperature, but the doses used must be small, one million organisms being quite enough for the initial dose. The vaccine should always be autogenous and can be readily prepared from the incubated and enriched spinal fluid of the patient himself. In the study of contacts for the purpose of isolation the great difficulty is in the growth and identification of the meningococci when obtained from the posterior nares or fauces. After culture the organisms can be identified as meningococci by agglutination with the blood serum, serum of convalescents, or with commercial antimeningococcic serum. It was found that if contacts were isolated together on suspicion the proportion of carriers of the organism among them rose. Contacts should, therefore, never be isolated together in any considerable numbers. In the treatment of carriers, the greater the effort the smaller the success, and the stronger the antiseptic employed the more difficult was the eradication of the organism. Nature unassisted, or aided only by the weakest washes, was more successful in clearing up carriers than human efforts. The presence of nasal catarrh increased the probability of a person's becoming a carrier, and it was found that the presence of even a small amount of nasal mucus on a culture plate greatly increased the growth of meningococci.

**Bacterial Antagonism**, by Leonard Colebrook.—It was found that the growth of pneumococci in plates would inhibit the growth of meningococci where the two colonies approached each other. This inhibition was found to be due to a filterable substance produced by the growth of the pneumococci. It was found also that an old culture of pneumococci could be sprayed into the human throat without danger to the patient, and this was practised in several carriers of the meningococcus in the hope that inhibition of the growth of the latter organism might be secured. It was impossible, however, to make the pneumococci establish themselves in the throats of these persons.

**Blackwater Fever**, by R. W. Burkitt.—Through an accidental observation it was discovered that the administration of an alkali would relieve the hemoglobinuria in blackwater fever. In this condition it was found that the urine was always strongly acid in reaction and usually also contained acetone. It

was found to reason that the mechanism of the production of blackwater fever by the administration of quinine rested on the fact that the tissues had been previously damaged by a reduced alkalinity of the blood, or an acidosis. When, in this condition, quinine was given it was capable of increasing the damage and leading to the appearance of blackwater. Since this observation the routine use of large doses of sodium bicarbonate before and during the administration of quinine seems to rest on a rational basis. The same holds true when neosalvarsan is to be given in the severer forms of malaria. In any case of malaria in which acetoneuria is found, the danger of the development of blackwater fever may be regarded as great.

#### BOSTON MEDICAL AND SURGICAL JOURNAL.

December 2, 1915.

**The Dangers of Ether as an Anesthetic,** by W. W. Keen.—Keen urges straight ether by the open drop method on an Allis inhaler, or a simple mask, as by far the best and safest routine anesthetic. He believes all mixtures to be more dangerous. He also pleads for more accurate doses of ether by the anesthesiometer as a gas on the basis of its anesthetic tension, which may be regulated quickly and easily according to the needs of the patient. The alcoholic, the child and the adult all require to be saturated to the same ether tension to attain anesthesia. Every case requires unremitting watchfulness from first to last, irrespective of the method employed.

**Pregnancy and Diabetes mellitus,** by Elliott P. Joslin.—The conclusions arrived at are that the secret of success in the treatment of pregnant women with sugar in the urine seems to be: To have the patients under constant supervision throughout the pregnancy and for some months after confinement, employing the same treatment as in the usual case of diabetes. Even when sugar appears to a slight extent in pregnant women, it should be watched carefully and controlled by diet. The advantage of a Cesarean section should be borne in mind. Ether anesthesia may work well, but is probably not as safe as gas and oxygen. If ether should be used, as brief an anesthesia and as little ether as possible should be employed. Many statements in the literature of pregnancy and diabetes must be revised. Pregnancy in diabetes does not demand immediate abortion, even if acidosis is present. If pregnant diabetic patients are managed suitably, they will very likely abort less frequently. It cannot yet be accepted that pregnancy aggravates diabetes; it is quite possible for such a patient to become worse because of the ingestion of an unusual quantity of food. Nursing is not contraindicated after confinement, for the diversion it affords the patient may offset the extra demands made upon the metabolism. Too few data have been accumulated regarding the blood sugar of pregnant women, and the alleged excessive weight of children of diabetic mothers to warrant conclusions.

**Etiology and Treatment of Heart Disease,** by Paul Dudley White.—The male sex has been found to be more subject to auricular fibrillation, auricular flutter, heart block, and alternation of the pulse than has the female sex. The older the patient with heart disease, the more subject has he been found to be to

serious abnormalities of the heart beat. Auricular fibrillation and alternation of the pulse occur at the same ages, most frequently in the fifth and sixth decades. Rheumatic hearts usually show normal mechanism or auricular fibrillation, much less commonly pulsus alternans. A considerable proportion (thirty-six per cent.) of syphilitic hearts show alternation of the pulse; few were fibrillating. A patient with cardiac insufficiency in the course of cardio-renal disease is very apt to show pulsus alternans, either constant or more frequently only after ventricular premature beats. Cardiosclerosis often results in the production of fibrillation and alternation. Hyperthyroidism of long standing is sometimes attended by auricular fibrillation. Alcohol, tobacco, tea, and coffee appear to play no direct part in the production of serious disorders of the heart beat. Two thirds of the patients with auricular fibrillation, one half of those with alternation of the pulse, and one third of those with normal mechanism show physical signs of cardiac insufficiency. Digitalis was used in eighty-eight per cent. of decompensated cases, almost always in the form of pills of standardized leaves. Intravenous medication was used in urgent cases only. Morphine was given beneficially in nearly one half of the patients with physical signs of insufficiency, one dose often sufficing to give the patient the first comfortable night in weeks. Venesection was found useful in a few urgent cases. The change in diet to five small meals daily was often much appreciated by the patient.

#### JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

December 4, 1915.

**Experimental Transplantation of the Epiphysis,** by S. L. Haas.—After citing the contradictory statements in the literature concerning the longitudinal growth of transplanted bone, including the epiphysis, the author reports the results of experiments on dogs, undertaken to determine whether a transplanted epiphysis might be expected to retain its power of longitudinal growth. He found that after reimplantations of entire metacarpal bones into the animals from which they were removed, there was a total cessation of the growing function of the epiphysis. Autotransplantation of entire bones showed definite evidence of decrease in length and degeneration. The splitting of the transplanted bone did not favor viability. Reimplantation of the epiphyseal cartilage was first followed by an increase in length, which later changed to a decrease, due to degeneration. The function of increasing in length was entirely lost or greatly reduced after autotransplantation. Practically every case showed complete failure of growth, irrespective of the length of the section of bone transplanted, and incisions or borings increased the rate of degeneration. From these experiments the epiphyseal cartilage must be regarded as a vulnerable tissue, directly dependent for its viability upon the adequacy of its blood supply.

**Manufacture and Administration of Nitrous Oxide Gas,** by A. R. Warner.—Nitrous oxide gas manufactured in the Lakeside Hospital was found to produce certain toxic symptoms in a small proportion of patients, especially on certain days. The same was found true to a somewhat lesser degree

of the best commercial gas. The chief symptoms were cyanosis which could not be overcome by oxygen, and those similar to carbon monoxide poisoning, with the exception of the color. One death resulted. It was discovered that these effects were attributable to some nitrogenous substances of the nature of ammonium compounds which remained in the gas even after the most thorough washing, and such gas was always found to be alkaline in reaction. It was discovered, further, that if the gas was well washed through sulphuric acid it lost all toxic properties and became neutral. Since the sulphuric acid washing has been in use, over a year, there have been no cases of poisoning. Cyanosis at any stage of the anesthesia is due to faulty and incompetent administration or to impure gas. Rebreathing to any degree is dangerous in nitrous oxide-oxygen anesthesia because perfectly normal color can be maintained, although the carbon dioxide in the alveolar air may have risen to a dangerously high concentration.

**The Wassermann Test in the Medical Dispensary,** by Josiah J. Moore.—In a series of 418 unselected medical dispensary cases positive Wassermann reactions were obtained in fifty-six, or over thirteen per cent. Of the women, eighteen per cent. reacted positively, while only twelve per cent. of the men responded. In only twenty-eight of the fifty-six positive cases was a definite history of syphilis obtainable, and in some of these only after being confronted with the result of the test. Further to confuse the clinical diagnosis of syphilis, it was found that many of the patients with negative Wassermann reactions gave histories which closely simulated those of syphilitic infections. In the majority of cases the first and tentative diagnosis was other than of syphilis, and even with a complete physical examination syphilis was not suspected. The conclusion seems to be that the Wassermann test is of inestimable value in a general medical clinic and should be performed as a matter of routine.

**Statistical Study of Syphilis,** by James L. Whitney.—Cases to the number of 7,885 from all of the departments of a dispensary were studied with reference to the prevalence of syphilis. Twenty-three per cent. of the neurological cases and twenty-two per cent. of the medical cases gave positive evidence of syphilitic infection. The other departments showed smaller proportions, the surgical falling as low as two per cent., which was due in part to the fact that in this clinic syphilis was less often looked for than in most of the others. Syphilitic infection was present in 100 per cent. of the cases of aortitis, seventy-three per cent. of aortic aneurysm, thirty-one per cent. of arteriosclerosis, fifty-one per cent. of iritis, thirty-three per cent. of osteomyelitis, 48.5 per cent. of periostitis, and twenty-eight per cent. of cases of infectious arthritis. Practically all types of ocular diseases showed high proportions of syphilis.

**Syphilis of the Spine,** by James L. Whitney and Walter I. Baldwin.—Contrary to the general belief, joint syphilis is not uncommon, but was found in fifteen per cent. of over 500 cases. The commonest site of joint syphilis is the spine, and the symptoms of this involvement are very characteris-

tic. In a series of 100 cases of syphilis, sixty-eight had spinal involvement. The arthritic lesions are of two types—one, the infectious, consisting either of gummatous bone lesions or, more commonly, of a nondestructive synovitis; the other, the toxic, simulating the lesions of arthritis deformans. The type with synovitis does not seem to have been recognized, although it is common and characteristic. Its symptoms are diminished mobility, or complete fixation of from three to six of the vertebrae with hypotonicity in the ligaments and muscles in the uninvolved vertebral joints and the sacroiliac joints and hips. Pain is not usually prominent, but probably a large proportion of the cases of syphilis with backache and "rheumatic" pains are due to this spinal synovitis. The phenomena of limited mobility combined with hypotonus is very rare in nonsyphilitic persons and is strong presumptive evidence of the disease. The combination constitutes almost certain proof, although in a considerable number of cases the Wassermann reaction was negative.

#### MEDICAL RECORD.

December 1, 1914

**Milk Borne Septic Sore Throat,** by Herman N. Biggs.—Septic sore throat frequently occurs in epidemics, and is caused usually by streptococci which can be traced to infected cows on dairy farms. The symptoms are uniform and characteristic, with a rapid onset often with a chill, and a sudden rise in temperature to 103° or 105° F. Headache is severe and general muscular pain is present. The throat may show only general redness like scarlet fever throat; later, however, small patches of membrane may appear on the tonsils and in many cases the exudate resembles diphtheria. The cervical lymph glands are almost always much swollen. The first period of the disease lasts for four or five days, resulting in rapid recovery in mild cases and marked by secondary complications in severe cases. Common complications are peritonsillar abscess and supuration of the cervical glands. Diffuse cellulitis of the neck is common, as are also polyarthritis, erysipelas, nephritis, pneumonia, pleurisy, pericarditis, septicemia, and peritonitis. The only means of prevention lies in universal pasteurization of milk used for drinking purposes.

**Fermented Milk and Whey in Infant Feeding,** by Albert E. Mucklow.—Fermented milk and whey have marked bactericidal action from the presence of the lactic acid bacilli and the acidity may be neutralized by the addition of bicarbonate of sodium. The method of preparation is gone into deeply and the use of Bulgarian bacilli is advocated.

**The Connellan-King Diplococci Infections of the Throat,** by James Joseph King.—These diplococci were first observed in November, 1914, and King has seen since that time seventy-eight cases of this infection. He insists that every case of septic arthritis, commonly called rheumatism, is caused by focal infection. The most frequent focus is in the mouth and usually in the tonsils. Where such focus exists in the tonsils, the arthritis should be cleared up by autogenous vaccines and tonsillectomy then performed. The blood change in this infection is a simple anemia with occasionally a four to six per cent. increase in the eosinophiles.



**Rectal Operations**, by Waters F. and Elliott C. Burrows.—A review of 500 operations on the rectum done under local anesthesia shows that the complications and dangers of the operation are minimized, and convalescence is shortened. The rectal conditions operated in were, in the order of frequency, hemorrhoids, fissure, ulceration, pruritus ani, fistula, abscess, rectal prolapse, stricture of the anus, tuberculous ulceration, and polyp. Local anesthesia is indicated in ninety-five per cent. of all rectal surgery. It permits of painless operations, free from danger, obviates after pain, does not confine the patient to bed, and saves considerable time to the patient.

## JOURNAL OF EXPERIMENTAL MEDICINE.

December, 1915.

**The Influence upon Tadpoles of Feeding Desiccated Thyroid Gland in Variable Amounts and of Variable Iodine Content**, by Lenhart.—Lenhart found, as a result of his experiments, that the activity and potency of the physiologically active substance of the thyroid is measurable in terms of its percentage iodine content. As the amount of iodine content increased in the thyroid gland used for feeding, there was also an increase in the metabolism of the tadpole, resulting either in increased growth or rapid emaciation, according to the strength of the action. Lenhart suggests that as the reaction of tadpoles to thyroid feeding is so sensitive, they might be used as a biological test for the activity of thyroid tissue.

**Observations on Antityphoid Vaccination**, by Nichols.—The writer concludes that the living sensitized typhoid vaccine is too dangerous for general use, especially in the military service, as it retains the power of causing typhoid fever if accidentally taken by mouth. He also points out the nonrelationship between virulence and toxicity. The army strain, although pathogenic and relatively avirulent, nevertheless is distinctly toxic, and it is upon this latter factor that its efficacy depends. In regard to Gay's typhoidin skin reaction, Nichols believes that it is not an index of true immunity, but rather an indication of typhoid proteid sensitization, which is not as complete, permanent or specific as true immunity.

## LANCET-CLINIC.

November 27, 1915.

**Rest in the Treatment of Tuberculosis**, by Lucius B. Morse.—Rest is insisted on as being even more important than outdoor life in tuberculosis. Reduction of the cough to a minimum and lessening of the depth and frequency of respiration are essential features. The average case can, by a mere act of the will, reduce the cough by two thirds or even more. Patients laboring under the impression that sputum must be raised whenever they are conscious of its presence in the bronchi should be informed of the rapid liquefying action of bacteria which, if the impulse to cough is temporarily repressed, will soon lead to the evacuation of the sputum with greatly reduced effort. This one injunction will often promptly reduce the temperature curve. As aids to sputum liquefaction, hot alkaline drinks, hot aromatic spirit of ammonia, small doses of tartar

emetic, pilocarpine, and apomorphine are of value. Lessening of respiration is chiefly brought about by bodily rest. All incipient cases in which the temperature reaches 99° F. should be put to bed for thirty days unless there are positive contraindications, which are rare. Many chronic cases are also benefited by a prolonged stay in bed. Excessive talking and laughing are to be avoided. In gastric and intestinal complications rest is also important; an easily digested, nonfermenting diet should be ordered. Arsenite of copper, one fiftieth grain, before eating, was found valuable to lessening peristaltic pain. Mental and emotional rest are equally imperative. The patient should take a two hourly temperature record, and avoid all indiscretions that are reflected in a rise of temperature.

## AMERICAN JOURNAL OF THE MEDICAL SCIENCES

December, 1915.

**Complement Fixation in the Diagnosis of Pulmonary Tuberculosis**, by Charles F. Craig.—The writer concludes that complement binding antibodies are present in the blood serum of both active and clinically inactive tuberculous infections. A polyvalent antigen prepared from several strains of the human tubercle bacillus has been found to give excellent results in complement fixation for tuberculosis. With the test described a positive reaction was obtained in 92.2 per cent. of active tuberculosis and in 66.1 per cent. when the disease was clinically inactive. The test was negative in normal persons and in patients suffering from other diseases, with the exception of two syphilitics, in whom symptoms of a coincident tuberculous infection were present. A positive reaction is specific and apparently indicates the presence of an active tuberculous focus, although no clinical symptoms may be present. The results obtained are practically as good as those obtained by the Wassermann test for syphilis.

**The Problems of Nephritis from the Clinical Standpoint**, by Arthur R. Elliott.—The treatment of high blood pressure is primarily hygienic. During the period of sustained compensation personal hygiene and diet should be so regulated as to avoid all overstrain to heart and kidneys. Rarely is it advisable to lower the blood pressure by direct therapeutic attack, as necessarily follows if we grant that high blood pressure is a compensatory phenomenon. In chronic nephritis only discomfort if nothing worse will accrue to the patient from the use of vasodilators. Nitrites should be reserved for emergency use to combat angina, stenocardia, cardiac asthma, severe high tension headaches, and other pressure manifestations. If dropsy, renal or cardiac, exists, nitrites will do harm. Dropsy in chronic vascular nephritis almost invariably signifies the advent of cardiac failure. Because the case is primarily renal, it does not follow that the dropsy is of renal origin; it is usually cardiac and requires cardiac supporting measures. Digitalis becomes in the end the staff upon which the chronic nephritis invalid must lean.

**The Sugar Content of the Spinal Fluid in Meningitis and Other Diseases**, by Arthur H. Hopkins.—The consensus is that glucose is the principal reducing substance in the spinal fluid. Its concentration in health is slightly lower than that of the blood sugar. In meningitis there is a pro-

nounced hyperglycemia associated with just as pronounced a drop in the sugar content of the fluid, this drop being due evidently to the destructive activity of the invading microorganisms. In diabetes the sugar content of the spinal fluid is almost as high as that of the blood. In infections like pneumonia there may be a hyperglycemia without apparent change in the spinal fluid. The reducing substance of the fluid is frequently increased in uremia, a condition, however, in which hyperglycemia also occurs. A slight increase in the sugar concentration of both the blood and spinal fluid occurs in some cases of epilepsy, and in certain other nervous conditions. Syphilis frequently reveals lower figures than any condition except meningitis.

**Hodgkin's Disease**, by W. F. Cunningham.—The writer contends that the Dorothy Reed type is not a special form of Hodgkin's disease, but is the picture that makes this disease a distinct entity. The prognosis is difficult; it is impossible to say that a case is cured. The treatment is excision of all foci of infection and the Röntgen rays. Vaccines are of no value. More than one gland should be obtained for diagnosis in lymphatic disturbances. The specific organism has not been isolated, but the following evidence is given in support of the theory that it is a bacterial or protozoal infection: 1, The histology is that of an inflammatory reaction; 2, injections of gland emulsions have caused temporary lymphatic enlargement in the lower animals; 3, the fever resembles closely that of other infections; 4, the leucocytosis; 5, the exudate when serous surfaces are involved.

#### ANNALS OF OPHTHALMOLOGY.

October, 1918.

**Herpes zoster ophthalmicus**, by Burton Chance.—Herpes zoster ophthalmicus is the frequent subject of mistakes in diagnosis. It may be mistaken for erysipelas from which it should be distinguished by the acute neuralgic pain and the formation of vesicles in the course of the trigeminus. The inflamed area is confined to one side of the face and shows no tendency to spread, which is not true of erysipelas. In the latter disease the vesicles are large, while in zoster they are small and grouped. Simple or febrile herpes is not accompanied or preceded by the characteristic neuralgic pains of zoster. When the rash appears it is well to dust it thickly with a powder of zinc oxide in rice starch. During the evolution of the vesicles an ointment of zinc oxide and rice starch rubbed up in petrolatum may prevent suppuration as well as foster the healing. Anodyne lotions are useful, such as lead water and laudanum, or, when the eyeball is not affected, weak carbolic acid or belladonna. Ichthyol ointment is valuable. Calamine lotions painted on early sometimes diminish the severity of the lesions. Arlt covered the side of the face with a mask of red celluloid and directed the patient to sit in the sun so as to get the therapeutic benefit of the red rays, which he thought relieved the pain and enabled healing to follow without scars. Internally anodynes are nearly always required, as the severe pain must be mitigated. Quinine in full doses, iron, strychnine, arsenic, sodium salicylate, codliver oil, and a highly nutritious diet offer the best chance

of combating neuritis of the trigeminus. When ocular complications set in they should be managed on the general principles governing the treatment of conjunctivitis, keratitis, iritis, and cyclitis from other causes. Carefully applied protective bandages may possibly ward off neuroparalytic keratitis. Galvanism has been recommended for the relief of persistent neuralgia. McNab has been gratified by the results of ionic medication, consisting of the introduction of quinine sulphate by means of the positive pole over the whole area affected. Usually two applications to the skin area are sufficient, at an interval of from seven to ten days, using a current of one to one and a half milliamperé to the square inch of surface for fifteen to twenty minutes. The treatment is not satisfactory; it is doubtful if we can shorten the duration of an attack, and it is difficult to decide whether a rather shorter course than usual is spontaneous, or due to the drug or other measures employed, for in many cases the evolution of the eruption is incomplete.

#### ARCHIVES OF RADIOLOGY AND ELECTROTHERAPY

November, 1918.

**Fluorescent Screen Localization by the Parallax Method**, by Alfred C. Jordan.—The essentials of the method are: 1, A couch with a tightly strapped canvas or wooden top; 2, a thoroughly protective tube box with an adjustable rectangular diaphragm and a convenient method of moving the tube box in a horizontal plane in the longitudinal and transverse direction of the couch; 3, it is absolutely essential to have an arrangement whereby the operator is able to control by a touch of the foot both the current through the x ray apparatus and the light in the room. A double foot switch enabling this to be done can be added to any installation; 4, a lead lined screen should be interposed between the operator and the couch; 5, a pair of efficient protective gloves and a pair of protective spectacles.

**Radiograms Illustrating the Velocity of the Rifle Bullet**, by George Vilvandre.—The radiograms illustrate the point that the damage done by rifle bullets is dependent on the velocity of the missile rather than on the texture of the bone. In one case the radiogram showed a bullet lodged in the infraspinatus, which was easily removed, the patient being little worse for his wound. Another showed a penetration of the lower end of the tibia with no complete fracture. This bullet travelled at a greater velocity than the first, but still its speed was not sufficient to perforate the bone completely. A third showed extensive injury to the bone, the tibia being comminuted. This bullet seemed to push everything in front of it, but its speed did not prevent its wabbling. A fourth and a fifth showed a clean hole and a vertical fracture of the shaft of the bone respectively, and were produced by bullets of the highest velocity.

**Photographic Action of Radioactive Sources**, by Walter Makower.—Radioactivity has thrown considerable light upon atomic phenomena and radioactive methods investigate these phenomena more intimately and directly than in almost any other way; alpha particles have been identified as charged atoms of helium travelling with enormous

velocities and their number has been directly connected by an electrical method. Their complete paths through gases can be recorded and examined in detail by a method devised by C. T. R. Wilson, which causes a cloud to form on the ions produced along the path of an alpha particle and photographs the track of the cloud thus formed. Similar photographs could be made with beta and gamma rays, and the differences between the properties of the various types of rays were strikingly demonstrated. Another method consists in examining microscopically the photographic action of the radiations and possesses the advantages of great simplicity and delicacy. A method adopted to show the paths of alpha particles through photographic films was to activate the tip of a sewing needle by gently rubbing it on a surface coated with the active deposit of radium or some other source of radiation. In this way a trace of active matter was transferred to the point of a needle which was then placed for a short time in contact with a photographic film. The grains affected by the alpha particles can be clearly seen radiating out in straight lines from two centres, representing the points at which the needle had been brought into contact with the films.

#### JOURNAL OF BIOLOGICAL CHEMISTRY

October, 1915.

**Effect of Pituitary Substance on the Egg Production of the Domestic Fowl**, by Clark.—The author reports some results obtained by the use of pituitary gland substance removed from growing mammals. In the first experiment, thirty-five hens were used, while in the second 645 were fed forty-five grams daily. It was found that by the fourth day after the first dose the egg production, which had been decreasing, increased in the first series from sixteen a day to thirty-two; in the second series, the increase was from 248 to 339. Another feature was the increase in hatchability. Out of 100 eggs collected before dosing only seventy-one hatched, after the dosing ninety-six. The increase in laying was also preceded and accompanied by an increase in appetite.

**Quantitative Studies on the in vivo Absorption of Iodine by Dogs' Thyroid Glands**, by Marine.—Iodine is taken up by the thyroid when administered in any form and by any method. The amount taken up from a given intake varies with the size of the gland and the existing degree of hyperplasia. In order to determine more accurately the amount, Marine removed one lobe of the thyroid, weighed it and obtained its iodine contents. After feeding the animal for a definite time on a certain amount of potassium or sodium iodide the remaining lobe was removed. By his experiments he found that as high as 18.5 per cent. of a given intake of iodine by mouth may be recovered from a thyroid whose ratio to the body weight is one to 687. In this respect it stands alone at present among the specific affinities of tissues for inorganic substances.

**The Cause of the Loss of Nutritive Efficiency of Heated Milk**, by McCallum and Davis.—By feeding experiments it was found that skim milk powder which has been wet and long heated in a double boiler, or heated for one hour in an autoclave

at fifteen pounds pressure, no longer supports growth as does the unheated product. By separating the component elements it was noted that the only one affected was the casein. That heating casein in a moist condition for one hour in an autoclave at fifteen pounds pressure destroyed its biological value as a complete protein.

**The Abderhalden Reaction**, by Van Slyke, Vinograd-Villchur, and Lodee.—The authors undertook certain experiments in the hope of providing for the measurement of serum protease a quantitative method sufficiently accurate, simple, free from subjective influence, and specific proteolysis to afford definite conclusions concerning at least the facts of Abderhalden reaction. As a possible standard for measurement of serum protease the aminonitrogen determination seemed particularly promising. Their results are so important that it seems well to quote extensively from their summary. Practically every serum, whether from a pregnant or nonpregnant woman, showed protein digestion when incubated with placental tissue prepared according to Abderhalden. The range of individual variation in proteolytic activity was wide. The range covered by most of the normal serums was, however, identical with that covered by the majority of the pregnant serums. There is a tendency for the results from the pregnant serums to average somewhat higher than those from the nonpregnant. The difference even in the averages is not great, however, and the individual variations of both pregnant and nonpregnant serums make the results from both overlap so completely as to render the reaction, even with quantitative technic, absolutely indecisive for either positive or negative diagnosis of pregnancy. Further evidence of nonspecificity is seen in the fact that carcinoma tissue was digested to about the same extent as was placenta.

### Proceedings of Societies.

#### AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

*Twenty-eighth Annual Meeting, Held at Pittsburgh, September 14, 15, and 16, 1915.*

The President, Dr. CHARLES L. BONIFIELD, of Cincinnati, in the Chair.

(Continued from page 1213.)

**Surgery of the Appendix**.—Dr. JOHN W. KEEFE, of Providence, stated that in a series of 129 cases occurring in his service at the Rhode Island Hospital it was found necessary to drain in sixty-five cases, showing the tendency of the profession to delay operating. During four months he operated fifty-two times with one death; fifty per cent. of the cases were drained. The morbidity in these drainage cases should be avoided. The tendency to a long drawn out convalescence, to fecal fistula, and secondary abscesses was unfortunate, to say the least. He operated in most of the cases shortly after the patients left the hospital. The Ochsner treatment was not understood by the profession and consequently had done great harm. Rapidity in operating was essential when the patient was prostrated. The surgeon should not attempt too much;



open the peritoneal cavity, attend to the pathological conditions found as quickly as possible, drain and close the wound as far as the drain, with quickness. Stab wound drainage was usually not necessary, but occasionally might be of service.

The aftertreatment consisted of the Fowler position, withholding food, lavage of the stomach, if necessary, frequent rinsing of the mouth, tap water by rectum, and small doses of morphine. On the third day, the bowels were moved by enemata, and he had found eserine and pituitrin in some cases of value where distention of the abdomen with gas was troublesome. Appendicitis was a disease amenable to surgery. Early operation by a competent surgeon should be attended with no mortality. When he knew this to be a fact and realized how easy it was to remove an appendix in the first twenty-four hours of the disease, was it not regrettable to hear of so many patients dying from this affection. Both the physician and the laity were to blame. They must become enlightened, and though much had been said and written on the subject it was their duty to continue to raise their voices and to cry out, "Don't kill with cathartics. Make the diagnosis early. Advocate operation before the end of the first day and see to it that a man well qualified to do surgery performed the operation."

**A Prognostic Sign in Acute Suppurative Peritonitis.**—Dr. HUGO O. PANTZER, of Indianapolis, said that the presence within the abdomen in cases of peritonitis of a free or encapsulated serous or seropurulent fluid, which was practically without odor, by the side of encapsulated foul material, indicated a strong systemic defensive activity of distinct prognostic value. There were cases of peritonitis which, by their violent symptoms and the conditions found at operation, included no apparent hope of recovery, and which notwithstanding made straightway for recovery. It was of prognostic interest to know the signs which at operation in a given case revealed this probability. In June, 1906, on a very hot summer day, which seemed to accentuate the gravity of the case, there was brought to him a male baby of six months, which a few days before had become acutely ill and had at once and thereafter revealed the characteristic signs and symptoms of an acute general peritonitis of probable appendicular origin. The temperature was 104° F., pulse feeble and 170 to the minute. At operation there was found much free fluid within the abdomen, cloudy with pus, but colorless; and about the ileocecal coil were extensive adhesions enclosing an abscess containing about forty-five c. c. of creamy and extremely foul pus and the gangrenous appendix. The case seemed utterly hopeless, yet it turned straightway to recovery. With three drainage tubes within the abdomen, the very next day the child was found cooing merrily and taking its mother's milk, and from that time on it began to recover.

With many subsequent cases revealing a similar experience, it might now be set forth that such finding had reliable prognostic value. The defensive material thus produced by Nature in single instances might vary in its characteristics. Notably it might be merely clear serum or quite cloudy, and it might be free within the abdominal cavity or en-

cysted in one or more pockets. Conversely, the original morbid material might be variously encapsulated in one or more pockets, and even vary in degree or even kind of odor as pertaining to the several pockets in a given case.

**Abnormality of the Sigmoid.**—Dr. BUDD VAN SWERINGEN, of Fort Wayne, reported a rare congenital abnormality of the sigmoid in a woman, thirty-seven years of age, who had suffered from childhood with constipation. Palpation of the abdomen elicited tenderness and tumefaction in both flanks. By the vagina the mass in the left side was felt to be very hard and larger than that on the right. A diagnosis of malignant disease had been made by several consultants on this finding. The abdomen was opened by a median incision. The omentum was firmly adherent on the left side, but was finally loosened and packed back out of the way. The tuboovarian abscess on the right side was removed. The appendix, which was adherent to it, was also removed. In enucleating the left tube and ovary, which were very intimately adherent to the sigmoid, there was uncovered a cylindrical structure about six inches long, apparently coming out of the side of the sigmoid and entering the lateral aspect of the rectum. After freeing it, it was thought to be a diverticulum open at one or both ends. As the main channel of the bowel was thought to be still uncovered, the diverticulum was ligated at the sigmoid and rectal attachments and removed. The left ovary and tube were also enucleated and removed.

Preliminary to closure of the abdomen, water was run into the rectum, it being his custom to allow two quarts. It was then found that the sigmoid and descending colon could not be filled and that he had evidently destroyed the only passage-way between the rectum and colon. He, therefore, anastomosed the rectum and sigmoid by the Noble method at the site of the former channel. The woman made a satisfactory although prolonged convalescence, and went home with a fecal fistula for which she was successfully operated upon May 11, 1915.

His reasons for thinking it was a congenital defect and not a part of the sigmoid compressed by the exudate of a salpingitis and pelvic peritonitis, were four, namely: 1. The history of lifelong constipation and necessity for taking cathartics. 2. The tube did not come off of the sigmoid at its end nor did it enter the top of the rectum. 3. The ballooning of both the sigmoid and the rectum showed a process which must have antedated the pelvic inflammation. 4. The walls of this tube did not correspond to those of a compressed tube, that is, they were not thrown into folds, and by no kind of incision on or around the tube could its calibre be increased to that of normal bowel.

**Postoperative Ureteral Fistula.**—Dr. HENRY DAWSON FURNESS, of New York, said the proper care of ureteral fistula depended upon a knowledge of the natural history, a careful study of all the conditions, and selecting the treatment that was going to give results. He thought that he had been too conservative in attempting to save kidneys that were functionally of no value, and that in this so called conservatism he had risked too much. It

was useless and unwise to attempt a ureteral and vesical anastomosis in the cases where there was serious renal damage. The operation was attended with more risks than a nephrectomy and should success follow, the drainage into the bladder from an infected kidney was in itself harmful.

**Mesenteric Thromboses.**—Dr. WILLIAM EDGAR DARNALL, of Atlantic City, believed that infection played a decidedly more important part in the etiology of mesenteric thromboses than they had thought in the past. Recent studies went to show what a tremendous element infection was in all the ordinary types of embolism and thrombosis, such as occurred in the saphenous and pelvic veins, the lateral sinus, the uterine sinuses, and other parts of the body. It was only reasonable to infer, therefore, that the cases of acute mesenteric thrombosis were the result largely of some focus of infection, such as appendicitis, gallbladder infection, ulceration of the intestine, or even of metastasis from a distant focus of infection.

The superior mesenteric artery was most often the seat of the trouble. Any other treatment than operative need not be considered. It was generally agreed that resection of the involved gut should be done, but many cases had been lost which possibly might have terminated favorably if the anastomosis had been delayed and a secondary operation done later. The reason for this was that they could not be certain that the gangrene had reached its limit and would not extend farther, and that the complete operation was apt to involve more time and trauma than the patient could stand. These patients were usually in bad condition when they came for operation. It was therefore better, according to Jackson, that the gangrenous portion of the gut should be brought well out of the incision, leaving full liberal margins at both ends. The gut should be resected and the ends sewed into the wound, which was walled off with gauze. With both ends of the intestine thus opened, distention might be relieved and signs of further extension of the gangrenous process watched. At a later day, if the patient survived, the fistula might be closed and an anastomosis done.

**Removal of the Uterus instead of the Ovaries for Incurable Menstrual Disorders.**—Dr. J. HENRY CARSTENS, of Detroit, stated that all cases that required the establishment of the menopause should be subject to hysterectomy, leaving the ovaries. Vaginal hysterectomy was preferable, but if there were extensive adhesions and other obstructions that required celiotomy, then suprapubic hysterectomy could be performed, leaving one or two ovaries.

**Use of Sodium Citrate for Direct Blood Transfusion.**—Dr. CHARLES B. SCHILDECKER, of Pittsburgh, said the use of sodium citrate for direct blood transfusion in human beings had been suggested by Hustin, of France, in 1914. In the Argentine Republic a number of investigators had had success with this substance. Lately in New York, Dr. Richard Lewisohn and Dr. Richard Weil had reported success with sodium citrate in blood transfusion. At first he was afraid that the toxic effects of sodium citrate were such that it would not be advisable to use it. He was studying the effect of

citrate blood transfusion and would report on that subsequently.

In order to make transfusion a simple procedure so that it could be easily performed, an apparatus was devised, consisting of a glass stopped, graduated cylindrical container, so made as to have a side tube near the top. The bottom of the vessel was drawn to a tube about a quarter of an inch in diameter bent at right angles. Accompanying the apparatus were two glass cannulae, one male and one female, which fitted in and on respectively the end of the container. The method of performing the transfusion was as follows: Under all aseptic and antiseptic precautions, the male tube was inserted into the vein of the donor and the female tube into the vein of the recipient. The tubes were so made that they could be securely fastened in the veins. Bulldog clamps could occlude the veins at any moment. The apparatus was then connected with the cannulae in the arm of the donor. Five c. c. of a ten per cent. citrate solution was put into the vessel and the blood allowed to run, gently stirring with a glass rod to effect a good mixture of the blood and the citrate solution. The blood was allowed to run until the required quantity had been obtained. The clamp was then adjusted so that the blood flow ceased. The thumb was placed on the side tube and the apparatus removed from the female tube and adjusted on the arm of the recipient. The blood was allowed to run in. The whole procedure should not take more than ten minutes.

The advantages of this apparatus were: 1. The whole procedure was visible. 2. No hurry was necessary. 3. The exact quantity of blood taken could be measured. 4. It did not require much experience to use it. 5. It could be used in a private office or dwelling; it needed no hospital surroundings. 6. The operation was not unsightly.

**President's Address; Present Day Tendencies in Gynecological and Obstetrical Practice.**—Dr. CHARLES L. BONFIELD, of Cincinnati, stated that one method of diagnosis strongly recommended by some operators in recent years seemed to him to be seldom needed. He referred to the opening of the uterus. The greater their familiarity with intra-abdominal conditions, the less frequently they would find it necessary to do an exploratory abdominal section. Hysterotomy would find more frequent employment in the hands of the general surgeon who had broadened his field to include gynecology, than in the hands of a gynecologist who had studied at the feet of a master of the art. It was from the laboratory rather than from the operating room that further success in dealing with cancer was to be expected. The importance of early diagnosis and operation was thoroughly recognized by the surgeon, if not by the laity, and the radical and painstaking operations now performed had merely reached the limit as to thoroughness. Further experience with radium had pretty well demonstrated the position it should occupy in cancer therapy.

In estimating the results of a given treatment of cancer, it was to be remembered that cancer differed materially in the degree of malignancy. Dr. Harvey Gaylord had called attention to the fact that

some of the tumors with which he succeeded in inoculating mice had such a low degree of malignancy that even incomplete removal served to cure the animal. The surgical treatment of uterine fibroids in the hands of an operator skilled in pelvic surgery was now so successful and satisfactory, that any other form of treatment would have to show brilliant results to supplant it.

Much interest had been shown in the toxemia due to colonic stasis. He had read two short papers on this subject before the association, and he saw no reason for changing the opinions expressed in them which might be summarized as follows: First, preventive treatment was of prime importance. Second, medical and hygienic treatment brought relief in a large proportion of cases. Third, in a smaller number of cases some form of surgical treatment offered the only hope of relief. Fourth, ileosigmoidostomy gave the best results. Fifth, it was not usually necessary to remove that portion of the bowel whose function was eliminated by this operation.

As to the administration of anesthetics, he preferred them to be given by some one whose knowledge of anatomy, physiology, and therapeutics enabled him to meet emergencies without much direction or supervision on his part. The professional anesthetist was a useful member of the profession, but naturally liked to magnify his calling, so he provided himself with expensive and complicated apparatus that made the operating room look like the inside of a submarine. He did not allege that nitrous oxide was not a useful agent, and that there were not cases where it was preferable to either ether or chloroform, but he did believe that it had not been proved that gas was safer than ether as the routine anesthetic for major surgical operations.

Pituitrin had been introduced and twilight sleep was abroad in the land. It was maintained by some good observers that the physiological action of pituitrin was identical with that of ergot, and that twilight sleep had benefited some sensational magazines more than it had parturient women. But the family physician of today was little better prepared to meet and grapple with the real problems of obstetrics than was his predecessor of a quarter of a century ago, and it was by the family physician that the majority of cases were attended. One of the main reasons for unsatisfactory progress was that obstetrics was inadequately taught at the medical colleges.

**Newer Conceptions of Intestinal Stasis.**—Dr. GEORGE W. CRILE, of Cleveland, said experimental research had shown that indol and skatol, the typical products of intestinal stasis, produced widespread changes in the brain, the adrenals, and the liver; that one of the immediate effects on the adrenals was an increased output of adrenine; and that the iodine content of the thyroid was modified. In other words, indol and scatol produced effects similar to those produced by chronic infections, excessive emotion, or excessive exertion.

The histological changes produced by all these conditions were identical. He, therefore, contended that intestinal stasis was an etiological factor in diseases of which chronic infections, excessive emotion, and excessive exertion were etiological factors.

In operative cases of intestinal stasis the procedure of choice was the resection of the cecum and ascending colon, making a lateral anastomosis between the ileum and the transverse colon near the hepatic flexure and buttressing the closed end of the ileum and the transverse colon against each other to prevent later dilatation.

**Conservative Surgery of Chronic Intestinal Stasis.**—Dr. HAROLD D. MECKER, of New York, said that chronic intestinal stasis was a recognized factor in producing many pathological conditions. The existence of bands, folds, or veils, which might interfere with intestinal function, challenged dispute. The problem confronting the practical surgeon today was not how these bands were formed, but rather how best to remedy the condition as it existed and prevent reformation. The surgical relief first offered was so radical that many conservative members of the profession were frightened from further consideration of the subject. A few surgeons adhered to the Lane technic, but many had striven to modify it. These modifications served chiefly to prove the tolerance of the intestinal tract to abuse. Very little had been written on the therapeutic possibilities of conservative plastic surgery as bearing on this subject. Surgical interference was indicated only when mechanical interference to drainage existed.

**Luteum Extract in Menstrual Disorders.**—Dr. ADAM P. LEIGHTON, Jr., of Portland, Maine, after reporting several cases of menstrual disorders, said that, from his little experience, he was certain that there were cases of dysmenorrhea, in which the main causal factor was deficient action of the natural corpus luteum. He was not carried away with the idea that the therapy of corpus luteum was a cureall in any sense of the word. On the other hand, the cases which might be traced to ovarian deficiency were probably in the distinct minority. They must not allow themselves to be so impressed with the etiological value of some one factor in the cause of disease that they forgot or became indifferent to others of equal importance. Surgery was necessarily indicated in cases where they found pelvic pathological conditions or anatomical abnormalities, which they were wont to consider as probably causes of this disorder.

There were some serious drawbacks to the use of corpus luteum. It generally had to be used as a routine or continuously to obtain and maintain results. Its cost presented its more general application. Its action was not immediate, it was cumulative, and for that reason patients and they themselves too often discarded it after a short trial, if it had been unproductive of good results.

As regards the dose, he found that from fifteen to thirty grains a day, seldom more, was sufficient in any case. Its prolonged administration had not brought about any untoward symptoms that he had been able to detect, with the possible exception of slight gastric disturbance in one or two instances. The subject of organotherapy, in its present experimental state, was rather involved and indefinite, and while it was sometimes difficult to recognize and identify cases which would be benefited by cor-



parturition, yet when there was a possibility of ovarian deficiency being an etiological factor in any gynecological disorder, they owed it to the patient to make use of this remedial agent, for its value was well determined.

#### Present Status of Twilight Sleep in Obstetrics.

—Dr. A. J. RONEY, of New York, said, after referring to 2,000 cases which he had collected from the literature, that judging from his personal experience, extending over a period of fifteen months, and covering a series of over 350 cases, the value of the treatment and its acceptance, as a recommended therapeutic measure, would depend upon their interpretation of the physiological processes which were produced by these drugs. If they accepted the theory that the semiconsciousness prevented the actual experience of pain, although apparently present in all its clinical phases, then labor must be considered painless, and therefore to refuse to adopt it would be a failure on their part to carry out the trust imposed upon them. On the other hand, if the mental state induced did not actually prevent the sensations of pain and the patient had actual suffering, even though it was modified, then the value of this method would devolve upon the degree of pain and diminution of analgesia, and not upon the lack of recollection of pain or amnesia. He found it difficult to recognize the fact that a patient, displaying all clinical evidences of pain, such as crying and groaning, as was observed in these patients, did not actually experience it. However, he was fully convinced that pain in a goodly proportion of cases was influenced to a degree that would warrant the adoption of the method in selected cases, more particularly in primiparæ of the highly emotional type and in multiparæ in whom they expected long and tedious labors.

**Chorioepithelioma.**—Dr. BEN. R. MCCLELLAN, of Xenia, Ohio, stated that chorioepithelioma was more common than generally recognized. He emphasized the importance of a case history and the laboratory findings. Anemia might be a possible factor in the etiology as well as a result of the disease. He reported a case of atypical chorioepithelioma in which he resorted to curettage, with apparent recovery of the patient.

**The Teaching of Obstetrics.**—Dr. CHARLES EDWARD ZIEGLER, of Pittsburgh, would not overemphasize the importance of didactic teaching in obstetrics. It was basic and indispensable to the teaching of obstetrics as a science. It must in part precede and in part accompany clinical teaching, but could never take its place as had too long been attempted. In times past obstetrics was taught very largely didactically, and in certain quarters this was still the case. Even at the present time in all but a few medical schools in this country, the clinical teaching and practical experience given undergraduate students in obstetrics were woefully deficient. Both the teaching and practice of obstetrics were generally regarded as the poorest of all the clinical branches of medicine. There must be a reason. Any scheme for improvement in obstetric teaching and practice which did not contemplate the ultimate elimination of the midwife, would not succeed. He said this not only because midwives could never be taught to practise obstetrics successfully, but especially because of the moral effect

upon obstetric standards. The lay public would continue to regard with indifference all pleas for the improvement in the teaching of the practice of obstetrics so long as more than fifty per cent. of confinements were in the hands of ignorant, non-medical individuals, who as a class were regarded as capable of doing the work satisfactorily, even by physicians, among whom were certain well known professors of obstetrics.

(To be continued.)

### Letters to the Editors.

#### AN UNUSUAL FORM OF ALCOHOLIC HALLUCINOSIS.

NEW YORK, December 3, 1915.

##### To the Editors:

I respectfully ask that, if space can be found in your JOURNAL, the following unusual case of alcoholic hallucinosis be published therein. The case is interesting chiefly for the strikingly vivid hallucinations of sight, hearing, and smell which the patient experienced. It is also an example of the erroneous ideas which the laity have about hallucinations in alcoholic psychoses. We have often heard of the horrible visions and other frightful forms of hallucinations which are said to occur in this type of psychosis. In this case, however, as in many other cases, the hallucinations have been rather pleasing to the patient. A report of the case in brief follows:

The patient is twenty-eight years of age, married, an actress by occupation, and a great traveler because of her occupation. She was born in the United States, but has visited practically every portion of the globe. The young lady was perfectly normal until about two years ago when, following an unpleasant incident in which her husband figured, she took to drink. She began to drink for the first time in her life and, as often happens, drank desperately and excessively. She had had the advantage of a splendid education and had been a refined, very efficient, and very attractive woman. When she began to drink, however, she became careless about her personal appearance, lost interest in her work, and began to show various mental symptoms. About a year ago she had reached the stage when she was almost continually drunk. She came to this country several months ago and immediately after her arrival, entered a private sanitarium where she was given the Lambert cure for alcoholism. Following this treatment she became delirious, misidentified everyone about her, began to fabricate freely, and mutter to herself. Her condition became such that she was admitted to the Kings County Psychopathic Ward on October 20, 1915, and, on November 9th, was sent to the Long Island State Hospital, Brooklyn. When she was admitted to this institution, she was fairly quiet although somewhat restive, was very agitated, drowsy, and muttered in a delirious strain disconnectedly and stupidly. Her knee jerks were increased; there was some tenderness over the muscles of the calves of the legs. A Wassermann spinal fluid and blood examination was negative, and she presented just the ordinary case of delirium tremens. After admission to the Long Island State Hospital, her condition began to improve quite rapidly and all her symptoms cleared up, excepting a very peculiar hallucinosis, which is best described in the patient's own words:

"It is very hard for me to realize that I am seeing things. What I see is so vivid and so realistic that it appears as an actuality. It is more like a dream. I am riding in a drawing room on a Pullman car passing through the most wonderful scenery; beautifully wooded hills, magnificently fertile valleys, wonderful lakes. Stupendous mountains pass before me. Again I am riding in an automobile through exquisitely cultivated gardens and I feel so keenly the smell of the beautiful flowers striking my nostrils that in my vision I appear to faint with the ecstatic pleasure of it. At other times I am crossing the ocean in one of the large modern transatlantic liners (the patient has done this on numerous occasions) and I can see the wide expanse of the beautifully colored ocean and hear the swish of the waves as they strike the sides of the ship. I can see the stewards busying themselves carrying coffee

and tea to the passengers on the deck and I can even smell the fluid as one of the stewards offers me a cup of coffee. At other times I am crossing limitless cañons of passing through wonderful cañons. It is simply wonderful and it is hours sometimes after I have an attack before I can realize that it has been simply a dream."

This description does not in any of its fields tally with what one has been usually led to expect in a case of alcoholic hallucinosis. The laity and some physicians usually expect to see one of these patients in an attack of the "horrors," seeing various animals, misshapen forms, and other horrible things.

MICHAEL OSNATO, M.D.

### Book Reviews.

[The following brief notes are taken from the review of the book by the editor of the *Journal of the American Medical Association*, and are published here for the interest of our readers who are likely to be interested.]

*A Study of Locomotor Ataxia and Kindred Diseases. Based on the Treatment of 600 Cases.* By C. H. BURTON, M.D., Medical Director of the West Side Sanitarium, Detroit, Mich., Author of *Ocular Diagnosis, Adenoids and Their Treatment, Faucial Tonsils, etc.*, and FRANK BURTON, B.S., Member of the American Chemical Society.

This so called study is a quasiscientific attempt to offer an explanation of the pathogenesis of locomotor ataxia, in which the authors deal in the vaguest possible expressions with a scientific sound, but quite devoid of meaning when analyzed. They speak, for instance, of the knowledge and intellect possessed by the individual cells of the body, and use these hypothetical attributes to explain the phenomenon of the transmission of nerve impulses. To every single cell of the human body they ascribe the power of "producing an antibody to destroy or neutralize any foreign substance with which it comes in contact." This property, though wholly unproved and even diametrically opposed to the most enlightened modern views, is used by them to explain Hahnemann's advocacy of infinitesimal doses, for such are held by the authors to be ideally suited for the stimulation of cells to produce antibodies. The utter fallacy of this argument is too patent to require mention, for so far it has been impossible by any means to produce antibodies to a nonprotein substance. It seems hardly necessary to proceed farther with the discussion of this pseudoscientific paper in order to give the reader an idea of its contents, but we should like to mention one more statement solely on account of its fantastic nature. It is the statement that the bivalent carbon atom is markedly toxic, while the tetravalent atom is essentially neutral, and the suggestion—not proof or even evidence—that it is the presence of compounds in the body fluids with bivalent carbon atoms which cause cell fatigue and locomotor ataxia. The treatment advocated cannot be discussed, for it is not set forth, but is only indicated in the faintest possible manner. We feel that our duty is to save the prospective reader from wasting his time as well as to indicate to him the good things in medical literature. We hope that the physician will be spared at least a few moments which he might otherwise throw away through being misled by the pretentious title of this pamphlet.

*Infant Health. A Manual for District Visitors, Nurses, and Mothers.* By I. (STEWART) CUMBERSON, M.B., M.D., C.M.B., A.R.San.L., Lecturer (First Class Diploma) Sick Nursing and Popular Health, Edinburgh, Inspector of Midwives and Health Visitor, Oxford, Formerly Senior Health Visitor, Aberdeen. Oxford Medical Manual. London: Henry Frowde (Oxford University Press); Hodder and Stoughton, 1915. Pp. viii-128. (Price, 75 cents.)

A thorough common sense little volume has come from the pen of this author and reflects much of her own experience in the practical teaching of the fundamental principles of infant health to nurses, district visitors, and mothers. Nothing at all new has been said, but the information has been greatly condensed and has been set forth in very simple language. From the exceeding simplicity of expression and the lack of much important matter which should be at the command of either nurse or district visitor, we are constrained to feel that in England

neither of these classes of women is as well trained for the work as is the case in our own cities. Certainly, we demand that our nurses, who actually do most of our district visiting, know virtually everything stated in the present volume long before they graduate from the training school. On this account we feel that the volume must have little appeal to them, although it might be of value if placed directly in the hands of the mothers, for it certainly contains much of great value to them.

### Intercollegial Notes.

Dr. Frederick C. Warnshuis writes for the December *Nurse* on the surgeon's hospital kit and on bandaging. This being a special Christmas story number, we are pleased to note the very successful short stories which the editor has managed to elicit from his readers; the editor himself is evidently also pleased, for he continues his offer of a special prize for the best story submitted each month. The practical suggestions, diet in sickness and health, and the special articles are all excellent, while the illustrations continue to merit the highest praise.

Leslie's for December 9th protests against the tax imposed on toothbrushes, tooth pastes and powders, talcum powders, deodorants, etc., not only because these are hygienic articles, the sale of which ought to be encouraged in every way, but because the tax imposed is not merely onerous, but actually confiscatory. The perfumers feel that they have been unnecessarily distinguished in being picked out to sustain so large a part of Uncle Sam's burdens.

### Meetings of Local Medical Societies.

- MONDAY, December 20th.—New York Academy of Medicine (Section in Ophthalmology); Yorkville Medical Society; Medical Association of the Greater City of New York; Medical Society of the County of Erie (annual); Elmira Clinical Society (annual).
- TUESDAY, December 21st.—New York Academy of Medicine (Section in Medicine); Tompkins County Medical Society (annual); Medical Society of the County of Monroe (annual); Buffalo Academy of Medicine (Section in Obstetrics and Gynecology); Tri-Professional Medical Society of New York; Medical Society of the County of Kings (annual); Binghamton Academy of Medicine; Syracuse Academy of Medicine (annual); Ogdensburg Medical Association; Oswego Academy of Medicine.
- WEDNESDAY, December 22d.—New York Academy of Medicine (Section in Laryngology and Rhinology); New York Society of Internal Medicine; Schenectady Academy of Medicine.
- THURSDAY, December 23d.—New York Academy of Medicine (Section in Obstetrics and Gynecology); Ex-Intern Society of Seney Hospital, Brooklyn; Medical Union, Buffalo; Hospital-Graduates' Club, New York; New York Physicians' Association.
- FRIDAY, December 24th.—Society of New York German Physicians; New York Clinical Society; Manhattan Medical Society; Brooklyn Society of Internal Medicine (annual).

### Official News.

#### United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending December 8, 1915:

Bean, W. S., Jr., Assistant Surgeon. Relieved at the Marine Hospital, Boston, Mass., and ordered to report to the commanding officer of the Coast Guard Cutter *Androscoogwin* for duty. Bryan, W. M., Passed Assistant Surgeon. Granted ten days' leave of absence on account of sickness, from November 30, 1915. Cofer, L. E., Assistant Surgeon General. Granted three days' leave of absence, from November 27, 1915. Gwyn, M. K., Surgeon. Granted twenty-five days' leave of absence,

from December 7, 1915. **Heterick, R. H.**, Assistant Surgeon. Granted one month's leave of absence on account of sickness, from December 7, 1915. **Lumsden, L. L.**, Surgeon. Detailed to present an address on rural sanitation at the meeting of the Southern Commercial Congress, at Charleston, S. C., December 16, 1915. **McCoy, George W.**, Surgeon. Leave of absence for ten days en route to Washington amended to read "two days' leave of absence en route." **Stoner, George W.**, Senior Surgeon. Granted five days' leave of absence from November 24, 1915, under paragraph 103 of the Service Regulations. **Sweeney, A. R.**, Assistant Surgeon. Granted fifteen days' leave of absence, from December 6, 1915. **Treadway, W. L.**, Assistant Surgeon. Directed to proceed to Frederick, Md., for duty in connection with studies of school hygiene. **Wilbert, M. I.**, Technical Assistant. Detailed to present an address on antinarcotic legislation at the meeting of the American Medical Society for the Study of Alcohol and Other Narcotics, Washington, D. C., December 15-16, 1915. **Yarbrough, H. C.**, Assistant Surgeon. Granted one month's leave of absence from December 15, 1915. **Young, G. B.**, Surgeon. Directed to represent the Service at a meeting of the Seaboard Medical Association, at Norfolk, Va., December 7, 1915.

#### RESIGNATION.

Resignation of Assistant Surgeon Don C. Sutton accepted by the President to take effect December 22, 1915.

#### BOARD CONVENED.

Board of medical officers convened to meet at Vancouver, B. C., for the examination of a detained alien. Detail for the board: Acting Assistant Surgeon H. R. Storrs, chairman.

#### UNITED STATES ARMY INTELLIGENCE:

*Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army, from November 1 to December 11, 1915.*

**Blair, Harry C.**, First Lieutenant, Medical Reserve Corps. Relieved from duty at Fort Bliss, Texas, and will report to the commanding general, Fifth Brigade, Douglas, Ariz., for assignment to duty. **Card, Daniel P.**, Captain, Medical Corps. Reports departure on two months and five days' leave of absence; address Post-Graduate Hospital, Second Avenue and Twentieth Street, New York City. **Culler, Robert M.**, Captain, Medical Corps. Relieved Captain James D. Fife, Medical Corps, in charge of construction work at the Army and Navy General Hospital at Hot Springs, Ark., under instruction of the Quartermaster General of the Army. **Falkner, L. W.**, First Lieutenant, Medical Reserve Corps. Reports his relief, November 26th, from the Medical Reserve Corps, and departure for his home in Youngstown, N. Y. **Gentry, Ernest R.**, Captain, Medical Corps. Reports departure from Fort Screven, Georgia, on three months and eighteen days' leave of absence; address general delivery, Baltimore, Md. **Hess, Louis T.**, Major, Medical Corps. Granted five days' leave, effective December 27, 1915. **Humphreys, H. G.**, Captain, Medical Corps. Reports departure from Fort Oglethorpe, Georgia, en route to Fort Crockett, Texas, for duty. **Mount, James R.**, Captain, Medical Corps. Reports four months' leave of absence, with address care of Department Surgeon, Western Department, San Francisco, Cal. **Napier, Edwin L.**, Captain, Medical Corps. On November 28th departed for twenty-one days' leave of absence, with address care of Napier Brothers, Sixteenth and Farnum Streets, Omaha, Neb. **Register, E. C.**, First Lieutenant, Medical Reserve Corps. Reports departure from Fort Monroe, Virginia, on one month's leave of absence, with address on leave 9 St. Michael's Place, Charleston, S. C. **Rukke, Guy V.**, Captain, Medical Corps. Relieved from duty at Fort Bliss, Texas, and will proceed to Fort Mackenzie, Wyoming, for temporary duty. **Tefft, Lloyd E.**, First Lieutenant, Medical Corps. Relieved from duty with Ambulance Company No. 6, Fort Ethan Allen, Vermont, and will proceed to Fort Randolph, Canal Zone, for duty. **Waring, John B. H.**, Captain, Medical Corps. Reports departure on December 5th from San Francisco, Cal., en route to Honolulu, H. T., for duty.

## Births, Marriages, and Deaths.

### Married.

**Bonney-Ray.**—In St. Louis, Mo., on Wednesday, December 1st, Dr. Sherman G. Bonney, of Denver, Colo., and Mrs. Jessie Ellwood Ray. **Holmes-Merrill.**—In Boston, Mass., on Tuesday, December 7th, Dr. Allen Wheeler Holmes, of Dansville, N. Y., and Miss Clara Lillian Merrill. **Scott-Smith.**—In Rochester, N. Y., on Tuesday, November 30th, Dr. Francis Scott, of Washington, D. C., and Miss Mary Smith. **Snyder-Coate.**—In Philadelphia, on Tuesday, November 30th, Dr. Homer H. Snyder, of Scranton, and Miss Hannah J. Coate. **Treible-Stieg.**—In New York, on Saturday, November 20th, Dr. William H. Treible, of York, Pa., and Miss Camilla J. Stieg.

### Died.

**Abruzzo.**—In Brooklyn, N. Y., on Tuesday, December 7th, Dr. Onofrio Abruzzo, aged seventy-four years. **Allison.**—In Essex, Ill., on Saturday, December 4th, Dr. J. W. Allison, aged sixty-two years. **Baird.**—In Waverly, Va., on Tuesday, November 30th, Dr. James W. Baird, aged sixty-eight years. **Binkley.**—In Orwigsburg, Pa., on Saturday, December 4th, Dr. George B. Binkley, aged seventy years. **Brensinger.**—In Philadelphia, on Sunday, December 5th, Dr. Ellen C. Brensinger, aged sixty-nine years. **Bristol.**—In Middlebury, Conn., on Wednesday, December 1st, Dr. George B. Bristol, aged seventy-nine years. **Bumster.**—In Long Island City, N. Y., on Wednesday, December 1st, Dr. P. H. Bumster, aged fifty-six years. **Compton.**—In Coyle, Oklahoma, on Monday, November 29th, Dr. Charles M. Compton, aged fifty-seven years. **Fowle.**—In Denver, Colo., on Thursday, November 25th, Dr. Ella Fowle, aged sixty-one years. **Franklin.**—In Parkersburg, W. Va., on Sunday, December 5th, Dr. Lewis S. Franklin, aged seventy-three years. **Frey.**—In Scranton, Pa., on Monday, December 6th, Dr. Lewis Frey, aged fifty-two years. **Gallagher.**—In Yonkers, N. Y., on Thursday, December 2d, Dr. E. J. Gallagher, aged forty-six years. **Haislip.**—In Lorton, Va., on Sunday, December 5th, Dr. George W. Haislip, aged fifty-seven years. **Hani.**—In Lafayette, Ind., on Tuesday, November 23d, Dr. William F. Hani, aged seventy-two years. **Harris.**—In Tripoli, Syria, on Thursday, November 25th, Dr. Ira Harris, of Fayetteville, N. Y., aged sixty-one years. **Heistand.**—In Kenton, Ohio, on Sunday, November 28th, Dr. E. D. Heistand, aged eighty-four years. **Hornibrook.**—In Cherokee, Ia., on Tuesday, November 30th, Dr. Freeman Hornibrook. **Linthicum.**—In Baltimore, Md., on Tuesday, December 7th, Dr. James Garrett Linthicum, aged eighty-one years. **Longshore.**—In Hazleton, Pa., on Wednesday, December 1st, Dr. William R. Longshore, aged seventy-seven years. **McKamey.**—In Kansas City, Kans., on Thursday, December 2d, Dr. J. M. McKamey. **Marren.**—In Bellevue, Pa., on Sunday, November 28th, Dr. P. J. Marren, aged forty-seven years. **Martin.**—In Roxbury, Mass., on Friday, December 3d, Dr. Francis C. Martin, aged fifty-seven years. **Miller.**—In Washington, D. C., on Tuesday, December 30th, Dr. Thomas Miller, aged fifty-eight years. **Millwee.**—In Greengood, S. C., on Wednesday, December 1st, Dr. William Brewster Millwee, aged eighty-nine years. **Mitchell.**—In Norwood, Ohio, on Saturday, November 27th, Dr. Frank G. Mitchell, aged thirty-eight years. **Perce.**—In Anderson, Ind., on Friday, December 3d, Dr. Benjamin H. Perce, aged seventy-seven years. **Rathmell.**—In Chattanooga, Tenn., on Thursday, December 2d, Dr. J. R. Rathmell, aged sixty-one years. **Reed.**—In Dorchester, Mass., on Thursday, December 2d, Dr. Asa P. Reed, aged twenty-eight years. **Shears.**—In New York, on Sunday, December 12th, Dr. George Pearslee Shears, aged fifty-five years. **Smith.**—In Houston, Texas, on Wednesday, November 24th, Dr. Forrest Bedford Smith. **Vance.**—In Louisville, Ky., on Thursday, December 9th, Dr. Ap Morgan Vance, aged sixty-one years. **Waller.**—In Mattoon, Ill., on Tuesday, November 23d, Dr. Fay W. Waller, aged sixty-eight years. **Welty.**—In Brooklyn, N. Y., on Wednesday, December 1st, Dr. George Washington Welty, aged seventy years.



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WEEKLY 1915

### Lectures and Addresses.

#### THE COTTAGE HOSPITAL IN RURAL COMMUNITIES.\*

By CHARLES P. NOBLE, Sc.D., M.D.,  
Philadelphia.

I have been invited to address you today, upon the occasion of the opening of your new hospital, the character of which has suggested my subject. I have much pleasure in being with you, for several reasons. Some of you may know that although I have spent my adult life north of Mason and Dixon's line, in the materialistic atmosphere of Pennsylvania's industrial civilization, like most of you, "I am to the manner born," a Southerner, by ancestry, birth, and tradition; and even more, I am a native Eastern Shoreman, born in the neighboring county of Dorchester.

In accepting your invitation, I had not only this in mind, but also the anticipated pleasure of meeting some of my boyhood friends—now, no longer lads as I left them, but men; who are carrying on, in their turn, the work and responsibilities, borne by our fathers, influenced by the fine and inspiring traditions of the Southland, the precious heritage of most of those present. And also, I have the great pleasure of finding in your superintendent and her assistant, two of my former nurses, for whose training and qualifications I have some personal responsibility.

During the past twenty years, no feature of hospital development has shown a livelier growth than the establishment of cottage hospitals in suburban and rural communities; and, at the present time, many of them have developed to full estate, so that the term "cottage" no longer applies to them, since in size and equipment they compare favorably with many urban hospitals. It has been my pleasure and good fortune to be professionally connected with several of them since their foundation, and in one I did much of the abdominal and gynecological surgery throughout this long period. In this way I have become quite at home in the rural hospital, and find myself on familiar ground in addressing you today.

Naturally, the broad general principles which apply to all hospitals, as to their necessity, management, advantages to a community, and to the medical profession are equally applicable to rural hospitals; but there are, in addition, certain facts and

factors which apply to them chiefly or exclusively, since the rural hospital stands alone in purveying to the wants and the needs of its patrons and staff.

Not to trespass on your time unduly, I shall briefly consider some of these, and shall base what is said largely upon my knowledge of the methods used and the success achieved by the Chester County Hospital, of West Chester, Pa., mention of which has already been made and which, in most respects, can be regarded as a model of its type.

The problem of the wise management of a hospital appeals to me as much as its professional conduct, as for more than twenty years I served as a hospital director, as secretary of its executive committee, as well as its superintendent and surgeon-in-chief. The success of the management of a hospital depends upon a wise selection of its directors, and especially upon securing several, having not only good judgment, abundant means, liberality, and good standing in the community, but also the heaven born gift of true charity in their hearts, so that this spirit can be infused into the work, and the evils of institutionalism, born of mere business efficiency, be avoided. The type of hospital management to be avoided gives, *at best*, scientific treatment, but its spirit is stepmotherly and its atmosphere is chilling and repellant to the sick. Whereas the other type of hospital, while affording equally efficient medical and nursing care, has an atmosphere in which tired and sick bodies find rest and healing, and in which broken spirits are bound up—an atmosphere in which the spirit of helpfulness, true sympathy, charity, and gladness abounds.

A question of great delicacy as well as importance is, whether the rural hospital shall be "closed" or "open"—as to whether the professional care of its patients shall be the function of its medical staff exclusively, or whether the privileges of its wards and private rooms shall be extended to all reputable members of the medical profession in the vicinity. There can be no question in the minds of noninterested medical men, that the "closed" hospital can be more efficiently administered, that its patients, on the whole, will receive better and more systematic treatment, and that the superintendent of the hospital and training school for nurses will be spared many trials in preventing confusion and lapses from good discipline in her departments; and that the medical staff is afforded a much better opportunity to develop additional technical skill and to acquire greater clinical knowledge in the particular specialties of medicine which they may elect to follow.

Apparently, then, the "closed" type of hospital is the better; but, on the other hand, it has disadvantages

\*Address delivered upon the dedication of the new building of the Emergency Hospital, Easton, Md., November 24, 1915.

ages in rural communities, perhaps in part because of the limitations of human nature and also because the urban hospitals in the nearest cities are very real competitors with it, in its own field of usefulness.

The broader the appeal of a hospital, the more physicians and laymen which it serves, the greater is the local interest taken in it. And the more a hospital can avoid stirring up local envy and jealousies, the less active opposition to its growth and prosperity it suffers from and has to overcome in order to achieve the highest measure of usefulness.

The report of the hospital for 1913 indicates that your directors have sought to follow a middle course, and have put restrictions upon the performance of operations by outside neighboring physicians—which, unquestionably, is the field in which restrictions are most needed for the benefit of the sick. In the Chester County Hospital restrictions are also placed upon the professional care of patients in the free beds in the medical wards, which certainly tends to improve the efficiency of the work; as even though the professional skill of all the outside physicians be equal, the fewer "chiefs" from whom the head nurse of a ward receives her instructions, the better it is for the work and for the discipline of her nurses.

The "open" system, as applied to the private rooms, and even to certain small pay wards, has manifest advantages to rural hospitals, avoiding much evil and accomplishing much good along the lines indicated.

A subject upon which perhaps a few words may be of interest, is whether the local medical staff shall do all the general and special surgery needed by the hospital's patients, or whether skilled specialists from neighboring cities, usually the younger men who have more time and enthusiasm than their elders, shall be called in for this work, or whether a mixed plan shall be followed.

Unquestionably, the plan of depending wholly upon specialists from the city entails the unavoidable disadvantage of delaying needed operations in acute infections, and in other emergency cases, and for this reason, if for no other, the local staff, or better some of them, should train themselves in the proper way to do these operations, which also means that they will thus be able to perform many others with skill and success. On the other hand, if skilled specialists are not called in, with fair regularity, the local medical staff misses the opportunity for much personal intimate association with those in constant touch with the best medical and surgical thought, and the opportunity for improving their own surgical and medical technic, by working with those having the best of technical skill.

There are three important matters which I wish to bring before you, and especially before the board of directors. These are the importance and the wisdom of having a paid anesthetist, a salaried pathologist and bacteriologist, and also a properly remunerated x ray specialist attached to the staff.

So important is it considered to have a skilled anesthetist in Pennsylvania that the State Board of Medical Examiners refuses to recommend any hospital for legislative aid that does not provide itself with one; and every surgeon of experience can

testify that the services of a skilled anesthetist appreciably lessen the mortality, and still more the morbidity, of operations. Hence true humanity requires that the sick be afforded this protection to their health and lives—to say nothing of the equity of the maxim that "the laborer is worthy of his hire."

No one factor does more to improve the quality of the medical service in a hospital and to increase the scientific attainments of the medical staff than the work and influence of an intelligent and properly trained pathologist and bacteriologist. Speaking personally, I should feel lost to attempt to do surgery without such assistance. This department, with its salaried chief, is also required in a hospital in Pennsylvania, in order that it be recommended for State aid.

Almost equally important is the x ray department, which, to be really useful instead of being often misleading or even actually harmful in its work, must have in charge of it a well trained specialist. In the treatment of fractures and dislocations, in the surgery of the head, the kidney, and other organs in which stones form, not to speak of the location of bullets and other foreign bodies, the surgeon is greatly handicapped and often wholly at a loss without the aid which a properly equipped x ray department affords.

In conclusion, permit me to say, as one who has spent his whole professional life in hospital work and management, and who cannot fail to know the great value of a hospital to a community, and especially to one somewhat remote from the nearest cities, I cannot help being gratified to find that this community, which, when I knew it, was destitute of such advantages, has provided itself with so excellent a modern hospital plant, adequate for present needs and capable of expansion to meet the needs of the future. I heartily congratulate the board of directors, the medical staff, and, not least, the community, on their achievement, and wish the work Godspeed.

### Original Communications.

WILLIAM KONRAD ROENTGEN.

#### *A Biographical Sketch,*

By I. SETH HIRSCH, M. D.,  
New York,

Professor of Roentgenology, New York Post-Graduate Medical School and Hospital.

#### THE DISCOVERY.

It was late in the fall of 1893. The ancient town of Würzburg is basking in the autumn sunlight in the vine clad valley of the Main. In the broad and tree lined Pleicher-Ring is the Institute of Physics. Within its walls in a room littered with scientific apparatus, a man stands deep in thought before a glass bulb glowing with colored light. He is of middle age, tall, heavily bearded, with a face almost spiritual in its aspect. His brow is broad, the eye, though deeply set, glows with kindness; the lips are thin, the mouth is firm. It is the face of an ascetic and a thinker.

This little glass tube he studies so intently as it

glows and flickers with its iridescent hues, what an amount of thought, of painstaking, laborious investigation it represents! Plücker, Gassiot, Geissler, Hittorf, Varley, Crookes, and Lenard and before them all, Faraday, how persistently the human spirit strives to find the meaning of nature's mysteries! How crude the beginning, how halting the progress, how hidden the goal. How slowly the foundations are laid, often without definite plan; the walls rising haphazard, isolated, disconnected, until the master mind sets the cupola and Lo! the structure glows with a beauty and significance undreamt of.

In this vacuum tube, energized by the current of an induction coil, lie many of the mysteries and



FIG. 1.—William Konrad Röntgen.

marvels, not only of modern electricity, but of matter itself—its ultimate constitution—the master problem of the universe. Geissler had passed the induced current through a tube of low vacuum and had produced the exquisite color effects. Hittorf had discovered the cathode ray therein. Crookes noted the change in the phenomena, as the vacuum was increased to about one millionth of an atmosphere. On Hertz's suggestion Lenard brought the cathode stream out of the tube, and studied it exhaustively.

All this was in the mind of Wilhelm Konrad Röntgen, then professor of physics at the University of Würzburg, as he watched the flickering bulb. He noted the beautiful green fluorescence of the glass of the tube, just as Plücker had done thirty-five years ago, and thought of Crookes's

designation of "radiant matter" as that influence which apparently shone from the negative pole.

Absorbed in thought,<sup>1</sup> he did not notice how quickly the hours flew. Called from the room, he laid the still glowing bulb on a book he had been reading that morning, in which lay a large, flat, antique key, which he used as a bookmark. It happened that underneath this book lay a photographic plate holder which he had prepared for the afternoon's outing. Returning later to the laboratory, he gathered up several plate holders, among which was the fateful one under the book, and spent the afternoon outdoors, seeking recreation and amusement in the practice of his hobby, photography. He made several exposures. On developing the plates, a shadow of the antique key, his bookmark, appeared on one of them. He wondered how this could have happened. He showed the plate to his students and asked them for their ideas, but none of the explanations offered satisfied him. How came the image of the key upon the plate? The fogging of photographic plates in the proximity of energized vacuum tubes had been noted before, but to Röntgen's scientific mind this phenomenon demanded a satisfactory explanation and he proceeded to analyze it.

Hertz had said that something passed through the walls of the tube. But these were cathode radiations from the Lenard tube, which Lenard had so thoroughly studied. It was known that these cathode rays, when brought through the aluminum window of a vacuum tube, moved in straight lines, discharged electrified bodies, penetrated thin substances, and affected photographic plates. But this was no Lenard tube with an aluminum window, but a relatively highly exhausted Crookes's tube, and neither cathode rays nor ultraviolet light could pass through the glass of the tube and accomplish this. Röntgen decided therefore to search for the mysterious agent which had so silently recorded its presence. He restaged the drama, placing the glowing bulb, the tube, the book, the key, and plate exactly as before, and energized the tube for the same time as on the preceding day. He developed the plate and Lo! the shadow picture of the key was on the plate. Invisible light? Was some influence emanating from the glowing bulb that had the power of penetrating solid objects and affecting the photographic plate?

Let him who will, speak in admiration of the poetic imagination which soars on spiritual wings in the world of fantasy, singing words that soothe the ear and weaving fancies that stir the emotions. The imagination of the scientist far transcends that of the poet, not only in the scope of its fancy, but surely in concrete accomplishment. The imagination of I. a Place reached out into the infinite heavens and made possible the measurement of the courses of the eternal stars, the weighing of them as in a balance, their analysis as in a test tube. In the microcosm, the inspired imagination of a Pasteur caused the isolation of a host of organisms, whose destructive and constructive functions are so greatly the concern of medicine.

<sup>1</sup>This episode is based on the account given in *Popular Science Monthly*, December, 1908, by E. E. Burns, who attributes it to Dr. T. S. Middleton, of Chicago, who was a student in Röntgen's laboratory at the time of the discovery.



the imagination of Harvey lifted his eyes from the rutted paths over which legions of physicians since the time of Galen had traveled, to a newer vista where lay the truth of the physiological problem of the circulation of the blood. So, too, the scientific imagination of Röntgen dared to dream of what was almost scientific heresy, invisible light.

Noting the green fluorescence of the glass of the Crookes tube, he conceived that other substances might be similarly affected. He, therefore, surrounded the tube with a light proof envelope, and sure enough, a platinobarium cyanide screen, even at a distance of nine feet, fluoresced brilliantly green in the darkened room. Eureka! He had it—a ray invisible to the eye which traversed solid substance. He placed his hand on a covered photographic plate, energized the Crookes tube above it, and obtained a photograph of the shadows of the bones.

He at once saw before him the problem in all its possibilities. To study the invisible energy, to determine its nature, its origin, its characteristics, this was the work to be done. He carried on his researches in all phases of the problem, and when convinced at last that he had discovered a new form of radiation, reported his results briefly on two occasions before the Würzburg Physicomedical Society, December 28, 1895, and March 9, 1896, in a paper entitled *A New Form of Radiation*. In 1897, before the Royal Prussian Academy of Science, in Berlin, he made a third communication, *On Further Observations of the Characteristics of the X Rays*.

Let the captious critic point out that the placing the glowing bulb upon a book containing a metal key and under which lay a plate holder, was a fortuitous combination of circumstances, a master stroke of the blind madonna of pagan Chance, who will doubt, knowing the thoroughness of his methods, that sooner or later Röntgen would have made this discovery as a logical step in his researches?

#### PERSONAL LIFE.

Röntgen was born in Lennep, in Eastern Prussia, March 27, 1845. It was planned that he should follow the agricultural occupation of his father, and

his scientific education was therefore begun at the engineering school at Apeldoorn in Holland. He entered the Polytechnic School at Zürich several years later. Clausius was at this time teaching physics in this university, and it cannot be doubted that the young student listened with rapt attention to this great teacher, who developed the principles of the dissipation of energy and first advanced the mechanical theory of heat production.

Röntgen graduated from the university with the degree of Doctor of Philosophy. As a student he manifested an extraordinary aptitude for work requiring exactness in detail, and his industry and ability won him immediately after graduation an assistantship to Kundt, whose favorite pupil he was and with whom he was associated for many years. Röntgen has ever held him in highest veneration as

his teacher and guide. To him he owes the exactness of his methods, his accuracy of thought, and his thoroughness in investigation. When Kundt was called to Würzburg in 1870, Röntgen went with him and, in 1872, followed him to Strassburg, where he became a private lecturer in physics. In 1875, at the age of thirty years, Röntgen was appointed professor of mathematics and physics in the agricultural

academy at Hohenheim, but left the following year, at Kundt's request, to return to Strassburg, where he assumed the position of the associate professor, teaching theoretical physics.

In 1879, however, at the age of thirty-four years, he was called to Giessen as full professor and director of the institute of physics. Here he remained for nine years, until appointed director of the physical institute in the great school of Würzburg, the second most important university of Bavaria.

It was here that the discovery of the x ray was made. In 1900, after twelve happy, active, and useful years of service, and at the special insistence of the government, he accepted the position of director of the Royal Academy of Technical Physics of the University of Munich, which position he occupies at the present time. The presidency of the Royal Physical Institute of Berlin has been offered to him, but declined. Honors and titles from all corners of the civilized world have been bestowed upon



FIG. 2. Statue of Professor Röntgen on the Potsdam Bridge, Berlin.

Röntgen. Immediately upon announcement of the discovery, the Emperor invited him to demonstrate the X rays at the Palace of Potsdam, where he was awarded the Crown Order of the Second Class. The title of *Professor* was given him by the German Government and his statue was erected on the Potsdam bridge in Berlin. In 1901, he obtained the Nobel prize for physics, the first of the awards made. The rays he discovered have, by general consent, been named after him. The honors and acclamations of the world have in no way affected the modest, generous, and lovable character of the man. Nor can it be said of him that he ever derived any material gain from his important discovery. He gave it to mankind freely and wholly.

Before 1895, his scientific work related to various questions in experimental physics; the examination of the specific heat of gases, the study of isothermal crystals, solar calorimetry, dust figures, aneroid barometry, and the absorption of heat by vapor. Since then his efforts have been mostly devoted to electricity and the phenomena of exhaustive tubes.

In the consideration of Röntgen's scientific labors, one characteristic that stands out above all others is the self restraint shown in his intellectual activities and his reverence for temperate and accurate deductions. His is the mind of a mathematician and his schooling was one in thoroughness, exactness, and precision. Indeed, as a keen, inductive thinker he has no peer in the modern scientific world. Nowhere in any of his productions is there a hasty conclusion based on insufficient premises, nowhere any unfounded generalization. It is always the careful, painstaking work of an investigator, who constantly denies himself the joys of enthusiasm, persistently represses his emotionalism and the tendency to glorification in his achievement. The constant self questioning, the constant searching analysis of his own beliefs and observations, indicates a mental asceticism which characterizes the highest type of scientific worker. He permits the facts to speak for him. His experiments, therefore, have an elemental firmness, strength, and finality. It is the quality and not the quantity that renders his work of such surpassing value.

We are too near the age to obtain the proper perspective of the personalities which will dignify it, but from the distance of centuries, Wilhelm Konrad Röntgen will be seen as one of the towering figures of our time.

90 PARK AVENUE.

## A SHORT HISTORY OF THE ROENTGEN RAYS.\*

BY PERCY M. BROWN, M. D.,  
Boston.

It has been said that, as we grow older, there is developed in us a tendency to mental retrospection, and that, with advancing years, we acquire a habit of "living in the past." For some, such retrospection is pleasant—it recalls an easy and comfortable existence; for the large and blessed majority, it reinvigates a past filled with distress and disappoint-

ment, with struggle, with the struggle of the inanimate, with vicissitudes and even poverty, which could have been avoided if the early signs of least resistance had been followed.

By this somewhat lugubrious generalization I do not mean to infer that the roentgenologist, as "the lean and slipper'd pantaloen," has reached the descending colon of his career—far from it. I do know, however, that the past twenty years have seen him, thrust forth from an academic pylorus, twisted and turned within an ileum of difficulties and uncertainties, to emerge finally through the ileocolonic valve of apparent success, and, with his gaze turned upward toward an ascending colon of renewed hope, only to be crowded back by the antiperistalsis of a cecal maelstrom of discouragement! In spite of this, however, he is coming into his own; the valvular portals of the past are closed—they are never incompetent—and the tendency is ever upward and onward by the mass movement of cohesion and cooperation.

It must have occurred to us all that the Röntgen worker is thus himself the test meal upon which the aberrant alimentation of unbelief and adverse criticism is brought to bear, and through his own weight and the weight of the metal he contains, is he able to expose these disorders. Of the petty contractions and greater constrictions which he has met perforce, it has been my honor previously to mention in other papers. He has passed through some and has dissipated others; therefore, let them be forgotten. Rather, let us consider how fruitful has been the seed sown twenty years ago.

If each of you who has been active in Röntgen diagnostic work for the greater part of them, will ponder on these twenty years in the quiet of his home tonight, it is not unlikely that there will appear to him a Genius, as, so long ago, appeared to Scrooge, the Spirit of Christmas Past. Fly with this Genius upon the wings of Memory. As the smoke of Warfare melts away before you, you will see a peaceful little Bavarian town nesting in the snows of the departing year of 1895. Within the walls of the university are gathered a small band of scientists—the Physico-medical Society of Würzburg. One of their own number, a man who lives in the midst of them from day to day, a professor in the university, is speaking to them. They hang upon his words in amazement. The vision is gone. Others quickly appear; in a breath the Genius bears you from city to city, from university to university, from laboratory to laboratory. Every one is active; all are interested, deep in a great new work. You see and recognize Jackson, Lenard, Crookes, Thomson, Salvioni, Tesla, Pupin, and Edison. Six months are passing quickly; what are these men and others doing? Pupin is relinquishing the use of induction coils as vacuum tube exciters, and is adopting influence machines; for the coil, he has already found the vibratory interrupter too slow, and has been using a rotary break. Edison is using a 110 volt primary current—for the question of radiographic exposure time is attracting general interest. You can hear Edison's statement that, roughly, the exposure is proportional to the square of the distance. Tesla, the following spring, is using his well known method of producing high ten-

\*Read as part of a symposium on the Röntgen Rays, at a meeting of the Röntgen Ray Society of the Greater New York Academy of Medicine, May 5, 1917.

sion and frequency for the excitation of Crookes's tubes. I trust is publishing his opinion, since known to be sound, that the most rapid plate for light does not give the clearest image for x rays. Your Spirit guide will show you Salvoon, Swinton, and Pupin lessening their exposure time by the use of the fluorescent tungstate of calcium, Swinton declaring that, by this means, a skiagraph of the skeleton hand can be obtained in ten seconds instead of two minutes! In May, Gifford is writing that, for this purpose, potassium platinoeyanide is best. Salvioni suggests the use of an especially coated screen without the use of a plate, and, following this suggestion, Edison calls his device a "fluoroscope." In July, Mount Bleyer, of Naples, is trying to photograph the fluorescent image. All are striving, striving, gratified in their accomplishments—yet striving. Even in these first months you hear an echo from a fascinated scientific world that, after all, these shadow pictures may do more than to satisfy the curious—they may really be put to practical use, possibly in the domain of surgery or medicine.

"Is there aught of truth in this?" you ask yourself, "and when will that which is predicted come to pass?"

Your thought is answered by the Spirit. "Even at this moment," it says, and at once you are looking down upon Nottingham, England. There, its whereabouts revealed by the new rays, a needle is being localized in a young girl's hand. Thence, you are carried to London, where Renton and Somerville are discovering the unsuspected dislocation of a phalanx. Now, you have before you the city of Glasgow, where MacIntyre, in July of this eventful year, has discovered a calculus in the kidney.

"Lead me farther," you exclaim, "reveal yet more!" "I cannot," the Genius replies, "my mission is at an end. I am the Spirit of Inspiration, and can show you but the Beginnings of Things. Remembering these beginnings, consider, and try to realize what has been accomplished by the aid of the Light given you. Remembering these beginnings, revile not the crude efforts of the pioneer. By me, he was inspired; by me, you and those with you have been inspired in whatever you have accomplished. I shall be the inspiration of those who come after you. Farewell!"

Let us, then, consider the development of our art, especially as it concerns diagnosis, since the years that have appeared to us in our vision. Indeed, were these years more eventful, after all, than those following later? Any advancement in physical diagnosis has been curiously dependent upon the development of the devices given to us to use. The ancient art of blood letting is most vividly brought to our minds when we see a set of old cupping instruments. Bigelow's surgical success with bladder stone was signalized by the lithotrite devised and used by him. Laennec's name is associated with auscultatory diagnosis chiefly through his monaural stethoscope. Röntgen diagnosis has been linked with especial firmness to the constant advance in the development of the physical aids it possesses. Many of these devices have created epochs in our past. Consider, if you please, the wonderful growth of the vacuum tube from the

diminutive, fickle, soap bubble affair of the latter nineties to the marvelous mechanism of today, the moods of which may be governed at will.

History shows, as might be supposed, that the earliest diagnostic efforts by x rays dealt with clinical questions of foreign body and bone fracture. The most prominent radiographic evidence naturally attracts the greatest attention. Even these efforts were crude, however, for shadow distortion led to erroneous conclusions as to fracture, and foreign bodies, clearly in evidence, were not localized through general endeavor, although the methods of Mackenzie-Davidson, Sweet, Harrison, and others were published as early as 1897. Stereoscopy, a principle long recognized, was applied to radiography by Elihu Thomson, in 1896, but its use among early Röntgen workers was not general. Weigel, of Rochester, gave stereoröntgenography its greatest impetus in 1901. The early lack of competent apparatus of application may have been the cause of a lukewarm interest in stereoscopy.

Concerning procedures of greater pathological moment than these, it is interesting to note that no anatomical region with which we are now familiar had not been already assailed diagnostically. In 1896, fluoroscopic examinations of the thorax had been made. By October of that year, Williams, of Boston, had made forty observations in cases of pulmonary tuberculosis. He placed much importance on the existence of a complex of fluoroscopic appearances in this disease, asserting that, in early cases, an intelligent use of the screen elicited information which could not be obtained by other means of physical diagnosis. His favor was not wholly confined to the screen, for, in 1901, he says, in comparing the then unsatisfactory radiograph with the screen method: "When instantaneous photography can be carried out in the lungs, a better opportunity will be offered for obtaining evidence of pulmonary tuberculosis by the photograph than has hitherto been given." His prediction has come true, as we all know.

The power given us to record, upon the sensitized plate, vascular as well as pulmonary conditions, is due to the great volume of x rays at our command from focus tubes which will tolerate profound excitation. Could Williams or his contemporaries have prophesied the possibility of the cardiac shadow, obtained in the fraction of a second's time at a tube distance of eight feet? We may congratulate ourselves that we have not become dazed by our radiographic ability to the extent of losing sight of fluoroscopy, a *sine qua non* in chest diagnosis. Increased powers in radiography, however, especially in cardiac cases, have relieved us of a greater danger—the orthodiagraphic method of unhappy memory. Never have I seen one of these instruments used, especially in a cardiac case supposedly of bad prognosis, that I have not likened the ardent operator to the much maligned mongrel in the last stanza of Goldsmith's *Mad Dog*:

BUT soon a wonder came to light,  
That show'd the rogues they ly'd;  
The man recover'd of the bite,  
The dog it was that dy'd.

Our present day use of the screen in thoracic cases is but a rejuvenation of its employment in the



past, except that now, thanks to Coolidge, we can reach our for the kind of rays we need, and that, thanks to many others, our screens are comparatively good and our protection is efficient.

Striking and positive as have been the results of our investigations of the gastrointestinal tract during the last decade—and, in the attainment of such results, American röntgenologists have played a large part—we must not forget that some of the earliest procedures were directed toward the intelligent study of these structures. Before the days of opaque test meals, attempts were made to outline the stomach with "loaded" rubber tubing, with injections of gas, and the like. Cannon systematically studied digestion by the use of opaque meals in 1898 and thereafter; much work of value was done the world over before the beginning of the new decade. As in the case of thoracic investigations, the screen was the medium at first generally employed. Intensifying materials soon paved the way for so called short exposures, although these were hardly to be compared with the stereoscopic double exposures of today.

There is no better way to compel the realization of what has been accomplished in this one branch of Röntgen diagnosis than to attempt to estimate the amount of time, the energy, and the material used and consumed today in an investigation of the case of but a single patient! Yet, the wondrous development of alimentary Röntgen work continues to stimulate the fascination it possesses.

Even an abridged consideration of the history of diagnostic work by x rays cannot be complete without mention of the early accomplishments of the late Lester Leonard in the study of urinary calculus. By his efforts he established himself as an authority in the face of all the adverse criticism and ridicule that falls to the lot of the pioneer. His results, as we look back upon them, seem really to antedate his time, especially when we consider the extreme simplicity of his working armamentarium. It is such men as he who have paved the road that his successors may progress more swiftly.

While he is called upon to serve the art of medical practice in all its branches, it is characteristic of the Röntgen diagnostician that he is prone, individually, to become engrossed in some special field of his own. It is the homogeneous agglutination of individual accomplishment that has supplied the art with real nourishment.

It is twenty years since we were given the new Light, from the source shown to us in retrospection by our benevolent Genius of Inspiration. This year marks also the anniversary of the loss, to his country and to the world, of a man, at a juncture when such a loss could be but ill sustained. May we, having in our keeping the heritage of our Art, the heritage of the Light, say of ourselves as Lincoln said of himself:

I am not bound to win, but I am bound to be true; I am not bound to succeed, but I am bound to live up to the Light I have.

**Purgation in Arteriosclerosis.**—L. F. Bishop forbids the saline purgatives in arteriosclerosis. Castor oil, he maintains, is the best, in fact the only safe and satisfactory laxative.

## THE INFLUENCE OF ROENTGEN'S DISCOVERY ON MEDICINE.

BY LUDWIG KAST, M. D.,  
New York.

Professor of Medicine, Faculty of Medicine and Medical School,

It was natural that the discovery of Professor Röntgen should be promptly applied to medical problems. To look through the living chest; to see the shadows of the heart and of the mediastinum, the expansion of the lung and the heaving of the diaphragm was a thrilling experience and full of suggestion. The discovery carried the eye, so to speak, into the human tissues. To the differentiation of resistance to the palpating finger and to the differentiation of the vibrations of tissues under percussion was now added the differentiation of the shadows of tissues as seen upon the screen and upon the photographic film.

Both in surgery and internal medicine the practical value of the method was quickly appreciated, and never perhaps has a method of examination been introduced into medicine and surgery which so promptly and so universally won acceptance and appreciation as did radiology. It made possible better therapeutic results; it curtailed suffering; it saved human lives.

The first practical application came in the localization of foreign bodies and the recognition of fractures and dislocations. This was the beginning of systematic efforts to visualize the body structures and their changes and to determine such structural variations as cysts, abscesses, tumors, calcifications, and other dystrophies which were demonstrable neither to touch nor hearing.

Soon the diseases of the thorax were studied. Because of the marked contrast in the densities of its structures, the pathological variations were easily demonstrable. Enlargements and dislocations of the heart, fluid in the pericardium, aneurysmatic enlargements of the aorta, mediastinal tumors, fluid in the pleural cavity, abscesses and tumors, ectasias and infiltrations of the lungs, and diaphragmatic hernia were among the first disclosures of radiology of the thorax. Later it was possible to demonstrate pericardial adhesions, pleuritic adhesions, and healed tuberculosis. Then came the work of Leonard in the diagnosis of urinary calculi giving accuracy and definiteness to the diagnosis of disease of the urinary tract.

In the first stage of the development of röntgenology, its benefits were largely confined to the better diagnosis of already known conditions. It did not noticeably aid in the discovery of new problems. The situation changed when by the use of opaque substances in the gastrointestinal canal, efforts were made to penetrate with the eye that hitherto unexplored region of the body, the abdomen. With the introduction of the bismuth meal the gastrointestinal tract became a field of entirely new studies.

In the chest the x ray was unable to show anything which was not by other methods demonstrable, either in the living or at the post mortem examination. In the abdominal cavity, however, the organs are so susceptible to post mortem changes and are

considered by laparotomy, that the conclusions from such examinations had been in many ways erroneous.

The contour, position, and motility of the stomach and intestines in the living were not correctly known until the x rays portrayed them on the screen. The new facts not only corrected previous findings, but led to physiological discoveries of unusual value. Among these were the following: The importance of the tonus of the gastric muscle; the interesting play between the gastric peristalsis and the pyloric ring; the help which the antrum pylorus lends to the propelling force of the pyloric vestibule, churning and expelling the food within well defined rings; the importance of the pylorus in correlating gastric and intestinal secretory processes; the difference in the rate of discharge of different food articles; the segmentation and pendulum movements and the peristaltic rush of the small intestines; the antiperistalsis of the ascending colon and its relation to the ileocolic sphincter; the sweeping peristaltic waves of the colon, so different from the peristalsis of the small intestine; the formulation of the so called law of the intestines—the stimulated point leading to contraction above and relaxation below.

With the newly gained facts and improved technic, the boundaries of our knowledge were rapidly pushed forward. As soon as our eyes were opened to the conditions in the living organs of the abdomen, biology took the place of speculation and post mortem deductions. This constitutes one of the most fascinating chapters in the entire range of physiology.

In conjunction with the work of Pavloff, showing the mutual dependence of chemical and mechanical functions of the gastrointestinal tract and its appendages, röntgenology established the physiology of digestion on a permanent basis. It is perhaps no exaggeration to say that in no field of internal medicine has Röntgen's discovery accomplished so much as in abdominal diagnosis. We cannot pass this point without gratefully acknowledging our debt to the men who so impetuously pioneered this work—to Rieder in Munich, Holzknicht in Vienna, and particularly to Cannon in Boston. In the application to pathological problems we were led by Rieder and Holzknicht in Europe, Cole in New York, Hemmeter in Baltimore, Herz and Jordan in England, and more recently by Haudek and Schwarz in Vienna, and Case in Battle Creek.

The diagnosis of the traction and pulsion diverticulum of the esophagus, the strictures of the esophagus, and its fusiform dilatation, as well as the demonstration of stenosis and pressure of mediastinal tumors upon the esophagus, became matters of comparatively simple and quick diagnosis.

While our hopes of the possibility of an early diagnosis of gastric cancer were not fulfilled to such a degree as was hoped, still there is no doubt that many lives have been prolonged by the recognition of such tumors earlier than was possible with previous methods.

The recognition of hourglass contraction and adhesions around the stomach with the dislocation of the organ became a matter of routine. The failure to demonstrate bismuth adherence in cases of ul-

ceration in the stomach proved somewhat disappointing; but the effect of the ulcer shown directly upon the contour or indirectly by the production of adhesions as well as the presence of spasm or beginning hourglass contraction and the influence of the ulcer upon the secretion and evacuation of the stomach facilitated the diagnosis of gastric ulcer to a very marked degree.

The discovery by Haudek of the niche symptoms in penetrating ulcer established for the clinician the previously unsatisfactory diagnosis of that condition and at the same time cleared up a group of indefinite gastric symptoms.

The demonstration of duodenal ulcer by the persistence of the spot in the duodenum or by the effect of the ulcer upon the gastric motility and tonicity and occasionally the demonstration of a duodenal stenosis were further advances in the diagnosis of the diseases of the upper abdomen. We must add to this Cole's deformity of the duodenal cap and the significance of the hepatofixation of the stomach as an evidence of inflammation around the duodenum and the gallbladder, giving definite direction to our differential diagnosis or definite indications for surgical exploration in cases of periduodenitis or pericholecystitis.

A great help was offered the clinician by the improvement of x ray technic which made it possible to recognize in many cases, gallstone shadows. The demonstration of strictures in the small intestines, while not very frequent, still has undoubtedly simplified indications for surgical procedure.

With the recognition of disturbances in the ileocecal region, a very marked advance was made. The visualization of the appendix and the effect of periappendicular adhesions and kinks upon the evacuation of the small intestines and cecum, has taught us how frequently stasis of the intestinal contents, either in the ileum or in the colon or in both, leads to local inflammatory processes which, in turn, increase adhesions and lead to a vicious circle between abnormal peristalsis, intestinal stasis, inflammation, and the formation of new adhesions.

The demonstration of tumors in the colon or adhesions between the ascending and transverse colon, or between the colon and adjacent organs like the gallbladder became a matter of routine. It was of utmost value to be able to demonstrate extracolonic bismuth shadows in the differential diagnosis between carcinoma and diverticulitis of the sigmoid flexure. Since the discovery of the x ray, it has been possible to recognize much more frequently than before, cancer of the upper rectum or sigmoid flexure, while the tumor is still in a comparatively early stage of development.

If we add here the great help which the x ray has lent in recognizing changes in the shape of the kidneys, calcifications, in the demonstration of stones in the pelvis or ureter as well as in the gallbladder, stones in the prostate, abnormal configurations of the ureter or pelvis of the kidney by means of pyelography, we can realize to what great extent abdominal diagnosis has been helped by radiology.

Not only by demonstrating positive findings, but also by negative results, diagnostic possibilities have been enlarged. Very often negative findings of

the shape, size, position, and function of the stomach have directed the attention into other lines of inquiry and diseases of the brain or gallbladder or heart often have been recognized as the primary cause of a secondary gastric manifestation.

With the improved technic of instantaneous exposures at longer distances, it is possible to obtain scientifically exact measurements of the heart and the aorta. While still not fully developed, the diagnosis of pulmonary tuberculosis has been greatly aided by the x rays. When the artificial pneumothorax became a factor in the treatment of disease of the lungs, x ray examinations became indispensable, and with the finer methods of today, we are able to demonstrate small quantities of fluid in the chest, which auscultation and percussion could never bring out. Interstitial pneumonia and interlobular pleurisy illustrate additional lines of progress made in thoracic diagnosis.

Regarding the radiography of joints, there is still much to be done. While we are helped, of course, by determining more accurately than is otherwise possible, the structural changes, the degree of roughening of the joint surface, the exostosis, and the osteoporosis, there are no clear criteria for the differentiation of the various forms of arthritis. The hope is justified that with a clearer understanding of the etiology of arthritis, these criteria will be found. One cannot pass this problem without gratefully appreciating the help which the x ray has rendered in finding diseases of the teeth, peridental abscesses, and infections of the sinus and antrum as primary foci and as causes of general infections or disturbances of metabolism.

There is hardly a field in internal medicine which has not derived help from röntgenology. To realize the revolution which has been brought about in the medical mind, it would only be necessary to compare the attitude of most diagnosticians toward fluoroscopic and skiagraphic methods seven or eight years ago with their attitude today. Today no clinician would contend that the work in thoracic or abdominal diagnosis was complete unless it was based in part upon the findings of radiology. There is no up to date hospital which has not erected a monument to Röntgen in the form of a Röntgen laboratory.

It is natural that in the enthusiasm and rush of first discoveries, optimism should have held sway as to the possibilities of x ray diagnosis. In science as in art, the reach exceeds the grasp. It is well that it should, but the time has now come when the limitations of röntgenology should be fully recognized and understood. Primarily, x ray findings are facts. The radiologist can help in the interpretation of these facts, but the ultimate deductions should be carried out by the cerebration of the clinician who bases his judgment upon the x rays in some cases exclusively, in many cases principally, and in the great majority of cases only in correlation with other methods of investigation.

The closest cooperation between the röntgenologist and clinician is absolutely essential if the data of the röntgenologist are to become thoroughly established as useful evidence of pathological changes in the tissues. A not unimportant result

of the röntgenological examination has been a certain refinement of the older physical methods, which under the correcting influence of the Röntgen ray, now more than ever, fully and accurately serve the clinician.

So far as the broadening of knowledge is concerned, the discovery of the cathode ray ranks among the foremost contributions to medicine. Like Pasteur and Koch in the domain of bacteriology, like Laennec, Auenbrugger, and Corvisari in the domain of percussion and auscultation, and like the discovery of the microscope, the discovery of Röntgen has broadened the paths of knowledge, has increased the understanding, and raised the efficiency of practical medicine. It has done more than that—it has opened up the new world of radioactivity in its biological aspects; and already, its influence is being felt in the problems of fertilization, and in the problems of malignant growths and in the problems of the ductless glands and internal secretions.

In paying tribute to the discovery of Röntgen we as clinicians must also express our gratitude to the conservative but progressive röntgenologists, our daily collaborators, who illuminate the paths on which clinical medicine reaches higher standards.

## THE PHYSICS OF RÖNTGEN RADIATION\*

*With Reference to Treatment.*

By J. S. SHEARER, PH. D.,  
Ithaca, N. Y.,

Professor of Physics, Cornell University.

It is a great pleasure to have an opportunity to write in appreciation of a genius. As a humble representative of the science enriched by Röntgen's labors I may safely assert that no discovery of modern times has had such far reaching effects in physical and chemical science as the one under discussion.

Yet, as in the case of many other discoveries, not even Röntgen realized the full importance of his observations or the extent of their application. Many valuable suggestions were embodied in the original memoirs of Röntgen, which I trust may be read as an inspiration by all, either in the original or in translation, yet I do not recall any mention of the probable effect of this radiation on vital processes. It was already well known that radiant light and heat, and even ultraviolet radiation, modified cell production or repair, and it was only natural that the physician should expect aid from this new source in his struggle for the mastery of disease. It might also have been expected that such a study would be attended by great difficulties, and that the results would be variable and in some degree uncertain so long as no method of measurement for such radiation was forthcoming.

Doctor Coolidge<sup>1</sup> has mentioned the possibility of building up molecules or atoms by a reversal of

\*Part of a symposium held at the University of the Pacific, San Francisco, California, at the University of the Greater New York Association of Medicine, May 1, 1911. (See this JOURNAL, page 473.)



the forces now used to disintegrate or tear down such natural structures. In brief he intimates that the dream of the Philosopher's Stone may not be so remote as we have been wont to believe. Although cell structure is ever changing and in the highest degree complex, controlled by forces not as yet known, why may we not add to our modified or scientific dreams one of control over cell growth? What might we not accomplish if we could not only transmute the elements, but *ungrow* animal and vegetable life? Verily we should have the Elixir of Life.

Turning from such iridescent dreams to things more certain of realization, we may well ask what part the physicist and the engineer are expected to take in the development of therapeutics. In order that rational information may be available in the study of the physiological effects of this radiation, we must know how to produce the exact quality of radiation required and how it is to be measured. The mode of production and its control has been greatly improved by the work of Coolidge, and it remains to study with unusual care the phenomena of absorption, of transformation, of scattering, and of secondary radiation in the tissues and cells. The medical profession have a right to expect the same attention to this problem that has been given to the study of light production, distribution, and quality.

There has hardly been time since the advent of the new tube to clear up the many points of physical difficulty in the study of this radiation. Yet we should by no means be discouraged, as all progress in radiation measurement has been slow. We still find the measurement of light a troublesome matter.

I am sure that we may in the near future be able specifically to direct the roentgenologist in the production of the desired quantity and quality of radiation and to measure it in a rational manner. Only when this is done, can the results by one man be compared with those of others, or can any one be sure of repetition of results from day to day.

It seems to me that it is time to use the methods of the great commercial laboratories where all the known sciences are utilized in the solution of their problems. We must ignore those accidental boundaries which separate one science from another, and give each to the other our best efforts and thoughts.

In conclusion, may I express the hope that all consider well the work of the investigator in every field of natural phenomena. Röntgen was not consciously striving to cure disease; he was anxious to know more of radiation, and all of these wonderful advances were by-products. Had he started out with the practical problem of looking through flesh and bone, I greatly fear he would never have made this great discovery. May not then all investigators expect, not simply tolerance, but active support, to the end that through our more complete knowledge, disease and suffering may be banished from our midst? Surely no problem is more worthy, nor should any receive a greater share of scientific attention.

## ROENTGEN'S DISCOVERY.\*

### *Its Recent Development and Future Possibilities.*

BY W. D. COOLIDGE,  
Schenectady, N. Y.

There seem to be two classes of investigators, one comprising those who delight in very accurate measurements with refined apparatus, and another made up of those who get new results with crude and sometimes old apparatus. Röntgen certainly belongs to the latter class. His great discovery was made with a device which had attracted the attention of the physicist ever since 1859, when Plücker was studying the green fluorescence of the glass of an evacuated tube through which a discharge was passing.

We see it generally stated that Röntgen's discovery was an accidental one. But a knowledge of the German university professor and his ideals and of the unflagging zeal and devotion which he displays in his life work—the search for truth without regard to material reward—shows the unfairness of this statement. It is furthermore not borne out by the facts. For Röntgen found exactly what he set out to find—invisible light. He had connected an induction coil to a Crookes tube. To eliminate visible rays he had entirely enclosed the tube in black paper and had darkened the room. For the purpose of transforming the invisible into visible radiations he had a platinocyanide of barium screen lying on the table. The combination of circumstances was of his own choosing, and the result was exactly what he was looking for.

It is reported that others had noticed the fogging of plates kept where discharge tubes were being operated, but it is to Röntgen that the world owes its great debt of gratitude. He was the one who saw in the fogging of the plates an important phenomenon calling for painstaking investigation. He knew the previous work which had been done with vacuum tubes, and knew of the easy absorptibility of the cathode rays. If the discovery had been made with a Lenard tube, which was known to let cathode rays escape through its window of thin aluminum foil out into the air, it would have called for much less imagination and initiative. As it was, everything that he knew, with the exception of the one fact of the fogging of the plates, must have told him of the absurdity of looking for any invisible radiations outside of that tube. No ultraviolet light and no cathode rays could get out through the glass. Very few men will so far leave the beaten path as did Röntgen when he tried his experiment. That is the one common characteristic of all of our great pioneers, in all of the various walks of life—they have had the courage to leave the beaten path.

It should be a great satisfaction to Professor Röntgen to sit down now in the light of our present knowledge and read his original publications, and their careful perusal will well repay any work-er in the field today.

#### RECENT DEVELOPMENTS.

Early attempts to show diffraction, refraction, and reflection had all failed. In 1912, Lane pre-

\*Part of a symposium read at a meeting of the Röntgen Ray Society of the Greater New York Academy of Medicine, May 5, 1915.

dicted that if the x rays were passed through a crystal, interference effects would be produced just as they are when ordinary light falls on a Rowland grating. The experiment was tried by Friedrich and Knipping and proved completely successful.

Bragg later showed that regular reflection of x rays can be made to take place from the cleavage surfaces of crystals. A secondary wavelet spreads out from each atom as a primary wave passes over it.

The work of Laue and Bragg has made it possible to measure the wave length of the x rays, and shows them to be a transverse vibration traveling with the velocity of light and with a wave length about one ten thousandth that of ordinary light.

Moseley and Darwin have found that each element, when placed in the path of x rays of sufficiently high penetration, gives off secondary rays with a wave length characteristic of the particular substance in question. This serves, not only as a useful method of analysis, but also as the basis of a logical method for grouping the elements.

#### FUTURE POSSIBILITIES.

1. As our sources of x rays become more and more intense, new fields of usefulness are opening up. The germicidal and sterilizing action may be commercially useful in connection with food products, etc.

2. They may be useful as an ionizing agent to bring about chemical reactions.

3. It is now possible to produce cathode rays having a velocity comparable with that of the most rapidly moving beta rays from the radioactive substances, and, at the same time, we get x rays comparable in penetrating power with the most penetrating gamma rays. We are also able to produce canal rays which are like the alpha rays, except that they have lower velocity. These three, together with metallic lead, constitute the decomposition products of radioactive substances, and it therefore seems possible that we may some day be able to produce these radioactive substances synthetically.

4. As we are now able to put energy into the atom, and as we are now getting more and more of an insight into the structure of the atom, it does not seem too much to hope that we shall some day be able to transmute the elements at will and to store up large quantities of available energy in small masses.

5. It seems probable that such work as that now being done by the physicist, on alpha ray scattering and with the x ray spectrometer, will lead to much higher efficiency of x ray production. The desirability of this is obvious when we think that at present we are able to utilize only about 0.2 per cent. of the energy which is put into the tube.

This means that if we could raise this efficiency to 100 per cent. and could suitably direct the rays, we should put into the tube, for say a stomach plate, not four kilowatts, but only eight watts. In other words, we should then need in the tube much less energy than we now consume in the ordinary hand battery flash lamp. I do not mean to give the impression that the work of the physicist has yet revealed a method for making the transformation

of electrical into x ray energy much more efficient than it is now; but it does seem probable that with more detailed knowledge of the mechanism of x ray production, and this means more knowledge of the structure of the atom, that we shall some day be able to help ourselves in this direction.

6. Another dream which should come true some day, is the production of a substance capable of making a screen say a thousand times more sensitive than anything we have now. For relatively little is known about the mechanism of fluorescence. The whole subject is one of the greatest interest and undoubtedly stands in very close relation to the production of secondary x rays. Seeing, as we now do, the widest range in the fluorescent power shown by different substances, and with the mechanism so little understood, it does not seem too much to hope that the efficiency of this energy transformation may also be tremendously increased. Most, if not all the energy absorbed by the screen is now transformed, but the amount absorbed is very small.

7. Similarly, it does not seem too much to hope that, with our rapidly increasing knowledge of characteristic radiations, we shall some day see a photographic plate in which a much larger fraction of the x ray energy is absorbed with a corresponding increase in speed. From the diagnostic standpoint, an increase in screen and plate sensitiveness is perhaps much more to be desired than is a more powerful or more efficient sources of x rays, for the former would reduce the danger, while the main effect of the latter would be on the pocket book.

8. With the ability to get, as we now can, characteristic radiations of definite wave length, the germicidal and physiological actions can be scientifically studied, with the possibility of finding out whether there is, for a definite purpose, any specificity of action so that a certain cell responds more strongly to a certain wave length than to any other.

## THYROID DISEASE.

### *Its History, Prevalence, and Sex Incidence,*

By SILAS P. BEEBE, M. D.,

New York,

AND J. WALLACE BEVERIDGE, M. D.,

New York.

Diseases and affections which may be traced directly or indirectly to a functional defect of the thyroid gland, are more frequent by far than is commonly supposed. True it is, that thyroid diseases of all kinds are considerably more rare in North America than in Europe and Asia, yet exophthalmic goitre is of quite frequent occurrence in this country and in Canada, while in South America diseases of hyperthyroidism and hypothyroidism are very common. Probably no race and no land is wholly free from diseases attributable to a defective mechanism of the thyroid gland, but at the same time there are parts of the globe where such maladies have gained a firm foothold and where, up to the present time, all efforts to expel them have been without avail.

Before entering into the question of the prevalence and geographical distribution of thyroid disease, it will not be out of place to discuss its history. Goitre is mentioned by early writers, although Hippocrates makes no reference to it. Juvenal calls it "the true tin and lead," "this swelling of the neck is common among the dwellers in the Alps." Ovid in the *Fasti* refers to the slight swelling of the neck that occurs in the first months of pregnancy, and Pliny goes so far as to blame the water supply. Viruvius and Pliny mention goitre wells and we find that the latter point is referred to from the sixteenth century on. In fact, the endemic occurrence of goitre has long been known. In the middle ages goitre was looked upon as a punishment for blasphemy, and the innocent just as miraculously were relieved of their thyroid strumas, as well as those of the lymphatic glands by the royal touch. Marco Polo saw goitre in central Asia. Paracelsus, in 1616, described it in the region of Salzburg, an important focus to this day, and made the first positive statements regarding cretinism and its relation to endemic goitre. During the next two centuries, many eminent writers busied themselves with the study of the disease in various countries, but especially in the Alps and other mountainous regions. In 1789, appeared the important work of Malacarn based on studies in the valley of Aosta, and soon after 1792 and 1800 appeared the more influential treatise of Fodéré.

According to Hirsch, the great historian of diseased states in the fourteenth and fifteenth centuries, the first medical references to endemic goitre was made by Arnoldus Villanovanus from the province of Lucca and also by Valescus de Thoranta for the Comte de Foix. Next we have the account of the disease in the Duchy of Salzburg by Paracelsus, who was the first to treat the subject with thoroughness on the basis of his own observations; he sketched the conditions for the endemic occurrence of goitre in brief and forcible words, indicating its relation to cretinism and supplying the first trustworthy information concerning cretinism itself. A somewhat more copious, but scarcely sufficient wealth of material for the study of the history of endemic goitre, is provided by the medical writers and chroniclers of the sixteenth, seventeenth, and eighteenth centuries. Among these were Munster for the Vallais, Styria, and the Pyrenees, Agricola for Salzburg, Tyrol, and the Val Tellina, Stumpf and Campbell for the Rhine valley, and so on. Dr. Smith Barton, writing in 1800, noted that among the Oneida Indians of New York State, goitre was fairly common. The disease was also of frequent occurrence among the Dutch inhabitants of New York at that time.

In 1810, Hans Cautner settled the question as to whether the disease was in the connective tissue or the gland itself. Anatomical and embryological investigations were begun by F. Meckel, in 1802, and continued by W. Mueller, Woelfler, and many others to determine this fact. In 1820, Conidet announced treatment with iodine long used in other forms, and so began an extensive discussion on iodism and thyroidism, that became still more insistent after the discovery of iodine in the thyroid gland by Baumann, and the further chemical studies of Roos,

Oswald, A. Kocher, and others. Schuff, in 1850, demonstrated that the thyroid gland was essential to life and that it produced a substance necessary to the well being of the organism. This prepared the way for the observations and experiments of Langendorff, Huerthle, Horsley, and many later investigators. Hirsch sums up the history of endemic goitre and cretinism as reducing itself to this: That a few centres of the endemic form were known to exist, the same continue, as we shall find, to be seats of the malady to the present day, and that endemic goitre is proved to have occurred as early as the pre-Christian era. Previous to the sixteenth century, little or nothing was known or recorded of cretinism. It was the only form of thyroid insufficiency known before Sir William Gull published his paper On a Cretinoid Condition Supervening in Adult Women. Doctor Ord, in a paper published in the *Medico-Chirurgical Transactions*, christened this cretinoid condition myxedema. The association of myxedema with thyroid atrophy was first clearly established at the International Medical Congress, held in Copenhagen, in 1886.

A committee of the Clinical Society of London investigated the functions of the thyroid gland, and concluded that myxedema was dependent on a destructive affection of the thyroid gland. The first contribution of permanent value to the literature of exophthalmic goitre was made by Caleb Hillier Parry, in whose posthumous works notes of eight cases are given, the first, observed in 1786, being typical. Soon after, Adelman reported two cases. The most important report was that of Graves, in 1835. In 1840, von Basedow published a fuller description and more complete analysis of four cases. Trousseau, who had seen a case in 1833, afterward advocated giving Graves's name to the disease. The late history of exophthalmic goitre can be epitomized by noting the work of Charcot and Trousseau, on the discovery of the importance of tremor by Charcot and Marie, and the studies of the nervous and cardiac conditions by Chvostek Senior, while later came the work of Mobinus.

As for the prevalence and geographical distribution of goitre, the accounts of various observers show considerable discrepancy. By some it is said to be less prevalent than it is now generally stated to be, while others, and these seem to be right, assert that it is more prevalent by far than the ordinary medical observer conceives. Men who have had the opportunity to study the manifestations of thyroid insufficiency or excess, have no hesitation in assuming that a vast number of patients suffer from the effects of such a condition, and it must always be borne in mind that so far as exophthalmic goitre is concerned, many are victims of hyperthyroidism without exhibiting the complete complex symptoms recognized as diagnostic of the disease.

Clemon, in his very excellent work on the geographical distribution of disease, says, in part, that in the British Isles neither goitre nor cretinism can be regarded as common forms of disease, although there are certain sections of the country, hilly districts, in which goitre is endemic. In France the disease is very prevalent. In the Alpine departments, the Vosges, Cevennes, and the high central plateaus are affected. Mayet, in 1900, estimated



the number of sufferers in France at over 100,000, while others place the number higher. In Germany the Black Forest is said to be an important seat of these diseases, which occur particularly in the lower valleys and are said to be unknown in the higher parts of the forest. In Bavaria, in Württemberg, in Baden and Hesse there are scattered centres of goitre and cretinism. The plain of North Germany and the Netherlands is said to be quite free from both forms of the disease. In the mountains of Germany there are many foci. In European Russia goitre is common. Some years ago the shores of Lake Ladoga were regarded as peculiarly goitrous districts, but the most reliable evidence points to the east and northeast of European Russia as specially liable to this form of disease. From the conscription returns of the Russian army for 1893, 1894, and 1895, it seems that the governments between the Volga and the Urals are the most goitrous. In Austria goitre and cretinism are very common, occurring especially along the banks of the Danube, particularly in the provinces of Styria and Carinthia, on the slopes and valleys of the Carpathians, and in Transylvania, Galicia, and Hungary. In Spain and Italy both goitre and cretinism are said to be of very frequent occurrence. It appears certain that in Italy, Spain, Switzerland, and Austria, goitre and cretinism are more widely prevalent than in the more northern European countries. As Doctor Dock says in Osler and McCræ's *Modern Medicine*, the classic home of endemic goitre is in the Swiss Alps. In Piedmont it sometimes affects more than two out of three of the inhabitants. In Canton Wallis, in the valleys of the Rhone, and its tributaries it is also very prevalent.

Of the degree of frequency of goitre in the countries of the Balkan peninsula little is accurately known, but it is more than conjectured that in certain portions of the Balkan States the disease is common. To quote Doctor Dock again, he says that in European countries many recruits are lost to the military service on account of goitre. According to Ewald, there were 12,277 cases in eighteen years. The drain on the country is better expressed by the number of cretins. In Cisleith Austria, there were, in 1883, a total of 12,815 or seventy-one per 100,000. In Piedmont, Lombardy, and Venetia there were, in 1883, 12,882 cretins in a population of 9,565,038.

In Russian Asia goitre exists to a very considerable extent in certain portions of that land. In Asia Minor and Mesopotamia, centres both of goitre and cretinism are met with. Syria, Arabia, and the table land of Persia have goitrous sufferers to a greater or less extent. The Turkomans of both Russian and Chinese Turkestan appear to suffer to a remarkable extent from goitre. The mountains of Asia, Japan, and many of the Asiatic islands have numerous centres. However, in Asia, the chief centre of thyroid diseases is certain districts of the Himalayan mountains.

The great authority on goitre in India is Major McCarrison of the British Indian Medical Service, who in the Milroy lectures on the etiology of endemic goitre, delivered before the Royal College of Physicians of London in January, 1913, gave some most valuable information on thyroid diseases from

all standpoint. He said that on one of the villages of that part of the Himalayas in which his own researches had been carried on, goitre was so common that it was difficult to find a man, woman, or child not suffering from the deformity. He estimated that not less than twenty per cent. of the total population of Culebra were from goitre and cretinism, among a population of about 100,000. In some cretins. In European countries, the condition of which with regard to goitre McCarrison knows well, the proportion of cretins to goitrous individuals was still higher, so that when the vast number of sufferers from goitre in Himalayan India and Europe alone was considered, a number which cannot fall short of 5,000,000, and the fact that the disease was capable of giving rise in the children of these sufferers to the grossest forms of mental and physical degeneration, we are in a position to realize the immense amount of disability and race degeneration directly attributable to thyroidism. According to McCarrison, Bail Cager estimated that about the year 1874 there were in France no fewer than 500,000 goitrous patients and 122,700 cretins and cretinous idiots. In Switzerland, during the six years between 1875 and 1881, 12,227 young men were exempted from military service on account of goitre. In Italy three per cent. of the conscripts were rejected for the same reason between the years 1859 and 1864.

With regard to the occurrence of endemic goitre and cretinism on this side of the Atlantic, Hirsch says that the disease exists in these forms from the basin of the Río Grande del Norte, New Mexico, extending along the Cordilleras through Mexico, Central America, and south as far as Chile; in the mountains of Mexico, Colima, western slope of the Cordilleras, and in Tobasco and Chapas, thence into Guatemala, in the *tierra templada* of which there are whole villages with goitre, and thence through San Salvador, Nicaragua, and Costa Rica. Paraguay has goitre in its river basins. It exists also in the southern and central provinces of Brazil. It is said that cretinism does not occur endemically anywhere in Brazil. Doctor Faure, who lived for a long time in central province, headquarters of goitre, says he saw but one case of cretinism. Cretinism is endemic in North Granada, which is also a chief seat of goitre. Both diseases occur throughout almost the whole valley of the Río Magdalena, from Noyoa in the *terra fría*, downward through Santa Fe de Bogota and other districts, as far as the plain of Pinto. In Venezuela, goitre occurs on the plain between Caracas and Valencia and in the mountain range from Bargincimeto as far as Pamplona and the frontier of North Granada. According to Humboldt, the basin of the Orinoco is free from goitre. In Chile it is endemic in San Felipe Santiago and other parts. In the States of the Argentine Republic goitre has a fairly wide distribution.

In the United States, cretinism is rare, but as said before there are always a large number of persons suffering from exophthalmic goitre. In Canada there is a certain amount of goitre in its different forms, although, of course, the number of cases of exophthalmic goitre preponderate. Among the French Canadians there is some cretinism and a good deal of goitre. Adami speaks of French Can-

adian villages in which scarcely a family is to be found that has not one or more goitrous members, while Munson has shown that the Indians of North America are by no means exempt. There are many different foci in Africa, and the only parts of the world where thyroid diseases seem to be unknown are in Australasia and the Pacific Islands. Although the sea shore is considered almost wholly exempt, Duncan, in 1905, reported as many as twenty per 1,000 cases in the municipality of Macabebe, near Manila Bay, only a few feet above the level of the sea.

As a matter of fact, goitre occurs as an endemic, epidemic, or sporadic disease almost everywhere. Tropical regions appear to be comparatively free from the malady, and thyroid diseases seem to flourish most luxuriantly in temperate and subtropical lands, especially in mountainous and hilly regions where the inhabitants are poor and live under unhygienic conditions.

Into the physiology of the entire system of the ductless glands, there is no space here to enter at length. Indeed the exact physiology of this system is unknown. It is known, however, that there is a correlation of the internal secretions of the adrenals, pituitary, thymus, etc. We believe each of the glands contains a hormone or hormones, a chemical stimulus or stimuli to the performance of the gland's appointed functions, secreted to counterbalance the activity of some of the other ductless glands. Waller, commenting on the stress that has been laid upon the antagonism of the internal secretions by various authors, is inclined to believe that a truer insight would be gained into their working, if rather their harmony were dwelt on. It appears to him a more ideal conception by far, that all the internal secretions should work together for the common good of the organism, and that when some special demand is made upon a particular gland, the others will work in accordance with it, and so far as possible assist it. Waller also alludes to a point which has been emphasized by Sir James Barr, namely, the widespread influence of the various ductless glands upon calcium metabolism, and considers this an excellent illustration of the fact that when we regard the influence of some particular internal secretion upon the economy of the whole, we shall only cause confusion if we neglect the influence of the other internal secretions. In short, we must beware of the view that man consists of two parts, the chief of which is the thyroid gland, or the pituitary gland, or the gland in which our own particular interest may lie. There is little doubt that there is a distinct correlation in the working of the ductless glands, a community of interest which is for the good of the entire organism. If a ductless gland fails to do its allotted task, the other ductless glands slacken in the carrying out of their duties, and the organism as a whole suffers in consequence.

H. H. Dale (2), in referring to the effects of thyroid deficiency, has this to say. In both young and older animals, thyroid removal produces a marked depression of metabolism with a retardation of vital functions in general. The most noteworthy effect is on protein metabolism, nitrogenous excretion being greatly reduced and the need for protein food correspondingly diminished. Horsley has traced a

connection between thyroid deficiency and senile decay. Fat metabolism suffers a like reduction; the tendency to obesity being a familiar result of thyroid deficiency. On the other hand, the capacity for using carbohydrates seems to be increased, for the thyroidless animals are said to tolerate unusually large quantities of dextrose without showing glycosuria. The effects of thyroid excess, with which this paper is more especially concerned, are, of course, directly contrary to those resulting from thyroid deficiency.

These effects may be best studied in cases of Graves's disease by observing the result of excessive administration of thyroid substance; for it is a point of great significance in thyroid physiology that defect of thyroid secretion can be replaced by injecting extracts of the gland or by administering its substance orally. The extreme nervous excitability, sleeplessness, tachycardia, reactive vasomotor system, and accelerated protein metabolism seem to present in Graves's disease a very complete contrast with the results of thyroid deficiency. The most constant effect of the administration of thyroid extract is accelerated metabolism, causing a marked increase of the nitrogenous output, and if treatment is not continued, rapid emaciation will often follow. It may be noted that wasting results, from both thyroid deficiency and thyroid excess, but apparently for opposite reasons. In the former case, digestion and absorption are at fault; in the latter case, the metabolic breakdown is unduly rapid. The mode of action of the thyroid gland is the production of a secretion necessary for the normal function of other tissues. The possibility of replacing an absent or defective thyroid by administering extracts or the substance of thyroid gland is conclusive in favor of an internal secretion. It has been suggested by Blum that albuminoid substances with toxic action are absorbed from the alimentary canal, and that they are rendered nontoxic in the thyroid by iodization.

More space has been given to the physiology of thyroid disease than was intended, but the subject is so interesting and many features are so obscure, that any attempt to elucidate it should be afforded as much publicity as possible, for it must be remembered that successful treatment rests on a good understanding of the underlying causes of disease.

As for the etiology of thyroid disease, it is naturally premised that cretinism and myxedema are due to hypothyroidism and that exophthalmic goitre is due to hyperthyroidism. With respect to exophthalmic goitre, Hertoghe (3) says that this form is almost universally acknowledged to be due to excess of function of the thyroid gland. Barr (4) says the same thing, while Balfour (5) is somewhat more guarded in his expression of opinion. He says that although there is nothing yet to prove positively that exophthalmic goitre is directly due to abnormal thyroid function, all evidence goes to show that true exophthalmic goitre is always associated with changes in the thyroid, and if these changes are not present, the disease is not exophthalmic goitre. McCarrison, whose work on the subject of this disease has been peculiarly extensive and painstaking, is of the opinion that the real etiological factor of exophthalmic goitre is infection from the

gastrointestinal tract, and that there is a specific toxic agent in the production of this type of goitre, although he has not as yet been able to discover it. This observation is of interest in connection with the well known ideas expressed by Thompson, the experiments of Holsted, the recent work of Gaylord, and is confirmed in part by unpublished experiments of Hertoghe. McCarrison, however, has been able to cause goitre to disappear entirely by the use of vaccine prepared from the normal organisms inhabiting the bowel. Dock (7) thinks that considering facts, the cause of goitre must exist in the soil, air, or water, and this view is held and has been held by those who have studied the question almost from the time when the disease was first recognized. For Smith Barton, to whose writings reference has been made, said that in 1800 certain water was regarded as the cause of goitre and that where there was limestone there was goitre, was a common belief in those days.

Working in the valleys of Gilgit and Chitral in the Himalayan district, where the main valleys are narrow, through which rivers flow and are bounded on either side by mountains ranging from 10,000 to 15,000 feet in height, McCarrison found that of thirty-six persons who consumed untreated suspended matter of a goitre producing water, twenty-one showed no change in the thyroid gland which could be detected clinically, ten developed a notable enlargement, while five showed a transitory swelling of the organ; of the thirty-one persons who consumed similar suspended matter which had previously been boiled, none showed any reaction in the direction of increase in the size of the thyroid. From these experiments he inferred that goitre produced in this way must almost certainly be due to the living component of the suspended matter. With these conclusions the results of Bircher (8), who produced goitre in rats by administering to them the water of goitre producing springs, is in agreement, and this worker supports the view that there is present in suspension in such waters a living agent which is the direct or indirect cause of the disease. Moreover, the beneficial effects on goitre of intestinal antiseptic treatment is becoming known. It is instructive to note that among many physical and mental ills which we lay at the door of "chronic intestinal stasis" we include parenchymatous goitre. Chapple and Rowell (12) stated that they have observed in their experience, instances in which a goitre has diminished considerably in size as the result of ileosigmoidostomy. Of course, McCarrison's theory is only a theory, and it has been adversely criticized from many sources, but great credit is due to him as a brilliant and patient investigator. What then seems to be known fairly conclusively as to the causation of goitre, is that cretinism and myxedema and some slighter manifestations are due to a deficiency in the secretions of the thyroid gland, and that exophthalmic goitre is due to hyperthyroidism or perverted secretion of that gland. Exactly why these untoward events occur is not known. Williams (13) dissents from the view that exophthalmic goitre is a pure hyperthyroidism. He says that close investigation will reveal the existence of some symptom or symptoms which proclaim the presence of thyroid insufficiency side by side with those of the obvious thyroid

excess. The question as to whether heredity exercises any influence leading to an abnormal action of the thyroid gland, is a moot point. Hertoghe says that heredity plays a considerable part in the etiology of thyroid insufficiency. Levi (14) believes that heredity counts for much in the causation of goitre. McCarrison is of the opinion that a family predisposition or hereditary tendency exists, although this may be explained as a result of increased liability to infection. Thompson (15) deems that family history is a factor of no importance in the causation of goitre. Helen M. Gurney (16) gives an account of ninety-three cases of exophthalmic goitre investigated in the Royal Victoria Hospital, Newcastle-on-Tyne, England, between the years 1903 and 1914; she found that there was a history of heredity in 10.7 per cent. of the cases. Near relatives of the patients had suffered from simple goitre in three per cent., from exophthalmic goitre in seven per cent. Ochsner and Thompson state that the fact is well known that in innumerable cases one or both parents and a number of the children have suffered from goitre. So far as the influence of heredity on the causation of the disease is concerned, it may be said that heredity does count in this direction to some slight extent.

Occupation is a question of some concern in the causation of goitre, and persons who live in more or less close contact with the soil are much more likely to contract the disease than those who work and live in cities.

Beebe and many other observers have concluded that infection with the germs of disease, even mild infections such as tonsillitis, plays a role not to be disregarded in the causation and development of exophthalmic goitre. It is instructive to refer to the prominence which has been given recently to the tonsil as a portal of infection. Poynton and Paine have shown to their own satisfaction, and their views are rapidly gaining ground, that rheumatic affections, so called, are caused by a diplococcus which infects the tonsil, and thence, if a predisposition exists, the infection spreads throughout or to other parts of the human organism. To shock has been attributed the onset of exophthalmic goitre. But in any event, of course, this is only an exciting cause, and shock merely arouses to excessive activity a gland already in an abnormal state. C. Mayo, in a paper read before the Clinical Congress of Surgeons of North America, held in London, in 1914, referring to this phase of the subject, said that when shock was ascribed as the cause of the sudden onset of hyperthyroidism, it was often only an evidence that the equilibrium of the nervous system had been upset in the presence of a latent hyperplastic thyroid, thus producing the sudden symptoms which had previously been controlled or neutralized.

#### INFLUENCE OF SEX.

Sex is undoubtedly one of the most powerful factors, if not the most potent influence in the causation of this disease. That there is a more or less intimate relationship between the female generative organs and the thyroid gland appears to have been proved beyond the shadow of a doubt. Gaskell has suggested that the thyroid glands may have been the uterine glands of our paleoccosmic ancestor, and that this may explain the relationship which has



been known from time immemorial to exist between the sexual organs and the thyroid in man and other animals. We know that the ovary should be classed as a ductless gland and that in pathological conditions of the thyroid and pituitary glands there are marked menstrual derangements, chiefly those associated with amenorrhea. Further, the thyroid and parathyroid are closely associated with the ovary in the metabolism of the inorganic salts, while thyroid derangements occur much more frequently among women than in men. That there is a close relationship between the female generative organs and the thyroid gland may now be accepted as a fact.

Judging from a study of the etiological factors concerned in the production of goitre, it seems certain that these vary much in their mode of action. Some, such as the influence of sex, are mainly predisposing—others, such as shock, worry, emotional excitement, may act in arousing or exciting a latent disease. Again, infection may play a role of considerable importance in bringing on the disease. It appears most plausible that the causes are many and various. Nervous stimulus of the thyroid gland may be the exciting cause; sometimes the stimulus is of a toxic nature, or infection or metabolic substances may be the causes at fault. Also, if we include all reflex or chemical irritation of other glands, possibly in women the sexual in particular, and the effects of excretory poisons, there seems to be little or no difficulty in explaining, from the standpoint of theory at any rate, the various types of the disease.

Regarding the relative frequency of exophthalmic goitre in the two sexes, while there may be somewhat wide divergences of opinion among authorities, the view is unanimous, as already stated, that the condition is very considerably more prevalent among females than among males and is especially liable to occur during the active menstrual period, although we have seen very severe cases after the menopause. Some hold that although goitre is more common in females than in males, the proportion of the two sexes affected is variable and differs widely in different endemic centres. The variability of the sex incidence depends largely on the degree of intensity of the endemic, the proportion of men and women affected being markedly less in villages in which the endemicity is low. McCarrison found a village in which the only sufferers were women, and St. Lager comments on this limitation of the disease to women in regions of low endemicity. According to this investigator, in France, in 1873, the approximate proportion of men to women affected was two to five, a figure which he thinks represents with a fair degree of accuracy the proportion for the western Himalayas at the present day. Thompson, in a clinical history of eighty-one cases of Graves's disease, found nine males and seventy-one females, a ratio of one to eight. Helen M. Gurney found of ninety-three cases that ninety-two per cent. were females. Miles Porter (18) says that women are five times more prone to the disease than men. Hector Mackenzie, in *Albutt's System of Medicine*, says that Graves's disease affects females much more frequently than males. This is the case in childhood as well as in later life, a contrast to cretinism which affects nearly as many males as females.

Charcot said that the disease was only a little less frequent in men than in women. Eulenberg has placed the proportion of female to male cases at two to one. Professor G. Murray, of Manchester, England, in 180 cases found ten males. Williams puts the proportion of female to male cases at thirteen to one. Balfour states that the exophthalmic goitre occurs more frequently by far in females than in males. In the Mayo clinic, of 2,928 patients with exophthalmic goitre, eighty-five per cent. were females. H. A. Hare (19) has this to say on the subject of the relative incidence of Graves's disease in males and females. In the *Twentieth Century Practice of Medicine*, 4, Murray states that out of 400 cases of this disease seen by himself and others, forty-three were males and 357 females, a proportion of one to 8.3. Tyson, in his *Practice of Medicine*, states that he cannot remember having seen the disease more than once in the male. Of the seven selected cases occurring in Hare's hospital practice, three were males. In thirty cases collected by L. F. Bryson there were eight males and twenty-two females. Out of 100 cases seen by Ord and Mackenzie, there were five males. In Putnam's series there were thirty-two cases, of which twenty-three were women and nine men. In other words, out of 1,839 cases there were 286 males and 1,553 females, a proportion of about one to six. Trouseau places the proportion of females to males at fifty to eight. Strumpell makes no statement of figures, merely saying that the disease is plainly one of the female sex. Buschan gathered 950 cases, of which 805 were females and 175 males, a proportion of nine to one. It is and has been for a long time clearly obvious that exophthalmic goitre is much more common among females than among males, so much more common, in fact, that it may seem superfluous even to discuss the point. Yet, after all, there is a very considerable variance of views among authorities with respect to its relative frequency in the sexes. The preponderance of opinion everywhere favors the view that exophthalmic goitre affects females more frequently by far than males. In this country there appears to be no doubt on the subject, and perhaps the ratio might be placed at eight or nine females to one male without in the least overstepping the mark.

The age incidence of goitre is another phase that is deserving of earnest consideration. McCarrison thinks that endemic goitre is considerably more frequent among children than is generally supposed. In one village of the district in the Himalayas in which he was pursuing his researches, he found eighteen goitrous children. The children were from different houses scattered over the village. They were all under the age of ten years, and none showed any sign of cretinism, myxedema, or nervous disorders. There were in the village twenty-three cases of goitre, of which five were imported cases and eighteen had developed in the village itself; of these eighteen cases all were in young people, seventeen being in children under sixteen years of age. The youngest case was that of a child two years of age. All these eighteen cases came from a part of the village supplied by a spring, at the head of which a priest and his goitrous relatives lived. Two years later, McCarrison made a further examination of the people of the village. Among two thirds of

the male and child population he found twenty-three cases. Of these, ten were old cases, while thirteen were new. Of these thirteen cases eleven were in children. The second examination confirmed the finding of the first with respect to the much greater incidence of the disease in children than in adults.

In an analysis of 227 cases of exophthalmic goitre, Eshner said in a discussion before the section in general medicine of the College of Physicians of Philadelphia, February 14, 1898, that he had found that 185 cases occurred in females and forty-two in males, a proportion of 4.4 to one. Of the former the oldest patient was sixty-eight, the youngest nine years old. Of the males the oldest was sixty-six, the youngest sixteen years. The average age of all the cases was between thirty and thirty-one years. Eshner concluded that the disease is most common during the period of active adult life, occurring earlier in females than in males. Mackenzie says that while the disease may occur at any age, it does so chiefly between puberty and the menopause. Children are comparatively seldom attacked, and Mackenzie has not observed a case in a patient under twelve years of age. But he allows that the disease has been recorded in children as young as two and a half years. Out of 495 patients whose ages have been recorded, fifteen only were ten years of age and thirty-one only were over fifty years of age. From a study of statistics relating to the occurrence of goitre in children, it seems that the disease is rare in early life.

As to the incidence of goitre at the age of puberty, it may be noted that it very commonly arises in both sexes at that period. The reason for this incidence is to be found in the fact that at that time the gland is largely concerned with the functional development of the generative system, an explanation of the greater susceptibility of young people to goitre. The thyroid gland at puberty is called upon to exercise to the fullest degree its functional activity, as it is during the state of pregnancy. The added strain of goitrous influence may tax the gland's resources to a degree which will necessitate hypertrophy during these states. All agree that puberty influences the thyroid gland, but this occurs much more commonly in girls at that time than in boys. As pointed out before, the relationship between the ovaries and the thyroid gland is close, and girls at puberty are naturally subjected to a great deal more functional strain than boys. Abrahams (20) believes that the foundation of trouble in connection with the thyroid gland is laid in the turbulent days of budding womanhood, the period of puberty. The disturbance of the nervous system before and during menstruation manifests itself in many ways. These are apparently physiological, but their frequent repetition concurrently with added work, worry, or disappointment increase and aggravate the normal manifestations, and the nervousness may become pathological. There is in many cases a decided interrelationship between a persistent hyperemic condition of the thyroid at puberty and the development of exophthalmic goitre later in life. Many observers have discussed the effects of the stress put upon the thyroid gland of girls at the age of puberty, and it seems to be generally held that when in addition, a girl just reaching maturity is compelled by circumstance to work

under unfavorable conditions, and is subjected to worry or cerebral excitement of any description, functional disorders of the gland are apt to ensue, which if not treated rationally and in time, may develop into goitre or lay the foundation for goitre in the future. This is a feature of the age of puberty in girls, to which sufficient attention has not been paid and it should be strongly emphasized.

The thyroid gland, as a rule being much more active in the female than in the male, plays a very considerable part in the characteristics of the two sexes. The female is sharper witted, more voluble, and less stable. A woman often jumps to a conclusion without any process of reasoning, but simply by intuition gets there and sticks there, and no line of reasoning will convince her that she is not right. Thyroid metabolism has much to do with this process; women of the more reasoning type have their suprarenals perhaps more developed than their thyroids, and present other masculine characteristics. The age of the appearance of goitre varies from early childhood to fifty years. It is more common at the age of puberty than it is perhaps believed to be, and especially among girls. The most frequent period of its occurrence is between the ages of twenty and thirty, less common between the ages of thirty and forty, and decreases *pari passu* with increasing age.

#### TREATMENT

The treatment of exophthalmic goitre has been the source of much argument. The surgeon contends that in the majority of cases operative measures are the only certain means by which the disease can be controlled or cured. Some surgeons take a more moderate view. For instance, C. Mayo has stated that while an exophthalmic goitre was amenable to surgical treatment by the removal of a large part of the hypersecreting gland, this procedure should be considered emergency surgery. During exacerbations all cases should be considered medical; surgery is indicated during the upward wave of improvement. Medical measures then may be considered as of quite equal importance in the treatment of hyperthyroidism with surgical means. In the first instance, it may be stated with emphasis that in the disorders of the thyroid gland associated with the age of puberty in girls, steps can be taken, and should be taken whenever possible, to allay the mental and physical conditions which accompany this period. If rest is prescribed and every effort made to keep the mind in a state of calm, the symptoms will almost invariably pass away and health be fully restored. If, on the other hand, either through the force of circumstances or through neglect, no notice is taken of the red flag of danger, the functional symptoms may develop into true disease. When thyroid function is impaired in girls, the ovaries develop late. Menstruation is late and sometimes assumes the form of menorrhagia. The uterus is small and infantile. The higher the degree of thyroid inadequacy, the greater is the menstrual loss. When menorrhagia is due to thyroid inadequacy, the best hemostatic is undoubtedly thyroid extract.

The chief point in the treatment of thyroid abnormalities, whatever may be the cause, is first to diagnose accurately and then to employ such means

ities as appear to be indicated from a scientific study of the condition. Diagnosis is in many cases by no means easy. Cases of Graves's disease are very often lacking in the very eye symptoms which gave it the name by which it is usually known in this country. Although in well defined cases the eye symptoms are obvious, yet in a large number of instances, and in girls at the age of puberty in particular, many typical symptoms cannot be observed. A girl from twelve to sixteen years old, suffering from thyrotoxicosis (or perhaps the condition might be characterized, without too great stretch of the imagination, as incipient exophthalmic goitre), which if not treated rationally may develop into the disease, although in a somewhat different form, is as a rule, highly nervous, the thyroid is enlarged, and while the cardiovascular and exophthalmic symptoms are absent, she is in such a state of health that if proper measures are not taken bad results will follow. As Bimsted says, "the condition is a pseudohyperthyroidism, a simulation of the true disease, and although possibly transitory, should not be ignored and should be given careful attention and treatment." In this paper emphasis has been laid intentionally upon the influence exerted by puberty in girls upon the thyroid gland, for the reason that this feature has been generally overlooked and in order to call notice to its significance and importance. Again, many cases of true exophthalmic goitre do not present the classical symptoms, and in such cases the heart should be examined carefully, for cardiovascular disturbances occur early, and a subject suffering from exophthalmic goitre is never free from such disturbances.

With regard to Beebe's serum treatment for hyperthyroidism, it was exhaustively discussed in a paper published in the *Journal A. M. A.* for January 30, 1915, and it will therefore suffice to recapitulate some of the main points. The paper referred to proceeded on the supposition, or rather the conclusion, that the symptoms of the disease all point to a thyroid origin, and therapeutic measures were designed on a serum basis in accordance with this conclusion. Well authenticated observations appear to verify in a fully satisfactory manner such a conclusion. These observations may be summarized as follows: 1. The gland is enlarged. It has a much increased blood supply and histologically shows marked evidence of an increase in the total amount of secreting epithelium. 2. The symptoms of the disease, such as loss of weight, increased heart action, weakness, increased oxygen absorption, etc., can be imitated by giving to normal persons large amounts of thyroid preparations. 3. Removal of the gland or a diminution of its blood supply by surgical means, relieves the condition, while many observations show that these patients are in most cases more than usually sensitive to thyroid administration.

The gland, therefore, is overactive. The function of the gland is not subserved within itself. The secretion prepared in the gland must reach distant organs and tissues. If the gland is overactive, and an additional amount of the active secretion, which is chemically an iodized protein, reaches through the medium of the blood supply the tissues which it stimulates to unusual activity, we have the complete complex of symptoms recognized as ex-

ophthalmic goitre. The blood in exophthalmic goitre, therefore, must contain an unusually large quantity of the active secretion prepared in the thyroid gland. When this secretion is present in the blood within normal limits, the physiological activity alone is served. When, on the other hand, excessive quantities are present, pathological conditions are produced.

The purpose of the treatment is to prepare in an alien species of animals a serum having special properties antagonistic to the human thyroid secretion. The injection of this serum into a patient having exophthalmic goitre provides a ready made antagonist to a complete toxic substance circulating in his blood. Experiments carefully carried out have proved decisively that the principles of treatment inherent in it are correct, and experiments pointing in the direction of evidence that the serum is specific have likewise been in a high degree convincing. From a theoretical point of view, the supposition appears reasonable that the serum is largely antitoxic and not cytolytic. The serum can be used in many cases in lieu of surgical treatment, and can also be employed with good effect before and after operation. As a medical treatment it is effective, and in addition it is a valuable adjuvant to operative measures. Clinical results, after all, supply the supreme test of treatment, and regarded from this aspect this serum treatment has thoroughly justified its use. The fact will be better appreciated when it is stated that fifty per cent. of patients out of more than 3,000 treated have been cured in the sense that they are strong and able to meet all the demands made upon them. Into the composition of the serum there is no space nor need to enter; it has now been before the profession sufficiently long for its members to know all concerning it and to judge it on its merits.

#### BIBLIOGRAPHY.

1. WALLER: *American Medicine*, April, 1914.
2. DALE: *Practitioner*, January, 1915.
3. HERTOGHE: *Ibid.*
4. BARR: *American Medicine*, April, 1914.
5. BALFOUR: *Collected Papers of Mayo Clinic*, 1914.
6. McCarrison: *Milroy Lectures*, 1913.
7. DOCK: *Oster and McCrae's Modern Medicine*.
8. BIRCHER: Quoted by McCarrison in *Milroy Lectures*.
9. LANGMEAD: *American Medicine*, April, 1914.
10. ARBUTHNOT LANE: *Proc. Roy. Soc. Med.*, 9, supplement, p. 195.
11. CHAPPEL: *Clin. Jour.*, 38, p. 102, 1911.
12. ROWELL: *Proc. Roy. Soc. Med.*, 6, supplement, p. 195.
13. WILLIAMS: *Practitioner*, Jan., 1915.
14. LEVI: *Ibid.*
15. THOMPSON: *Amer. Jour. of Med. Sci.*, Dec., 1907.
16. FURNEY: *British Med. Jour.*, May 29, 1915.
17. *American Medicine*, April, 1914.
18. PORTER: *Amer. Jour. of Obst.*, Nov., 1911.
19. HARE: *International Med. Mag.*, March, 1898.
20. ABRAHAMS: *Medical Record*, March, 1917.
21. RUMSTED: *Ibid.*, March 20, 1915.

25 EAST SIXTIETH STREET.

### PHARYNGEAL STENOSIS.

By H. HALLARMAN, M. D.,  
New York.

CASE. Child, female, aged seven weeks, very poorly nourished, and not developed, weight, six and one half pounds; preferred to lie in the opisthotonos position. Nothing abnormal in the head. A sharp conical projection was felt on the posterior wall of the pharynx, corresponding to the fifth or sixth cervical vertebra, about one quarter to three eighths of an inch above the epiglottis. The projection was sharp, pointed forward, and occupied about one third of the pharyngeal space. It felt hard and bony without fluctuation. Tonsils negative.

Chest: Anatomical bony prominences very easily made out, owing to marked emaciation. Inspiration: The child would make six or seven efforts to inspire without success. During these efforts the auxiliary muscles of respiration worked to the maximum, suprasternal notch would be drawn in about one and one half inch, the epigastric



notch and all the interspaces the same. The mouth would open squarely, the lower jaw drawn forward and upward. All these efforts were accompanied by a sharp click, situated somewhere in the throat. At last the child would take a deep sighing inspiration, followed by a prolonged and slightly noisy expiration. It would then breathe quietly, but rapidly for a few minutes, and then repeat the cycle. There was very slight cyanosis during the spasms. During the unsuccessful efforts at inspiration, no air would enter the lungs.

**Abdomen:** Extreme emaciation and thinning out of the skin over the abdomen was such that I could almost see the intestines. The rest of the physical examination was negative, except for the striking emaciation; the skin hanging loose and giving the appearance of an old woman.

**Family history:** Father and mother alive and well. One brother two years of age, in good health. No history of tuberculosis, gout, asthma, or any chronic disease in the family.

**Personal history:** When born, the cord was prolapsed and, because of impossibility of replacing it, a manual dilatation was done and medium forceps applied. The child did not breathe for about half an hour. The heart was beating, and, after application of hot and cold water and hypodermic injection of strychnine and atropine it started to breathe. Weight of child on delivery five and one half pounds. For the first two or three days, the breathing was rather shallow and irregular, but it improved later on, and in the second week became almost normal. The child did not gain in weight, in spite of the fact that the mother gave it a bottle in addition to the breast. On the third or fourth week, the mother noticed that the child was not breathing properly. She tried a few remedies, but the child grew progressively worse.

I saw the child first on January 16, 1915.

Having in mind the instrumental delivery, I thought of a possibility of dislocation of the cervical vertebra with fracture, especially the findings in the throat and the late breathing at birth. But there was no paralysis. The head was in extreme extension, markedly drawn back, giving the arched opisthotonos position to the child, but it was not fixed in that position; the child would assume it when left alone. It seemed to breathe more easily in that position.

The child was then taken to the Har Moriah Hospital, where many suggestions as to diagnosis were made. Thorough examination of pharynx and larynx revealed nothing. The projection in the throat was not thought to be abnormal. Blood and urine were negative; pulse and temperature normal. The diagnosis of enlarged thymus was made. The x ray (three plates) showed that the fifth cervical vertebra had a marked projection forward, but no sign of dislocation or fracture. A very faint shadow was seen in the region of the thymus gland.

Owing to the urgency of the attending pediatrician, a thymectomy was performed under anesthesia on February 6, 1915. After washing the part with green soap and water and alcohol and an injection of novocaine, an incision of one and a half inch was made in the median line of the neck from the suprasternal notch upward. The thymus and its capsule were exposed by blunt dissection. It was very easily handled, as each time the child breathed it was brought into view very plainly. The capsule of the left lobe was opened and the gland, omentumlike in appearance, came out. It was completely removed by shelling out from the capsule. It weighed thirty grains. The right lobe was only partially removed (fifteen grains). The wound was then closed by several buried sutures, the skin by interrupted silk sutures.

For the first week after the operation the result

was excellent, the breathing was normal, the position of the child when left alone normal; there was no spasmodic breathing, and it started to gain weight. A wet nurse was obtained in addition to the mother. On the second week, however, the baby showed signs of returning to the previous condition, although not so bad. Unsuccessful inspiration efforts were only one or two at a time. The general condition of the child was also slightly improving. It took nourishment better than before.

Microscopical examination of the gland showed it to be of normal histological structure. About a week later the baby left the hospital, improved. At the beginning of April, the mother showed a sore on the right breast which looked very much like syphilis, but two Wassermann examinations were negative, and the sore healed up in about two weeks. I had occasion to see the child three times a week. As far as the respirations were concerned, there was slight improvement. The general condition was very bad. On June 1, 1915, it weighed seven pounds and two ounces. It would still assume an arched position when left alone, and was extremely marasmic. There was no retraction of the suprasternal notch.

About this time the child was seen by Doctor Northrup, who made the diagnosis of pharyngeal stenosis. The child was put on the following diet: Milk, eleven ounces; malt extract, three ounces; flour, three ounces; water, twenty-two ounces; at each feeding six ounces, six bottles a day. From July 1st to July 15th it gained fourteen ounces. The respiration also improved a good deal. The child behaved almost normally when left alone. On July 30th, the child acquired lobar pneumonia and died.

I thought the case interesting enough from a diagnostic standpoint to report.

310 EAST NINTH STREET.

## DECAYED TEETH AND CANCER.

By ALONZO MILTON NODINE, D. D. S.,

New York,

Oral Surgeon and Dental Consultant, French Hospital, Assistant Dental Radiologist, New York Throat, Nose, and Ear Hospital.

One woman out of seven and one man out of eleven, after the age of thirty-five years die of cancer in England. Cancer is sixth in the list of diseases that cause death in the United States; there has been an average of 73,800 deaths from cancer for the last ten years. In New York State, in 1913, 9,528 deaths were caused by cancer. Cancer caused over nine times as many deaths as typhoid fever. In 1891, cancer caused 3,000 deaths. In twenty years the death rate has increased 166.66 per cent. If this rate continues for another twenty years, the death rate from cancer will be more than from consumption.

Different estimates indicate that from nine to 26.3 per cent. of all cancers are found on the tongue. Still others declare that one seventh to two fifths of all cancers are found in the mouth, tongue, lips, or jaws. Most of these cancers are on exposed surfaces where they should be discovered early, operated upon, and cured. Equally significant is the estimate that one third to one half

of all cancers are found in the stomach and duodenum.

Whatever may be the underlying, undiscovered cause of cancer, there seems to be no question that the exciting cause is irritation. This irritation may be caused by chemicals, burns, injuries, or inflammatory diseased conditions. Dynamite is harmless until irritated; and whatever causes cancer is harmless until irritated. The two regions of the body most subjected to chronic irritation are the mouth and the stomach.

Cancer is one of the diseases for which modern civilization is held responsible. Furthermore tooth decay is the most widespread and prevalent disease for which modern civilization is responsible. Eighty to ninety-eight per cent. of the school children of the United States have decayed teeth, and there is little doubt that the same rate prevails with the adult population. Decayed teeth are due, to a very great extent, to our modern demineralized, devitaminized diet, as well as to haste in eating, nervous tension, lack of exercise, methods of cooking, and all that goes with our manner of living.

The particular irritation that is frequently found to cause cancer in the mouth is the sharp edge of a decayed, worn, misplaced, or tartar covered tooth. The constant rubbing of the tongue, cheek, or lips over such a tooth produces an abrasion, an abrasion develops into a sore, and from a sore it may pass on through various stages to cancer. The irritation produced by the sharp edge of a broken or poorly fitting plate, bridge, crown, or filling has caused cancer of the mouth.

Cancerous growths may also spring from the irritated and injured gum surrounding decayed and broken down teeth. Polyps grow from irritated tooth pulps. Bony growths result from chronic inflammation of the covering of tooth roots. Injury to the bony support of teeth by extraction has resulted in the development of cancerous growths in these locations.

The chronic irritation of an abscessed tooth, the irritation of decayed roots, impacted teeth and unerupted teeth, lower the resistance of the surrounding tissue and invite the development of cancer. Diseased and uncleansed teeth and gums are sufficiently irritating to produce inflammation and ulceration of any part of the mouth. It is not unreasonable to believe that conditions such as these produce cancer of the mouth.

That there are other causes which produce cancer of the mouth and jaws is unquestioned, but it must not be lost sight of that in such conditions as have been described lie the possibilities of cancer. In fact, there are records of a great number of cases which show that cancer has developed from such conditions. There is the classical example of General Grant.

In New York State, in 1913, 291 deaths occurred from cancer of the mouth, and in January, 1914, thirty deaths! Mayo, Moynihan, and other surgeons and stomach specialists estimate that forty-five to ninety per cent., perhaps all cases of cancer of the stomach, originate at the site of an ulcer of the stomach or duodenum.

Among the most frequent causes of ulcer of the stomach are unmasticated food, too much food, and the constant swallowing of the contents of a dis-

eased and unclean mouth. Food is not chewed or bolted either from habit or haste, or because decayed, diseased, deformed, or deficient teeth make proper chewing difficult, if not impossible.

Large quantities of unchewed food, and the microorganisms and toxins from diseased, decayed teeth and gums injure the lining of the stomach either by impaction or stagnation, or else change or disorganize the production of the digestive secretions. The coating of the stomach also becomes infected during these resting periods between meals, when the hydrochloric acid is not poured into the stomach. The function of the hydrochloric acid is to neutralize, retard, and destroy the dangerous microorganisms and their toxins taken in with food.

The abnormal decomposition of food in the stomach due to the interference with production of the proper amount of hydrochloric acid, results in the manufacture from food of other acids, such as lactic, acetic, and butyric. These make the stomach excessively acid. This highly acid condition is sufficiently irritating to injure the coating of the stomach and cause gastric ulcer. A large amount of food, or hard unchewed food entering such a stomach, the churning movements further increase the irritation already begun by the abnormal acids.

Rosenow has experimentally proved that one particular microorganism found in unhealthy mouths is capable, when carried by the blood, of lodging in the wall of the stomach and producing gastric ulcer.

The employment of the x ray by the dentist assists in the discovery of cancerous and precancerous conditions. This diagnostic agent should be more frequently employed by physicians and dentists in all cases of suspicious swellings and enlargements.

A great amount of evidence shows that one of the most certain measures to prevent cancer, either in the mouth or stomach, is sound, clean teeth. Lost teeth should be replaced with artificial substitutes so that food may be properly chewed. In addition, dental defects should be corrected, decayed teeth should be treated and filled, and all unreclaimable teeth or roots removed; and all artificial fixtures, such as bridgework or plates should be made smooth, sanitary, and unirritating. Diseased gums should be treated to prevent the oozing into the mouth of pus and poisonous toxins that are found in such foul conditions. Tartar should be removed from the teeth frequently and thoroughly, and the teeth cleansed and polished by a dentist or dental nurse. Finally, teeth should be brushed carefully and thoroughly with a good tooth paste, powder or lime water, or lemon juice and water, after eating and upon going to bed.

8 WEST FORTIETH STREET.

### Therapeutic Notes.

**Treatment of Sciatica.**—A writer in the *West London Medical Journal* for October, 1915, recommends highly the institution of continuous extension of the painful limb as a remedial measure in obstinate cases of sciatica. The treatment is carried out by attaching long strips of adhesive plaster from the upper part of the thigh, internally and externally, to the malleoli, fixing them further by means of spiral strips encircling the thigh and leg,

and providing a stirrup with a cord leading over a pulley attached to the bed to a weight, generally a sandbag. At first the weight should be about eight or nine pounds, and this later gradually augmented to about double the amount. The effects of the treatment consist in a slight increase in the pain for the first two days, followed by rapid subsidence and relief. The limb should be kept in extension for about three weeks. After this the patient should, if possible, have a course of massage and radiant heat treatment. The absolute rest of the part and the stretching of any delicate adhesions that may previously have formed are held to account for the benefit which the extension treatment yields.

**Silver Nitrate for the Relief of Tinnitus aurium.**—W. C. Braislín, in the *Transactions of the American Otological Society* for 1914, states that swelling and congestion of the mucous membrane of the Eustachian tube, with the frequently accompanying tinnitus, is more quickly relieved when, in addition to the other measures employed, local applications of silver nitrate solution are made. For this purpose he uses an applicator consisting of two thin strands of silver wire twisted firmly into one. A small bit of cotton is wound around one end of the wire, the latter being rolled toward the right, as in driving a screw. The wire is also rolled in this direction when it is necessary to facilitate its passage over folds or ridges in the Eustachian tube. In cases of pronounced swelling at the mouth of the tube a relatively large pledget of cotton is used for application at this point only; later, deeper applications with a cotton pledget rarely more than double the diameter of the wire are made. Cotton fibres projecting beyond the end of the wire are trimmed off smoothly to prevent their doubling within the tube. A test is then made to see that the cotton cannot be pulled off the wire, the tube is inflated with the catheter in the usual way, the wire dipped in the silver nitrate solution, and finally, its introduction through the catheter is effected. The cotton pledget must have been firmly moulded on the wire, and is then removed quite easily, after the application, by holding it in an alcohol flame. Bends and angles in the wire are readily removed by passing it, at slight tension, slowly through the flame; when it shows signs of becoming brittle, the wire should be discarded.

The silver nitrate solution employed by Braislín was usually of four per cent. strength:

R Argenti nitratis, ..... gr. xx (1.3 gram);  
Aque sterilisata, ..... 3i (30 c.c.)  
M. Fiat solutio.

Where the application was not to be repeated for a week or longer an eighty grain (5 gram) to the ounce (thirty c. c.) solution was sometimes used.

**Simultaneous Typhoid and Smallpox Vaccination.**—Chantemesse, in *Bulletin de l'Académie de médecine* for July 20, 1915, states that in the last year the majority of a series of 3,772 persons have been simultaneously vaccinated, under his supervision, against typhoid fever and smallpox. The age of the subjects ranged from two to fifty-five years. Not the least untoward result was noted in

any case, no instance of abscess, sepsis, or syncope being recorded. One vaccine was injected into one arm and the other into the other. The safety of the procedure depends upon the fact that the mild febrile reaction which in occasional instances follows antityphoid vaccination, appears three to five hours after the injection and disappears long before the pustules of antivariolar vaccination appear (on the fourth day).

The use of an antityphoid vaccine which has been sterilized by heat is advocated, since in this type of vaccine the bodies of the bacteria remain entire and require ingestion and digestion by phagocytes before their toxic contents can be absorbed—a process which protects the patient from the sudden anaphylactic reaction that might occur, upon repeated injection, if a quickly absorbable type of vaccine was administered.

**Treatment of Sterility in the Female.**—C. Hollister Judd, in the *American Journal of Obstetrics* for October, 1915, writes particularly concerning cases of sterility which belong under the head of morbid physiology. The most frequent cause of sterility offering any hope of successful treatment is a stenosis of the cervix occurring in conjunction with some abnormality of the local secretions. Faulty relationship of the cycles of ovulation and menstruation may also be a cause. In the former group of cases Judd recommends the use of a stem pessary which he has designed, having for its purpose to fulfill the following desiderata: To hold open the internal and the external os, to be grasped by the internal os and so kept in place, and yet not to impinge upon the true cavity of the uterus, where implantation of the fertilized ovum takes place. The pessary provides a large and free opening into the body of the womb, and is so divided up that spermatozoa may progress freely over mucous membrane exclusively, i. e., without coming in contact with any foreign substance which might be inhibitory to them. The posterior wall of the cervix, along which the spermatozoa normally pass, is left free of the instrument, and the plicae palmate, largely uncovered, are left able to perform their function. The part of the instrument that lies against the end of the cervix is so thin and small as to be nearly impalpable, and situated as far as possible from the seminal lake. Applications can be made through the pessary to the mucous membrane of the body of the uterus, and it can be used as an endoscope. Electric treatment can be readily carried out through it. The passage of a current, with the negative pole in the uterus, will usually induce menstruation ahead of time, and faulty relationship to the ovulation cycle can thus be corrected. If desired, the menstrual flow can be made more profuse by using the current just before an expected period.

Curetting the uterus, or the dilatation that accompanies it, is frequently a useful measure in sterility. If, however, the decidua is so damaged that it is not properly replaced, the procedure may be an added cause of sterility. Plastic operations to restore the pelvic diaphragm and the seminal lake are of great value in sterility when the indications for them exist.



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## EDITORS

CHARLES E. DE M. SAJOUS, M.D., LL. D., Sc. D.  
CLAUDE L. WHEELER, A.B., M.D.

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## ORIGINAL HEALTH BOARD POWERS.

In the decision recently handed down by the New York Appellate Division in the legal controversy arising out of the health board's dog muzzling ordinance, the court definitely and unmistakably confirmed the original jurisdiction of the health authorities over matters concerning the health of the community, even though other municipal bodies had passed contrary ordinances on the same subject. Fortunately, the New York board of health is a municipal corporation separate and apart from the municipality in which it is situated, and deriving its power not from it, but from the State itself, as does the very municipality. The health board is coordinate with, and not subordinate to the municipality.

This decision must have a far reaching effect in enlarging and opening the power of the health officer or health board. It must be progressive enough, however, and alive enough to provide for every contingency that affects the health of the community, otherwise it will fail to impress upon the community the value of an untrammelled health board. The courts have many times decided that health boards must possess plenary powers to accomplish their mission. "A health officer who is expected to accomplish any results must necessarily possess large

powers and be endowed with the right to take summary action which at times must trench closely upon despotic power." (Legal Aspects of Medicine, New York Medical Journal, October 14, 1911.)

The powers of the health boards are acquired in our jurisprudence from the so called "police powers" of the State, wherein the State or any accredited part of it may take liberty or property without due process of law, against the restriction to the contrary of the fourteenth amendment, in the interest, not only of the health and safety of the public, but even of its convenience. These broad powers, while particularly necessary in large communities, find their best expression and their most benign influences under an efficient health board such as New York city possesses, and are least likely to be abused, or be used at all except under scientific dictation.

On the other hand, the application of these powers to a community unwilling from ignorance to accept them, is far from desirable and, indeed, not feasible. The public must be educated to have an interest in its particular health status and conditions, in its failings, and in its needs, before the best results can be obtained. A system of popular health education of the public, such as has recently been established in New York, will do more in this direction than the application of the most plenary powers.

## A USE FOR PACIFISTS.

Peace advocates, as amply proved by the present war, are worse than useless, for they have wasted an enormous amount of money on organizations—which always mean salaries for the promoters—on peace prize essays, largely written by clergymen, and on what have been called the "Hague picnics." All this keeps some people busy and out of other mischief, but it does not stop war.

We are not advocates of war, nor do we hope to indicate the etiology of the present outbreak of disease in the social organism or prescribe the cure. The causes have been explained glibly by a multitude of writers, but to us this constitutional disturbance is too intricate to fathom. War is, and will be as long as society behaves itself in certain ways, just like an attack of gout which comes and recurs as long as its possessor behaves in a certain ill balanced fashion from day to day. The patient does not desire his attack of gout. He is fully conscious, as was old Ben Franklin, of its cause, but the efforts of no antigout societies can cure him, and often not even experience itself has any effect upon his conduct. The nations at war are perfectly aware of its horrors and its expense. It is safe to say that no man of any nation embroiled wished for war, but

in the nature of European international conditions it came, and will be cured only after running its course.

Always, in war, it is the destruction of life which is considered most awful; yet life is bound to be destroyed after what is, at most, an infinitesimal fraction of all time—too often given up to doing mean things to other people, to grinding dollars out of employees that employers may live more luxuriously, or to stabbing with the poisoned poniard of gossip the lives of neighbors. Those who die in war, die at least with glory, for they are fighting for an exalted, even if mistaken idea.

Peace hath its horrors greater than war; and the pacifist who is aware of the fact is more cruel than the soldier. There are more people killed prematurely and unnecessarily by disease, by neglect, and by the heartlessness of employers, than are killed in war; but the professional pacifist, like the Pharisee with the man who fell among thieves, passes by this disagreeable fact on the other side.

The fact is that this war, with the impetus it has given to temperance and to the obliteration of infectious disease, and by the example of the possibilities of health conditions which it has given to the world, at war and at peace, has done more to bring about future health and happiness than all the peace advocates who ever existed. If the latter could only be persuaded to lend their time, money, and talents from now on, to bringing about conditions which will make for a healthier humanity, their efforts would be truly effective and worth while, even if not so spectacular.

International peace will come when conditions are ripe; until that time we shall have wars, no matter how much we talk against war.

#### FEMALE IMPERSONATION IN COLLEGE THEATRICALS.

The newspaper press recently announced that, at one of our great universities, a limitation had been set upon female impersonation in college theatricals. The reason for this action was said to be the fear that a trend toward effeminacy might be developed. On the following day, the press published reports upon interviews with men who were intimately associated with college theatricals, and a general denial of the effeminacy allegation was obtained. The subject formed what our friends of the lay press call "a one day story." Should a question of this sort be allowed to arise and to subside so easily, leaving a trifle of cloud upon the judgment of whoever was responsible for the original ruling? Perhaps not. We were impressed by the fact that press representatives had not quoted any opinions

from members of the medical profession. Had they done this, it seems probable that the question would have been divided into three parts: 1. Do normal individuals of one sex occasionally impersonate the opposite sex in a spirit of simple fun? 2. Do people with a fondness for impersonation of the opposite sex commonly represent types with atavistic traits? 3. Do theatricals which include impersonation of the opposite sex attract decadents to the audience?

The last question may be answered immediately in the affirmative. As to the second query, we know that since the earliest days of history, empirical observers have stated that a fondness for impersonation of the other sex had a sinister meaning. Our later day psychiatrists have made elaborate study of the subject, stating the terms of such impersonation and placing the matter upon a physical basis. We presume that almost any authority upon the subject would at least allow suspicion to rest upon the most innocent of impersonators in a college theatrical troupe. He would ask for a good deal of testimony before deciding that any one impersonator was "just fooling."

On page 365 of his book, *Microbes and Men*, Doctor Morris has these significant lines: "Among straws of decadence showing direction of the wind at the present time, we note in college theatrical troupes an increase of masquerading of the sexes." We have not space for the context, but this author, while admitting that much of the masquerading belongs in the category of innocent fun, carries the main idea in his main note. Doctors will not disagree much over this point.

Taking up the first question last, we may dispose of it quite as abruptly as we did the third question; in the affirmative. Our final deduction leaves us with some doubt if female (or male) impersonation is to be encouraged in college theatricals. This doubt was shared by several men about town who are college graduates of mature years, and whom we asked for opinions relating to the ruling that had gone out from one university. Answers were all to one effect—"A good thing, that ruling." This corresponds with the medical professional point of view, so far as we may be allowed to speak for the profession.

Female impersonation at its best evinces a spirit of disrespect for womanhood. In these days of irregularly advancing civilization there appears to be a need for us to set our faces, not only against the factors of social disintegration, but against the mere semblance of such factors. It is with some misgiving that we excuse even the disrespectful fun of college theatricals in which members of one sex masquerade as members of the other.

## THE INDICATIONS FOR RHACHIANESTHESIA.

Although some members of the surgical world have wished to make rhachianesthesia a general method applicable to all operations in no matter what region, the majority of writers have, nevertheless, continued to consider the method as exceptional in application. Rhachianesthesia, whether stovaine or some one of the substitutes of cocaine is employed, has, therefore, its indications, and it is evident that the region in which the operation takes place is the principal one. In spite of the enthusiasm shown for this method of anesthesia, particularly in Rumania, it is nevertheless true that it is especially indicated in operations on the lower limbs, anoperineal region, pelvic viscera, and the female generative organs.

Many surgeons limit the indications to subumbilical operations, but by resorting to Jonnesco's technic with prudence, the indications may well include all cases in which a sufficient anesthesia is procured by an injection at the dorsolumbar point, in other words, the majority of abdominal interferences. Opinion should be more reserved as to the high dorsal point between the first and second dorsal vertebrae, for operations on the thorax and upper limb. It cannot be denied that many operators, and Jonnesco particularly, have procured perfect anesthesia without accidents, but frequently the anesthesia is imperfect, while the technic is more difficult, requiring greater skill, not merely for the puncture itself, but as regards the position of the patient and the dose of the anesthetic.

Rhachianesthesia is rarely indicated in cranial, face, and neck operations, as its use in these conditions exposes the patient to real danger. But excluding the question of the site of operation, rhachianesthesia has other indications, for example, in the surgery of war, or in country surgery where the number of assistants is often limited. The method has some advantages of another order, inasmuch as the patient, being conscious, is able to give his consent for the removal of an organ supposed to be unnecessary before the operation was undertaken.

It may be said in a general way that lumbar anesthesia is indicated when there is some contraindication to a general anesthetic from organic cardiac lesions, a marked organic breakdown, a pulmonary or renal lesion, or even perhaps, great fear on the part of the patient. Jonnesco asserts that he knows no contraindication to rhachianesthesia, but it seems logical that operations on the head, face, or neck should be looked upon as contraindicating the method unless any other manner of anesthesia is impossible.

Age is not a contraindication and Rhem, of Frank-

fort, is of opinion that lumbar anesthesia is more indicated in elderly subjects than in younger ones on account of the greater diffusion of the anesthetic in the former. The same writer mentions as contraindications chronic visceral suppurations, arteriosclerosis, and disturbances of the central nervous system; the same applies to hepatic or renal insufficiency, when recognized.

## WHY FRENCH SOLDIERS ARE REFRAC- TORY TO ANESTHESIA.

A surgeon who has been serving with the Red Cross in France reports that the French soldiers are very poor subjects for general anesthesia, and that on this account many operations usually performed under general anesthesia are now being done with the aid of local anesthetics only. Large amounts of either chloroform or ether are required to produce complete anesthesia in these men, and even then it is difficult to obtain total relaxation, while marked cyanosis is apt to develop most unexpectedly. The general addiction of the patients to alcohol and tobacco seems likely to be the cause of this condition. All the *poilus* drink wine at their meals freely and nearly all smoke cigarettes incessantly. The combination of these two factors is quite sufficient to explain the idiosyncrasy of the French soldier toward general anesthetics, though, of course, the national temperament and the nervous strain under which the soldiers live and fight may be contributing factors.

An interesting parallel between the highly nervous French soldier addicted to both alcohol and tobacco and the surgical patient addicted to more potent narcotic drugs, is suggested in an article on Drug Addiction in Surgical Cases, by Dr. Ernest S. Bishop in the September number of the *American Journal of Surgery*. (See also Bishop, *NEW YORK MEDICAL JOURNAL*, February 27, 1915.) Doctor Bishop, however, takes the ground that the theory that the drug addict is a bad surgical risk is erroneous and is probably based on the fact that when the addict comes into the care of the surgeon, efforts are usually made to reduce the amount of drugs taken. Such efforts disturb what is to the patient a normal condition, and it is this disturbance which probably makes him a bad surgical risk. Doctor Bishop wisely advises the surgeon to inquire carefully into the habits of the patient and to avoid complicating his case by endeavoring to combine surgery with treatment for drug addiction. The shock of the operation is quite sufficient without subjecting the patient to deprivation of his accustomed quantum of drug. In the French hospitals, we are told that efforts are made to supply the patients with the wine and tobacco



which have by habit become necessities, and that where circumstances render this impossible the results are not so favorable.

### A NEW YEAR'S SURPRISE.

In our first issue for the coming year we inaugurate a new department in the *NEW YORK MEDICAL JOURNAL*, which we believe will be hailed by our readers with real enthusiasm. This department, which has been in preparation for several months and has required the most careful planning on the part of the editors and their assistants, will be as complete and up to date as knowledge and ingenuity can make it. We think we can promise that no reader of the *JOURNAL* will ever lay aside the current issue without having studied this new department, which will furnish the physician with the best and keenest of all the "tools to work with" that any medical journal has been able to collect. Some of the best medical men in the country have already promised to collaborate in this venture, and their comments on being let into the secret have been of the most complimentary, not to say enthusiastic nature.

### THE TREATMENT OF NONAMEBIC DYSENTERY.

F. Wyatt-Smith, M. B., B. C., communicates to the *British Medical Journal* for November 27, 1915, a reminder that in 1898 he wrote to the same periodical an account of his experience with magnesium sulphate in nonamebic dysentery during a campaign on the northwestern frontier of India. Mr. Wyatt-Smith's belief that the drug was a specific was confirmed by correspondents at the front and later by friends at Mauritius and in the South African war. The treatment was known three hundred years ago, but, as the writer says, that need not discourage the young surgeons in the present war, who will be astonished at the results if the dysentery with which they are dealing is the nonamebic form.

### News Items.

**Changes of Address.**—Dr. Paul Luttinger, to 1265 Boston Road, New York.

Dr. Bodog F. Beck, to the Professional Building, 133 West Seventy-second Street, New York.

Dr. Henry W. Frauenthal, to 160 West Fifty-ninth Street, New York, not Sixty-ninth Street as previously announced.

**Victoria Cross Awarded to a Physician.**—George Allan Maling, M. B., R. A. M. C., has been awarded the Victoria Cross. This is the first instance in which the Victoria Cross has been awarded to a physician during the present war.

**Consolidation of Medical Publications.**—The *Physicians Drug News* and *Office Practitioner* has been acquired by the Critic and Guide Company and will be consolidated with the *Critic and Guide*, beginning with January, 1916. The consolidated journal will be under the editorship of Dr. William J. Robinson.

**Announcement by a French Medical Journal.**—We are glad to learn that that excellent periodical, *Paris médical*, will continue its publication after the new year. Hereafter volumes will begin with the first issue in January instead of December.

**A Dinner to Dr. G. Morton Illman.**—On Thursday evening, December 9th, the Philadelphia Clinical Association gave a dinner in honor of Dr. G. Morton Illman, who is planning to move to Chicago in the near future. During the evening a beautiful testimonial was presented to Doctor Illman by the Samaritan Hospital Medical Society.

**Cholera in Austria-Hungary.**—According to reports received by the United States Public Health Service, cholera has been reported in Austria-Hungary as follows: In Austria, August 20th to September 3d, 1,034 deaths, of which 4,117 deaths, of which 6,386 cases occurred among the civil population; in Bosnia-Herzegovina, August 29th to September 13th, 8 cases with one death; Croatia-Slavonia, August 20th to September 20th, 98 cases with 31 deaths; in Hungary, August 20th to October 3d, 501 cases with 333 deaths.

**Seaboard Medical Association.**—At the twentieth annual meeting of the Seaboard Medical Association of Virginia and North Carolina, held in Norfolk, Va., December 8th and 9th, Dr. David T. Tayloe, of Washington, N. C., was elected president, succeeding Dr. Israel Brown, of Norfolk. Other officers were elected as follows: Dr. Kirkland Ruffin, of Norfolk, first vice-president; Dr. J. B. Ruffin, of Powellsville, N. C., second vice-president; Dr. R. L. Williams, of Norfolk, third vice-president; Dr. William E. Warren, of Williamstown, N. C., fourth vice-president; Dr. George A. Caton, of Newbern, N. C., treasurer; Dr. Clarence Porter Jones, of Newport News, Va., secretary.

**Defective Speech in New York School Children.**—At their next meeting, the New York Board of Education will consider the request of Dr. D. J. McDonald, to appropriate \$4,000 for the special training of public school children suffering from defective speech. Doctor McDonald at first suggested the creation of a department of speech, for those suffering from stammering and other nervous speech faults, but when he saw this was impossible through lack of funds he cut his budget from \$35,000 to \$4,000. This amount is small, but it is a start and, as a beginning, means a great deal. It is to be hoped that the appropriation will be made and in the future we shall be able to send the children out of school without the handicap of a speech defect.

**Books on Health at the Public Libraries.**—At the suggestion of the Bureau of Public Health Education of the Department of Health, the New York Public Library has prepared and printed an eight page booklet giving a list of books on health, which are available for use through the branches of the library. The list is based on a similar one issued recently by the public library of Rochester, N. Y., and distributed at the recent annual meeting of the American Public Health Association. Through the courtesy of the New York Public Library, a supply of these leaflets has been furnished to the department of health, which, in turn, is sending them on request, especially to the biology teachers in the various high schools in this city. Copies of this leaflet may be obtained by addressing the Bureau of Public Health Education, Department of Health, 139 Centre Street, New York.

**Personal.**—Dr. Emil Mayer, of New York, was elected an honorary member of the Philadelphia Laryngological Society, at the December 7th meeting of the society.

Mr. Leo J. Sys, of St. Paul, Minn., contributed \$2 to the fund being collected by the Committee of American Physicians for the Aid of the Belgian Population.

Dr. Bertram Waters, chief of the Division of Tuberculosis of the Department of Health of the City of New York, has been appointed director of the Bureau of Preventable Diseases, succeeding Dr. John S. Billings, who was recently appointed deputy health commissioner. Dr. Clifford D. Martin will succeed Doctor Waters as chief of the division of tuberculosis.

Dr. James A. Marshall, of Pontiac, Ill., was elected president of the North Central Illinois Medical Association, at the forty-second annual meeting held on December 5th.

Dr. George H. Hunt, of Paris, Ill., has been elected president of the Wabash Valley Æsculapian Society.

**Examination of Candidates for Assistant Surgeon.**—This will be conducted at the Bureau of Public Health Service, Washington, D. C., and at a number of the Marine Hospitals of the Service, on Monday, January 24, 1916, at 10 o'clock a. m., for the purpose of examining candidates for admission to the grade of assistant surgeon in the Public Health Service. Candidates must be between twenty-three and thirty-two years of age, graduates of a reputable medical college, and must furnish testimonials as to professional and moral character. Credit will be given in the examination for service in hospitals for the insane, experience in the detection of mental diseases, and in any other particular line of professional work. Candidates must have had one year's hospital experience or two years' professional work. For full particulars regarding the examination address the Surgeon General, Public Health Service, Washington, D. C.

**The National Committee for Mental Hygiene of New York City** has issued an interesting plan on foot, involving surveys of different states as to the public and private provision for feeble-minded, epileptics, insane, and allied defects. They have issued a map giving State surveys completed, under way, and to be undertaken. State surveys appear as completed for Pennsylvania, South Carolina, and Wisconsin. State surveys under way are those for Arkansas, Missouri, Texas, and Florida. State surveys to be undertaken next are of Maine, Rhode Island, Connecticut, New Jersey, North Carolina, Georgia, Tennessee, Indiana, Illinois, Iowa, Kansas, Oklahoma, Washington, Oregon, and California.

Of course a number of States in which the history of provision for the insane and allied defectives is longer and more complex are not regarded as requiring surveys at the present time. Massachusetts, New York, and Michigan may be classed in this group of States not requiring mental hygiene surveys.

**Harvard Medical School.**—Gifts amounting to \$109,994.75 were announced at a recent meeting of the president and fellows of Harvard University. The largest single gift was \$75,000, the balance of the bequest of Morrill Wyman to establish the Morrill Wyman Medical Research Fund, the income of which is to be applied to promoting investigation concerning the origin, results, prevention, and treatment of disease, the work to be done under the direction of Harvard Medical School. Six appointments were announced as follows: Dr. David Cheever, associate in surgery; Dr. James L. Huntington, Dr. Frederick C. Irving, and Dr. John B. Swift, Fellows in obstetrics; Dr. Samuel C. Harvey, Arthur Tracy Cabot Fellow in charge of the laboratory of surgical research; Dr. Edward T. Gibson, instructor in psychiatry. Five resignations were received and accepted, among them being that of Dr. Gilbert Harrax, as Cabot Fellow in charge of the laboratory of surgical research; Dr. Townsend W. Thorndike, as Fellow in dermatology, and Dr. Walter W. Palmer, as Fellow in medicine.

**Civil Service Examinations in New York.**—Among the positions for which the New York State Civil Service Commission will hold examinations on January 22d are the following:

Assistant Physician, Regular. This examination is intended to provide eligibles for the position of assistant physician in the State hospitals and for other positions of a similar nature, in various State and county institutions. Salary in the State hospitals \$1,200, increasing \$100 each year to \$1,600, with maintenance. Examination open to men and women who are licensed medical practitioners in this State, who have graduated from a registered medical school and who since graduation have had one year's experience on the resident medical staff of a general hospital, or as medical intern or clinical assistant in a State hospital or institution or have been engaged for three consecutive years in the practice of medicine.

Laboratory Assistant in Bacteriology, State Department of Health; open to men and women, salary \$720 to \$900 a year. A systematic course in bacteriology and three months' practical experience in laboratory work are prerequisites for the examination. Candidates will be examined on the technical procedures used in the study of pathogenic bacteria of infectious disease and immunity.

For further information regarding these examinations and for the necessary application blanks, address the State Civil Service Commission, Albany, N. Y.

**Gifts and Bequests to Hospitals.**—Two gifts amounting to \$30,000 for the maintenance of a social service department at the Massachusetts General Hospital, Boston, are announced, one of \$15,000 by Mrs. Shepherd Brooks and one of \$15,000 by Mr. Charles Moseley, of Newburyport.

A bequest of \$50,000 has been made to Cornell University by the late Mrs. Sarah Manning Sage, to promote the advancement of medical science by the prosecution of research work at Ithaca.

By the will of Justus S. Hotchkiss the New Haven, Conn., General Hospital will receive \$100,000.

By the will of Dr. M. R. Crain, who died in Rutland, Vt., on October 14th, the Rutland Hospital becomes a residuary legatee. This institution also receives Doctor Crain's medical library and surgical instruments and \$5,000 for the support of a room in the hospital.

By the will of the late Emily M. Price, the Children's Hospital, of Philadelphia, will receive \$10,000.

**Civil Service Examinations for Bacteriologist and Pathologist and for Assistant Surgeon.**—The United States Civil Service Commission announces an examination on January 18, 1916, open to men only, for the position of bacteriologist and pathologist in the Bureau of Science, Manila, at a salary of \$2,000 to \$2,500 a year. The duties of the position will be to carry on research work in the laboratories of the bureau, combined with the regular routine bacteriological and pathological work. The degree of M. D. or Ph. D. from an institution of recognized standing, including at least one year's training in bacteriological laboratory work, is a prerequisite for consideration for this position.

On January 18th there will also be an examination, open to men only, for the position of assistant surgeon in the Bureau of Science, Manila, at a salary of \$1,800 a year. Persons appointed as a result of this examination will be assigned to sanitary work in the Philippine Health Service. Applicants must have graduated in medicine from a medical school of recognized standing, and in addition have had special training in bacteriology.

For application blanks and full particulars regarding these examinations, address the United States Civil Service Commission, Washington, D. C.

**The Harrison Law.**—Internal Revenue Commissioner Osborne, in his annual report, gives an extensive review of the operations of the Harrison law. At the present time several revisions of the law are being considered, as well as several proposed amendments. While no exact figures are available as to the total number of persons in the United States addicted to the drug habit, in the course of the enforcement of the law thus far and through investigations by the internal revenue field officers, it has been found that there are many habitues in every State and the grand total will probably reach several hundred thousand. During the four months ending June 30, 1915, there were reported a total of 5,085 violations of this law of which 528 were by persons registered under the law and 4,557 by unregistered persons.

The violations by the registered persons were distributed among the professions as follows: Physicians, 257; dentists, 40; veterinary surgeons, 6; manufacturers, 3; wholesale dealers, 5; retail dealers, 211; and registered persons not within these classifications, 6. Prosecutions were instituted and trials took place in 131 cases, resulting in convictions in 106 cases and acquittal in twenty-five cases. Upon convictions fines only were imposed in a number of cases, in others both fines and imprisonment, ranging from short jail terms to three years in the Federal penitentiary. There were 170 cases under indictment or held for the grand jury at the close of the fiscal year. Twenty-seven cases were compromised and 4,058 cases involving only technical violations of the law and regulations, dropped upon recommendation of the internal revenue officers and United States attorneys, and 699 cases in which no action had been taken, were pending June 30, 1915.

There were 227,972 persons registered under the provisions of this law during the four months ending June 30, 1915. These included 174,189 physicians, dentists, and veterinarians; 52,187 wholesale and retail druggists and other distributors; 1,596 manufacturers, importers, and producers. Collections of special taxes from this source amounted to \$199,697.35, and there was collected from the sale of order blanks \$48,708.62, making a total of \$248,405.97 collected during 1915.

## Pith of Current Literature.

## BERLINER KLINISCHE WOCHENSCHRIFT

**Specific Treatment of Typhoid**, by Fritz Meyer.—The exact mechanism by which recovery from typhoid is accomplished is not known, but there is evidence that the presence of bacteriolysins in the circulation is of more value than that of agglutinins. No satisfactory method of specific treatment has yet been introduced, but the good effects secured by prophylactic inoculation and the harmlessness of the measure suggested the therapeutic use of vaccines. This was tried in a large series of severe cases and the results were compared with those in control cases treated without vaccines. The mortality in the vaccine cases was 9.6 per cent., while that in the parallel series without vaccines was nearly twenty per cent. In the vaccine cases there was a marked tendency for the fever to fall earlier and more rapidly, but this treatment did not seem to reduce the likelihood of complications. In forty-five per cent. of the early cases the fever fell within seven days of vaccine treatment and a similar effect was secured in eighty-three per cent. of cases treated later in the disease. No severe reactions from treatment were observed after either an ether killed vaccine or a sensitized one. The initial dose was 500 million organisms, and subsequent increasing doses were given at three to four day intervals. Both subcutaneous and intravenous injections were used. Still better results than those secured in the vaccine treatment of the acute disease were obtained when the vaccine was given in the later stages of the disease with a view to preventing sequelæ and relapses. It was further found that the blood serum of recovered patients who had received large doses of vaccine was of great therapeutic value in the treatment of the most serious cases of the disease.

**Typhoid Immunity**, by Altstaedt.—The endermic injection of very small amounts of typhoid vaccine gave negative results in fourteen persons known never to have had the disease and not to have been vaccinated against it. On the other hand, after prophylactic inoculation a good local reaction was secured, indicating a cellular hypersusceptibility toward the typhoid antigen which seemed to be indicative of immunity. The same was true in persons who had previously had typhoid fever, even as long as twenty-seven years before. The immunity from prophylactic vaccination was present in one case ten years later.

**Serum Anaphylaxis**, by Wilhelm Koch.—It is the general belief that anaphylactic susceptibility to serum in man can be discharged by a small subcutaneous injection of the serum, rendering the administration of large subcutaneous or intravenous doses safe. A case is reported in which death from anaphylactic shock resulted in a young child in spite of the preliminary subcutaneous injection of serum, suggesting that the method is not altogether a trustworthy one where anaphylaxis is to be feared, and serum must be given intravenously if possible.

**A Substitute for Starch as a Dusting Powder**, by P. G. Unna.—In the treatment of eczema, sunburn, and other skin conditions for which starch has been regarded as one of the best applications, this may be replaced by cooling pastes containing calcium or magnesium carbonate. By mixing thirty c. c. each of linseed oil and lime water and then incorporating about twenty grams each of zinc oxide and calcium carbonate a satisfactory paste may be prepared. This combines the cooling and drying properties of starch with the action of a dilute alkali and has proved useful in the treatment of eczema, burns, erysipeloid affections, and other marked inflammations of the skin. In neglected cases with foul secretions the paste may be made antiseptic by replacing the calcium carbonate with calcium chloride. If powders are desired these may also be prepared without the use of starch, but pastes made according to either of the following formulæ are preferable: Terra silicea five grams, zinc oxide twenty-five grams, oil of arachis (peanut oil), ten grams and lard sixty grams; or by reducing the zinc oxide of the preceding formula to fifteen grams and adding ten grams of precipitated sulphur. Both pastes are hygroscopic.

**Examination of the Bile in Disease**, by Emil Medak and Bruno Oskar Pribram.—Employing the Einhorn duodenal tube the authors were able to study the composition of the bile in various diseased conditions. They found that the normal duodenal fluid contained from 0.08 to 0.12 grams of bile pigment a day and had an average cholesterin content of 0.1 gram. In one case of cholelithiasis the cholesterin was found to amount to from 0.4 to 0.5 grams daily. The blood cholesterin was also high, owing to actual increased mobilization rather than to retention. In catarrhal jaundice only traces of cholesterin were found in the duodenal fluid, while the blood cholesterin was high, indicating retention. In cholangitis urobilin was present, indicating infection. Where urobilin was found in the duodenal fluid, infection was probable, but not absolutely proved, but when absent infection was certainly not present.

**Combination Treatment with Optochin and Camphor**, by Felix Rosenthal.—From an extensive series of experiments on mice infected with one of many strains of pneumococci and treated prophylactically, or after infection had developed, with camphor, optochin, or the two drugs combined, the conclusion was reached that many strains of pneumococci were not susceptible to the action of camphor. Others which were originally susceptible soon acquired a lasting resistance to this drug so that they could no longer be destroyed by it. Optochin alone gave fairly satisfactory results, but when combined with camphor its effectiveness was greatly reduced and toxic symptoms were prone to develop and often resulted fatally. In view of the common occurrence of strains of pneumococci resistant to camphor, the utility of this drug in the specific treatment of pneumonia must be regarded as slight. Also, in view of the toxic action of a combination of camphor with optochin, the former drug should not be used as a cardiac stimulant in patients under treatment with optochin.



## MEDIZINISCHE KLINIK.

**Treatment of Duodenal Ulcer by Diathermy.**

K. Kober. Citations are made from the literature which agree in showing that diathermy is not suitable as a general treatment of abdominal and thoracic diseases, although certain writers have reported some benefit in a few cases of stenocardia, peritoneal adhesions, and even in appendicitis. After all medical and dietetic measures had failed to do more than give a small amount of temporary relief, it was decided to try diathermy on the strength of the relief often observed after local applications of heat. Half hour sessions were given and the relief of symptoms was prompt. After a number of treatments, not only were all symptoms removed, but complete clinical cure took place. The cure in the first case has now lasted for about five months, although there has been no restriction in the patient's diet. Six other cases of duodenal ulcer have been similarly treated, all with excellent clinical results, and some have apparently been cured. It was found that the treatment was much less satisfactory in cases with an associated condition of gastric dilatation, chronic gastric catarrh, and hyperacidity. In one such case even forty sessions failed to yield a cure.

## BULLETIN DE L'ACADÉMIE DE MÉDECINE

[CHRONIQUE.]

**Serum Treatment of Acute Poliomyelitis,** by A. Netter.—This is a report of the results obtained in thirty-two cases by the intraspinal injection of serum obtained from human subjects who had themselves suffered from the disease six weeks to twenty-nine years before. The serum was collected aseptically from subjects proved to be free of syphilis by the Wassermann test; it was then tyndalized and administered, after withdrawal of an amount of cerebrospinal fluid larger than the quantity to be injected, and with the patient in the inverted position, in doses of five to thirteen c. c. Eight successive daily injections of serum were given when practicable. The injections were nearly always well borne. They caused regularly an inflammatory reaction of the meninges, generally unaccompanied by symptoms, but in a few cases associated with spinal pain, muscular hyperesthesia, rigidity of the neck and trunk, and a rise in temperature. The therapeutic results obtained consisted in rapid and complete recovery in six cases; improvement approximating cure in three cases; noteworthy improvement in seven; slight improvement in five; and none in three. Eight patients succumbed, seven of these from bulbar paralysis; in four of the latter the bulbar disturbance had been noted before the beginning of treatment. The rapidity of improvement, its accentuation day by day, and the retrogression following too early discontinuance of the injections left no doubt of the efficiency of the serum. If the treatment is begun early—from the first to the fourth day of the paralysis—the progress of the latter can be arrested, and even, paralysis already existing caused to disappear. Experience in one case showed that, if begun in the preparalytic period, the treatment is capable of preventing the appearance of paralysis.

**Partial Return of Motor Activity after Suture in Complete Rupture of the Spinal Cord,** by

Lortat Jacob, Garou, and Ferrand. A soldier, sustaining a shell wound in the right dorsal region, about twelve cm. from the median line, showed complete motor and sensory paralysis below the umbilicus, retention of urine, and fecal incontinence, followed by large bed sore ulcers, fever, and extreme emaciation. X ray examination over four months after the injury showed a shell fragment imbedded in the spinal column. Laminectomy was performed and the foreign body removed. The cord was found completely severed. Its two extremities, 1.5 cm. apart, were drawn together, though not brought into contact, with fine catgut, and the meninges were also sutured. The wound healed by first intention. On the twelfth day, voluntary flexion at the knee joint was noted. Motor power was thereafter regained to a remarkable degree, all movements of the right limb, including the foot, being restored. The muscle sense returned and sensation was restored down to the trochanters. Fifty days after the operation the extensive ulcers had largely healed. The bladder and intestinal paralyses had not, however, been improved.

## PRESSE MÉDICALE.

[October 1, 1918.]

**Simplified Technic for the Intravenous Injection of Arsenobenzol in Concentrated Solution,** by Paul Ravaut.—Thousands of injections of arsenobenzol in concentrated solution have been administered by various workers and have proved the feasibility of the method, which obviates toxic effect from the water (by reason of its small amount), permits the employment of solutions prepared some time before, and reduces the armamentarium required. Recent necessities in military practice have led Ravaut to simplify further his former technic. A two c. c. glass syringe, a good hypodermic needle, and a little absorbent cotton are boiled for fifteen minutes in water as clean as is conveniently procurable. Then, compressing the cotton on the bottom of the receptacle with the outlet of the syringe, water is slowly drawn up, filling the latter. The syringe is allowed to cool completely, as warm water decomposes arsenobenzol. The cooling may be accelerated by dropping a little ether on the syringe barrel. The vial containing the drug is then opened and the water projected into it drop by drop, the vial being meanwhile shaken to prevent caking of the drug. When the latter is completely in solution the fluid is drawn up into the syringe through the needle, and the intravenous injection is administered, with considerable care, as the passage of the concentrated solution into perivascular tissues causes great pain. The injection should be given very slowly, that the drug may undergo as great a dilution in the blood as possible. Doses of 0.3 to 0.9 gram of neoarsenobenzol (neosalvarsan) were found to dissolve perfectly in the small amount of fluid, and were well tolerated provided that the caution referred to as to rapidity of preparation of the solution and slowness of the injection was carefully observed. Intravenous neoarsenobenzol injections can thus be given as easily as injections of any other drug, not only in syphilis, but also in malaria, re-

current fever, musosparillar affections, trypanosomiasis, leishmaniasis, etc.

**Muscular Dystrophy of Myopathic Type Following Traumatism**, by H. Claude, A. Vigoutoux, and J. L'Hermite. Reference is made to cases of injury by bullets or shell fragments in which there is complete lack of correspondence between the muscular atrophy observed and the nerve lesions which one is led to expect from the course taken by the foreign body. Thus, from a rapidly healing wound of the right shoulder in which a shrapnel bullet passed through from above the acromioclavicular joint to the posterior margin of the deltoid, marked and persistent atrophy of the right trapezius and serratus magnus resulted. Similarly, in a case of shell wound of the lumbar region, followed by temporary paralysis of the four extremities, extreme bilateral atrophy of the muscles of the scapuloclavicular girdle was later observed. According to all available evidence, the atrophy in neither of these two cases, nor in others reported, could be ascribed to nerve injury, neuritis, or degeneration of the spinal cells. That the condition is a primary myopathy, with faulty nutrition and consequent impotence of the muscles, is substantiated by the situation of the atrophy in the scapular group of muscles, the proportional atrophy and diminution of motor power, and the absence of the reaction of degeneration.

#### REVUE MÉDICALE DE LA SUISSE ROMANDE.

(August, 1911.)

**Generalized Peritonitis from Perforation in Sigmoid Diverticulitis**, by E. Kummer.—Acquired diverticula may be met with at any part of the colon, but occur oftenest in the mobile portion of the sigmoid. They are generally multiple, and their parietes consist of mucosa and serosa alone, the diverticulum being thus a species of hernia of the mucous membrane through preformed spaces in the intestinal muscle. Diverticula may develop at any part of the circumference of the bowel, but are generally found in a line with the epiploic appendages. Among forty-two cases, thirty were known to have occurred in men and ten in women; eleven patients were over seventy years of age, thirteen over sixty, twelve between forty and sixty, and four over thirty-five. Infection with the colon bacillus, causing necrosis of tissues, is generally the origin of the trouble, where trouble occurs (in sixty per cent. of cases, according to Telling). Generalized peritonitis, the least common complication of diverticulitis, may arise by reason of: 1. Suddenness of perforation, giving no time for the formation of a fibrinous plug. 2. An extensive field for sigmoid peristalsis, due to a loose mesosigmoid. 3. Intense peristalsis, favoring extensive dissemination of the intestinal contents; active purgation and enterocolitis with diarrhea are especially to be feared in this connection. A characteristic but inconstant symptom of perforation is the "pistol shot" or sudden peritoneal pain due to the contact of fecal matter. Experienced during defecation, on the left side, by a habitually constipated elderly male passing "rabbit droppings" or small fecal masses; this sign is practically pathognomonic of diverticular perforation. If the diagnosis is made and operative treatment instituted at once,

there are chances of recovery; but if the diagnosis is tardy, owing to slow perforation and slowly developing peritonitis, the prognosis is very bad. The operation should consist of evacuation of the intra-peritoneal fluid; lavage and drainage of the abdomen, possibly to be followed by cecostomy, and closure of the perforation by suture or packing. The finding of formed fecal matter in the peritoneal cavity, in case of doubt, should direct immediate attention to the colon. Yet the perforation sometimes, in the time at the surgeon's disposal, cannot be located. Possible means of facilitating discovery of the site of perforation consist in the injection of a colored fluid in the rectum or the injection of air after saline solution has been run into the peritoneal cavity. When the perforation has been found, the necrosis of tissue at its margins should be borne in mind in placing the sutures. Kummer gives brief histories of thirteen cases from the literature and reports one personal case, all with peritonitis due to diverticular perforation. Several of these were operated in, but none ended favorably. In a few the operation itself was successful, but pulmonary embolism later carried off the patient. Better results may be expected when the disease becomes more widely known and the diagnosis is made earlier.

#### REVISTA DE MEDICINA Y CIRUGIA PRACTICAS

**Heart Disease; Its Effect upon Pregnancy and Parturition**, by J. J. de la Muela.—Most cardiac conditions have a symptomatology enabling us to make a fairly certain diagnosis, but there are some morbid processes of the heart which develop insidiously and are therefore misleading. These cases occur in women who are not obliged to work. Degenerative myocarditis is always accompanied by weakened functions and appears usually after forty years of age, but in multiparæ it may appear much earlier, especially in those who nurse their children. Sometimes the onset is gradual, with palpitation and dyspnea on exertion. Sometimes there are anginal attacks at the onset, while in other cases the first symptom is an attack of cardiac asthma in the midst of apparent health. It is important, if possible, to have women under observation for at least two months before confinement, and to fix our attention on the condition of the heart in every case of pregnancy or labor. Death in these cases of heart disease may occur in any stage of labor, especially during the period of expulsion or operative action.

#### BRITISH MEDICAL JOURNAL.

**Malignant Tumor of Kidney**, by R. J. Willan.—Analyzing a series of fifty-nine cases, ten were found to occur in children under ten years old, and of these all were sarcomas. Thirty-one of the remaining forty-nine occurred between the ages of forty-five and sixty-five years. Males preponderated in the series, the proportion being thirty-six to twenty-three females, and among the children six of the ten were boys. There was very little difference in the relative involvement of the two sides. The symptoms of onset were noted in fifty-two of the cases. The commonest initial symptom was painless hematuria, occurring in fourteen cases;

acute renal colic was the first manifestation in ten, and in a like number painless swelling in the flank was the first thing noticed. Five of the patients showed cachexia before any other indication of renal neoplasm was evident. Acute renal colic was present only in cases in which there was bleeding with clotting in the renal pelvis. Excluding the renal sarcomas of children, most cases of malignant renal tumor showed hematuria at some time. A renal tumor was demonstrable in forty-nine of the cases, and was definitely absent in four. In three patients with left sided renal tumor, there was also a left sided varicocele which was due to the extension of the growth to occlude the opening of the left spermatic vein. Such an occurrence showed the presence of too great infiltration to warrant operation. For the diagnosis of this malignant condition there should be a routine careful physical examination, urinary analysis, cystoscopy, tests of renal function, and pyelography. The functional test should be carried out both on the voided urine for several twenty-four hour periods, and on samples obtained from each kidney by ureteral catheterization done at the time of cystoscopy. Quantitative estimation of urea output serves for the functional test as well as any other and has the advantage of simplicity. If the case is seen at the time of hematuria or renal colic cystoscopy should be done at once, for valuable diagnostic and localizing information can thus be obtained. A mark should be made at the time of examination on the thigh on the side corresponding to the ureter from which blood is escaping in order to avoid subsequent confusion in doubtful cases.

**Easy Detection of *Spirochæta pallida*,** by Alfred C. Coles.—The method is based on the fact that structures colored with a fluorescent dye, like eosin, fuchsin, etc., can be readily seen with the dark ground illumination, and on the added fact that if the medium in which the stained organisms lie is of low refractive index, they will be exceedingly conspicuous. A stock solution of Giemsa's stain should be diluted with an equal volume of pure methyl alcohol or acetone. Films should be prepared in the usual manner on cover slips, and when dry a few drops of the stain should be dropped on them. This should be diluted immediately with ten times as much distilled water and staining continued for ten to fifteen minutes. The more prompt the dilution, the deeper the staining will be. When stained, the specimen should be washed with distilled water and dried, but not mounted. The specimen should then be examined with an eight mm. dry objective and a compensating ocular, over an ordinary achromatic condenser, used dry. This condenser should be provided with a Travis's expanding stop mounted below. A cover glass may be laid over the specimen, or the tube length of the microscope may be adjusted to give a clear image from the bare preparation. The spirochete stands out in such a preparation as a beautiful golden spiral which can even be seen with the two thirds inch objective, although it cannot be identified with this low power. So clear is the spirochete under these conditions that it could not be missed by any one, and the use of the one third inch objective (8 mm.) gives a large

field so that it is easy to cover the entire specimen in a short examination. Other spirochetes give equally clear pictures.

#### LANCET.

November 27, 1915.

**The Common Intestinal Protozoa,** by C. M. Wenyon.—Descriptions and illustrations are given of the common intestinal protozoa, together with some remarks on their probable pathogenicity for man. The examination of the stools for protozoa is best made as soon after their passage as possible, as the uncysted forms rapidly degenerate and become unrecognizable. It is better not to use a warm stage, for this often makes them move so rapidly as to render their discovery difficult. If examination cannot be made promptly the specimen should be kept cold and not in the incubator. When the examination is then made the use of a warm stage may be serviceable in restoring some of the parasites to motility. Flagellates can often be seen best with dark ground illumination. The nuclei in some of the encysted forms can be brought out by mixing a small amount of the feces with a few drops of Weigert's iodine solution. Wet fixation, with a stain such as Geimsa's yields the best results in the preparation of permanent specimens. In the identification of the several forms of parasite it is essential to have an eyepiece with a micrometer scale in order to determine the size of the organisms.

**The Meningococcus in Contacts,** by James McIntosh and W. E. Bullock.—Methods are described for the isolation and identification of the meningococcus from the nasopharynx, and the results of the examination of over 2,000 throats are reported. Among actual contacts the organisms were isolated from 5.5 per cent., but the several groups of contacts showed positive cultures in proportions ranging from zero to twenty-five per cent. The highest figures were found during the height of the epidemic.

**The Nitrogen Balance in Diabetes,** by P. J. Cammidge.—By using a modification of Kjeldahl's process, the total urinary nitrogen output can be determined and this should be compared for each twenty-four hour period with the nitrogen intake as estimated from food tables. There is in certain cases of diabetes a marked tendency for an addition of protein to the diet to increase the level of metabolism and promote tissue waste. Where the utilization of sugar is very defective protein also increases glycosuria and the excretion of acetone and oxybutyric acid. Where the urinary nitrogen regularly exceeds the intake, the prognosis is serious. By the determination of the nitrogen balance, therefore, we have a means for prognosis and for the adaptation of a diet suitable to the needs of the individual case. Mere regulation of carbohydrate intake and empirical adjustment of the protein intake are not sufficient for the proper conduct of a case of diabetes.

#### BRITISH JOURNAL OF CHILDREN'S DISEASES.

November, 1915.

**Lymphangioma of the Conjunctiva,** by Euphan M. Maxwell.—Cases involving the conjunctiva alone are not rare, but when the orbit is also affected, lymphangioma is remarkably uncommon.



Two cases are reported, in one of which the orbit was probably affected. In one case, a girl aged three years, the mother stated that the child "had a cold in the right eye since birth." For the past year the lower half of the right eye seemed more raised than the other. The conjunctiva was raised in a grayish semitranslucent mass which pitted on pressure with a probe. A piece was removed for microscopical examination and showed numerous empty spaces lined with endothelium. A few small round cells were seen scattered in the connective tissue. Electrolysis was employed in the treatment. A needle was attached to the negative pole which was inserted into the growth for half a minute. The current employed was of a strength of four to six volts. Treatment was repeated at intervals of ten days and the tumor showed no increase in size. The second case, also of a girl, aged three and a half years, showed in addition a proptosis of the left eye downward and outward to the extent of three mm. The motion of the eye inward was limited. Kroenlein's operation was performed, but nothing abnormal was found on the outer side. On the inner side the growth appeared to go back indefinitely into the orbit. Microscopical examination was the same as in the first case. Treatment along the same lines resulted in a diminution in the proptosis of one mm. The improvement is explained by the fact that electrolysis sets up inflammation, which is followed by the formation of contracting connective tissue.

**Primary Bronchial Diphtheria**, by W. Mitchell Smith.—The patient, a girl aged thirteen years, had gone through an attack of scarlet fever and had been discharged from the isolation hospital. There had been no cases of diphtheria in the ward. The day after her discharge she began to feel ill and was seen on the following day. The points of interest were the presence of a short, hacking, unproductive cough which occurred with great frequency, and the fact that she spoke in a whisper. No breath sounds were heard over the right upper lobe anteriorly, and there was a marked diminution of breath sounds over the corresponding area on the left side. That evening she complained of pain in the anterior part of the right chest in the neighborhood of the first rib. She acquired "croup" and at 3 a. m. coughed up a cast. It was examined and the report showed that the specimen contained diphtheria bacilli. Antitoxin was administered and the next day another cast was coughed up. After the second cast had been expectorated, the signs in the chest rapidly disappeared and the convalescence was uninterrupted.

**Acidosis in Children**, by Edward Cecil Williams.—Thirteen cases are reported, all in children under eleven years of age, five occurring in boys and the remainder in girls. Three of the cases, on admission, presented symptoms suggestive of meningitis, but an examination of the cerebrospinal fluid was negative. Some of the causes of acidosis in these cases were mussel poisoning, ice cream poisoning, diabetes, suprarenal hemorrhage, and pneumonia. The urine should be carefully examined for diacetic acid and acetones as well as for *Bacillus coli*. Treatment consists in the adminis-

tration of bicarbonate of sodium in doses up to one dram hourly in an effervescent mixture, and potassium citrate half a dram with glucose one dram, per rectum every four hours.

#### JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

December 25, 1905.

**X Ray Appearances in Rickets**, by Robert W. Lovett.—From a study of between 500 and 600 plates from rickets it was possible to divide the disease into three stages according to the osseous changes, which also corresponded to three clinical stages. In the first stage—that of swelling and rarefaction—the characteristic picture was one of fraying out of the ends of the diaphysis with little or no shadow from the epiphysis, while the entire joint was surrounded by a hazy cloud. There were no deformities at this stage, but in severe cases fractures were often observed. The second stage of deformity and organization is marked by a better epiphyseal shadow which shows a ragged margin and irregular calcification. There is broadening of the ends of the diaphysis with lip formation near the epiphyseal line on the side of greatest strain. There is also a transverse area of increased density in the shaft near the epiphyseal line which often resembles the "white line" of scurvy, and there is a cortical thickening along the concave sides of the shafts which is of endosteal origin and which persists into the cured stage. The third stage is one of healing and reparative eburnation, characterized by a resumption of the normal appearance of the epiphysis with some irregularity in its margin. Owing to the lipping there is a discrepancy in the breadths of the end of the shaft and the epiphysis. There is also greater definition of the bone shadows and a greater clarity of the white line. These x ray appearances are more or less typical of rickets and by them the disease may be differentiated from other degenerative bone conditions occurring at about the same age period.

**Intravenous Injections of Sugar**, by R. T. Woodyatt, W. D. Sansum, and R. M. Wilder.—An ingenious device is described whereby continued, prolonged, and accurately timed and measured intravenous injections can be made. By this means sugar solutions can be injected into man or animals at any desired rate and for any period of time, and the actual sugar tolerance and utilization determined with the factors of absorption entirely eliminated. Studies made with this technic showed that a seventy kg. man could utilize about sixty-three grams of glucose an hour, which is equivalent to 652 calories an hour, or 6,048 calories a day. Intravenous nutrition is, therefore, possible by this means. The normal human glucose tolerance was found to be about 0.85 grams an hour per kgm. of weight when given slowly by a vein. The idea that the glycogenic function of the liver is essential for the utilization of glucose, or that it is essential as a barrier to prevent the loss in the urine of absorbed sugar, has been proved incorrect by these experiments. The idea that any large quantity of sugar given by vein always causes diuresis and glycosuria was also disposed of. In Graves's disease the intravenous tolerance was found to be as low as 0.65

grams per kgm. an hour. The tolerance limit for glucose was found to be about one-sixth that for glucose, for galactose it was even less, and for lactose it was zero. When glucose was given intravenously at a rate faster than 0.9 gram per kgm. an hour, glycosuria appeared and later diuresis. The glycosuria soon reached a level and remained at that point during any rate of injection, which point depended on the rate of administration. By comparative tests it was shown that the maximum rate of sugar absorption after oral administration did not exceed 1.8 gram per kgm. an hour. Intense diuresis could be produced by the injection of amounts of sugar in excess of the tolerance and the dangers of dehydration or hydremic plethora then made their appearance. The clinical applications of this method are: The abstraction from the body of any desired quantity of water and the flushing of the body with any desired and safe amount of water.

**Oral Amebic Infections in Children**, by Anna Wessels Williams and associates.—Almost one thousand children between the ages of five and fifteen years were examined with reference to the presence of ameba in their mouths. Thirty-five per cent. of children between five and seven years old were infected with ameba and the proportion increased in relation to age so that this infection was present in sixty per cent. of all children between five and fifteen years of age. Twenty-nine per cent. of children with apparently normal mouths harbored ameba. The use of a mouth wash of emetine in the proportion of one to 400 greatly reduced the number of patients with ameba, but did not remove it in all cases.

**Intraspinal Arsenic Treatment of Syphilis**, by G. B. Hassin.—In a series of cases of advanced spinal syphilis the intraspinal administration of relatively large doses of neosalvarsan proved of no clinical value. The results were better from internal administration of arsenic trioxide. This was given in the form of the following solution: Arsenic trioxide 0.12 gram; diluted hydrochloric acid to dissolve; and distilled water to 120 c. c. This should be given once daily after a meal and well diluted with water. The initial dose should be one teaspoonful which is to be increased by half a teaspoonful daily until a dose of six or seven teaspoonfuls is reached, when the dose is decreased by the same fraction daily. Several courses of this type should be given.

**Vaccine Treatment of Gonorrhea**, by Carl G. Wardens.—Experiments were conducted which proved that the antigenic properties of the gonococcus resided in a lipid fraction which could be chemically isolated from fresh cultures, and not in the protein fractions. This antigenic lipid was used for complement fixation tests in a parallel series with the commercial antigen. In acute cases there were twenty per cent. of positive reactions with the commercial, and fifty per cent. with the lipid antigen; in subacute cases the figures were twenty per cent. and seventy-five per cent.; and in past cases sixteen and fifty per cent., respectively. The lipid extract was also used in the treatment of a number of cases and in general gave good results, with certain cure in some.

## MEDICAL RECORD.

December 11, 1918.

**Spontaneous Pyopneumothorax Complicated by Hydropericardium**, by Alfred Meyer.—This condition is extremely rare, only forty-eight cases having been reported. Meyer's case occurred in a man twenty-nine years of age, and treatment with nitrogen injections following aspiration into the pleural cavity seems to have almost cleared up the purulent condition.

**Auricular Flutter Accompanying Acute Endocarditis**, by Selian Neuhoof.—Auricular flutter is a comparatively frequent arrhythmia, fifty-three cases having been reported up to 1914. One case is on record in a man of thirty-two years, where the electrocardiogram showed ventricular contractions of seventy-five a minute, while the auricles were beating at the rate of 300. At different times there was either incomplete or complete heart block. Digitalis was tried in this case with only the undesirable effect of increasing ventricular irritability. The condition subsided with rest and without medication. These cases have only a limited scope of treatment, including rest, ice bags to the precordium, drugs of the salicylate and bromide groups, and occasionally opiates.

**Causes and Cure of Infective Diseases of the Kidneys**, by D. B. McCartie.—Of puerperal nephritis there are several causative theories. The uremic theory has the most adherents, but it does not account for all cases. The Traube-Rosenstein theory consisted in a condition called hydremia caused by loss of albumin from the blood, but it was entirely disproved by Spiegelberg. McDonald's theory was that anemia of the brain is caused by vasomotor irritation, which is a manifestation that the kidneys are defective and unable to deplete the blood of poisonous elements. However, no attempt is made to explain what this insufficiency is. The cause of infection of the kidneys in pregnancy is probably infections of the amniotic sac, which in turn probably start from a local cause. Interstitial nephritis is in a class by itself, similar to cirrhotic processes elsewhere. In the first stage, the tubules are unaffected, and Heller's test is useless when small traces of albumin are sought for. The heat and acetic acid test is trustworthy in such cases. The bacteria found in the urine are streptococci, staphylococci, and Bacillus urine of all stale urine. In all chronic kidney conditions the prognosis is bad if we cannot remove the cause, and in all acute infections we should endeavor to protect the kidneys from invasion. In throat conditions the tonsils and pharynx should be painted hourly with some strong disinfectant, and small quantities of mercury or arsenic may be given for their antiseptic action on the blood current. Salicylic acid is best in scarlet fever. In chronic cases of tubular nephritis, after a time all irritating drugs should be stopped, except possibly digitalis. The reason why in two thirds of all cases of eclampsia spasms occur during labor, will be found in the fact that the uterine contractions cause a forced absorption of the septic liquor amnii into the blood.

**Psychoses Associated with Cerebral Arteriosclerosis**, by Joseph Nack.—There are three groups, of which the first is the involuntary period where degeneration is caused by the ordinary wear and tear of life. Next is the toxic group, in which degeneration is caused by poisons of acute and chronic infections and intoxications and alcohol. The third group is that in which degeneration follows persistent high blood pressure. Cerebral arteriosclerosis may be of four varieties, arteriosclerotic brain atrophy; subcortical encephalitis; perivascular gliosis; and lastly senile cortical devastation. Differentiation of arteriosclerotic dementia from senile dementia is not easy. Therapeutically, little can be done.

**Gastroalbuminorrhea in Gastric Cancer**, by Max Kahn and I. Jacobowitz.—Estimation of the albuminorrhea in cases of gastric disease is a great aid in the differential diagnosis of gastric cancer from a benign condition. The protein content of stomach washings in cases of malignancy is invariably high, while in cases of nongastric disease, protein is either absent or found in only very small traces.

#### LANCET-CLINIC.

December 1, 1935

**Treatment of Abdominal Ptosis and the Accompanying Intestinal Stasis and General Asthenic State**, by N. W. Jones.—Stress is laid on the "general asthenic type" of body build, viz., that characterized by a slender, gracile, bony frame, a narrow waist line, and a low lying position of the abdominal organs, as a breeder of ill health, in particular where mechanical or toxic symptoms occur referable to the ptosis. The first requirement in the treatment is to overcome chronic intestinal stasis. When this is severe, and especially when it is due to local ileal or cecal blocking, the patient should be put to bed and the bowel filled as rapidly as possible with soft vegetable pulp and a variable amount of paraffin oil. Where there is duodenal stasis, as shown by fluoroscopic examinations, Jones has frequently carried out the Sippy plan of ulcer treatment until the relief of pain rendered heavy forced feeding possible. About ninety per cent. of patients with intestinal stasis were relieved by forced feeding under control. The remaining ten per cent. comprised those requiring actual surgical treatment for such conditions as true mobile cecum, angulation at the hepatic flexure, ileocecal or duodenal bands, or, rarely, an extreme midline ptosis. With the intestinal stasis removed, forced nutrition is the next step. Extraperitoneal fat deposition tends markedly to elevate prolapsed viscera. The absence of elevating effect in the tenth case in no way prevents a perfect end result. The final step in the treatment, and the one which insures permanency of benefit, is to augment reserve strength by suitable physical training, preferably under a competent instructor, and persevered with for a number of months. The new condition is thus established as a fixed body habit. Secondary psychic disturbances disappear during the physical training.

**Cardiac Pathology from the Röntgen Standpoint**, by P. M. Hickey.—Röntgen ray plates made with the tube at a distance of thirty-six to forty inches from the plate, the latter placed against

the anterior chest wall, were found satisfactory for studying the relative size, contour, and position of the heart. Lesions affecting the heart musculature can thus be graphically shown. The different enlargements present typical changes characteristic of given valvular lesions. These can be recorded at intervals and serve as a check in studying the progress of given cases.

#### JOURNAL OF LABORATORY AND CLINICAL MEDICINE

**The Action of Smallpox Vaccine**, by Vaughan.—The writer states that, as a general thing, the multiple pustulations that have occurred in cases of eczema after vaccination are due to infection by means of the fingers. He does not deny, however, the possibility that the vaccine virus may find its way into the blood after vaccination. Some investigators believe that they have produced pustulation by means of tissues taken from within the body. Vaughan believes that the vaccine virus forms in and immediately around the inoculated area. He holds that "the sensitizing agent is not the living virus, but the protein of the dead virus." It has been shown recently that immunity may be induced by vaccine lymph that has been sterilized. In such cases there was no pustule formation. In the process of immunization the epithelium of the skin appears to acquire the ability to digest and destroy vaccine protein. This so closely resembles smallpox protein that an agent capable of destroying one can destroy the other.

#### JOURNAL OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

**Intranasal Obstructions**, by G. A. O'Connell.—Patients suffering from nasal stenosis are often troubled with early fatigue of the eyes on usage, not infrequently falling asleep over their paper or book, particularly at night. Various eye conditions of a more disturbing nature may also be manifested. The headache encountered in many of these cases is of the greatest severity, affecting the whole side of the face and simulating closely neuralgic attacks. Tinnitus with varying degree of deafness is seen in certain obstructions, especially in hypertrophy of the posterior end of the inferior turbinate. The swallowing of the postnasal discharge accounts in many cases for indigestion and intestinal fermentation of obscure and indefinite origin. Respiratory disturbances of an asthmatic nature are sometimes traced to nasal obstruction. The close anatomical relationship of the nose and its accessory sinuses to the important organs of the head makes possible the easy dissemination of bacterial activity.

#### NEW ORLEANS MEDICAL AND SURGICAL JOURNAL

**Extraction of Exploring Needle Broken in Attempting to Do a Spinal Puncture for Diagnostic Purposes**, by Lucian H. Landry.—This case of accident is made the text on which to base the following advice: No spinal puncture should be performed without first anesthetizing the track of the needle with novocaine or some other suitable solution. The patient should be warned not to straighten up or move until told to do so. Incision of the skin



is advisable to obviate the punching out of a piece of skin, thereby blocking the needle, and to prevent the possible carrying in of infection from the skin. Care should be exercised in the choice of a needle. It should not be rusty or have too sharp or too long a cutting point. A platinum needle is to be preferred, as it will allow more bending and twisting without breaking than one made of steel.

### Proceedings of Societies.

#### THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.

*Meeting of Wednesday, October 6, 1915, at 8 p. m.*

The President, Dr. JAMES C. WILSON, in the Chair.

**Some Applications of Physical Chemistry to Problems in Medicine.**—Dr. HENRY LEFFMANN, of Philadelphia, said that under the term, physical chemistry, a vast and intricate science of molecular conditions and transformations had grown up, beginning to throw light in many directions upon the problems presented by both living and nonliving matter. He proposed to set forth a few of the data of physical chemistry bearing directly upon practical medicine. The science was abstruse, and the facts could be treated only in an elementary way. The phenomena of ionization were concerned especially with the condition ordinarily called solution, the latter term being limited to fluids produced by association of substances, one of which was primarily a liquid. The term, solution, had a much wider significance in physical chemistry, common glass being considered a solution, but this broad meaning was not applied in the paper. While until a few decades ago, the liquids obtained in dissolving common sugar and common salt in water were designated "solutions," it was now known that the activity of the salt was materially increased, while the sugar suffered no such change. The sodium atoms of the salt had by the act of solution acquired a positive electrical charge, while the chlorine atoms had acquired a negative charge. The proportion of salt thus modified was dependent largely upon the mass of water present. The modification of a substance by which it acquired these electrical charges was termed ionization; the respectively positively and negatively charged elements were termed "ions." The importance of the change lay in the fact that the chemical activity of the substance and the pressure of the solution were much enhanced by it. It was found that the most potent ionizing liquid was water. Generally the degree of ionization was increased by dilution. Interesting explanations of well known phenomena were now possible under these principles. Boric acid, while of the same type as nitric acid, was far less active, the difference being due to the fact that boric acid was but feebly ionized, while nitric acid was largely ionized. This applied also in the dilution of concentrated acetic and sulphuric acids. The application of the data of ionization to the interpretation of the action of medicines was complicated by the fact that living protoplasm and membranes had specific selective powers, and thus test in vitro might mislead; for example, under given conditions, mercuric nitrate ionized to a much greater extent than

mercuric chloride, yet the latter was ordinarily more toxic. According to Höber, this was due to the fact that the chloride was more soluble in the lipid substances contained in the membranes, and thus was enabled to get into contact with the protoplasm of the cells. Important also was the influence of salts upon one another. It was far from being generally true that when a mixture of two or more substances showed no appreciable change of condition, such mixture would have the properties of all the ingredients. An instance was that a mixture of mercuric chloride and hydrocyanic acid was not equivalent to mercuric cyanide, because the substances reacted in a different manner to the dissolving liquid. Inasmuch, however, as other solvents than water acted but feebly in ionizing, it was not unlikely that an alcoholic solution of mercuric chloride and hydrocyanic acid would have a closer equivalency to mercuric cyanide than a solution in water. The cyanides afforded several striking instances of the anomalous effects of mixtures, and these data seemed to point to the importance of simplification in prescriptions. The files of any drug store would show most extraordinary mixtures, violating the simplest principles of pharmaceutical chemistry, and in this connection he questioned whether the method of the homeopathic school of medicine of administering several potent substances at intervals might not be commended to the regular school. The phenomena of reaction of salts to the solvent and to each other when associated in solution were said to have important application to the so called mineral waters, and in this respect no class of waters showed more untrustworthiness than the so called lithia waters. Another point brought into prominence by the progress of physical chemistry was the influence of extremely fine division. From a consideration of this phase it followed that, by dividing a material finely, the facility of chemical action was greatly increased, and among other qualities conferred were constant self agitation and easier passage through porous partitions. Medicines insoluble, or difficultly soluble in the fluids of the body should be administered in as fine powder as possible, and here again, should reason be given to the homeopathic school. Because manufacturing chemists did not always apply the highest principles of physical chemistry in their processes, there were sometimes found in drug stores, preparations of distinctly inferior quality. The initiative in the field of the physical chemistry of colloids was said to be due largely to Thomas Graham, an English chemist, who in 1861 published the results of experiments upon diffusion through membranes. He had found that when a mixture was made of two substances, one of which was crystallizable and the other not, the former would pass rapidly through the membrane, while the other was held back. While Graham had divided substances into crystalloids and colloids, it was now known that such classification of substances was not fundamental, that they were conditions only, and that the same substance might assume both states. The crystalline condition was said to probably result when molecular attractions were allowed more opportunity of acting; the colloidal, when less opportunity was afforded. Hence, it was found that crystals were produced by the

solidification of a substance from a liquid or gaseous state; also, that the presence of a minute amount of a crystal of the substance in solution would materially promote the separation in crystalline form, acting as a nucleus for the operation of the molecular forces. Whatever might be the effect of uric acid when in the blood or deposited in the tissues, it formed a serious interference when separated in the crystalline form from the urine. Dr. Martha Tracy's experiments at the Woman's Medical College of Pennsylvania had indicated that a full meat diet increased the acidity of the urine. If this were established, it would be an important point, for the principal danger from uric acid was in its separation in the crystalline form in some part of the genitourinary tract. Such separation was promoted by increased acidity, and if a minute crystal were deposited at any point it would act as a nucleus, bringing about further separation of uric acid and of other compounds held in unstable solution in the urine. The administration of alkalies for the prevention of this separation might lead to the precipitation of substances not soluble in alkaline urine. It was obvious, therefore, that a full meat diet might cause or aggravate uric acid troubles, although not increasing the output of the acid itself. Knowledge of the nature and properties of colloids explained many physiological and pathological phenomena. Intimately connected with this field of chemistry was the subject of enzymes, which probably formed the connecting link of living with nonliving matter, showing colloidal properties and possessing high powers of absorption. The problem of the cell was largely a problem of physical chemistry, which latter might well be characterized by the description of politics which Mr. Pickwick gave to Count Smaltork, "A difficult study of no inconsiderable magnitude."

Dr. SOLOMON SOLIS COHEN, of Philadelphia, said that Doctor Leffmann's paper dealt with a subject of such magnitude that a certain degree of temerity was required on the part of him who would approach it, not being a professional chemist. So far as the physicochemical reactions in the living body were the same as those of the laboratory, the laboratory findings might be applied to the problems of biology, physiology, pathology, and therapeutics. Regarding, however, the great and increasing number of outstanding biological problems of the day, the value of the unknown factor, the  $x$  or the  $x$ ,  $y$ ,  $z$ , was so great that they must hesitate. No stronger illustration in this connection he felt could be given than the researches of Fischer upon edema and nephritis, yet that few clinicians or pathologists would accept without considerable reserve Fischer's far reaching conclusions. In the treatment of albuminuria and of edema resulting from nephritis, Fischer advocated the introduction into the blood of a concentrated, i. e., a hyperhemotonic alkaline saline solution; suggesting one containing from ten to twenty grams of crystallized sodium carbonate, and ten to thirty grams of sodium chloride to the liter of water. This was from two to six times the concentration of the ordinary, so called—physiological saline solution. Fischer also rejected, it was said, osmosis as an adequate explanation of cytolytic and similar phenomena, and opposed as unscientific, the common

practice of restricting the intake of sodium chloride in conditions of edema associated with nephritis. Of his methods many striking instances of success, also many failures, had been reported. No analysis yet made had given data whereby the conditions determining the success or failure could be exactly estimated. Wolfgang Pauli investigated the phenomenon of ionization and his deductions were that: 1, The effect of salt upon a protein was made up in the main of the algebraic sum of the effects of the individual ions; 2, anions and cations antagonized each other. He had found that sodium sulphocyanide tended to reduce blood pressure and to prevent deposition of calcium in the arterial walls, so that it could be used with good clinical results in cases of arteriosclerosis. He found also that sulphocyanides were even more active than iodides in favoring the formation of readily soluble protein compounds with the heavy metals, thus favoring elimination in cases of chronic poisoning. The whole subject came under the head of ion-colloid reactions important to pathologist and therapist. Warning should be given that, whereas sulphocyanide might be safely administered in doses up to one gram daily for sedative and analgesic, as well as for pressure lowering effect, yet any compound of the sulphocyanide ion with an ester would produce almost instant death owing to the solubility of the cell lipoids in esters. In further illustration was the theory of narcosis by lipid solvent substances referred to by Doctor Leffmann. In the application of such studies as those of Doctor Fischer's it was important to bear in mind the modern definitions of acidity, alkalinity, and neutrality. In Pauli's experiments it seemed strange to read that nitrate and acetate were ions inhibitive of precipitation, when nitric acid and acetic acid were used to precipitate albumin from urine. In acetic and nitric acids, however, there were, according to the modern view, hydrogen acetate, and hydrogen nitrate. Hydrogen was the cation, and if arranged in Pauli's series, should be placed as the strongest of all precipitants when ionized. Thus, too, it was found that acetic acid was a more delicate test for albumin than nitric acid, because the acetate ion seemed to have less inhibiting power than the nitrate ion.

#### AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

*Twenty-eighth Annual Meeting, Held at Pittsburgh, September 14, 15, and 16, 1915,*

The President, Dr. CHARLES L. BONIFIELD, of Cincinnati, in the Chair.

(Continued from page 2502.)

**The Teaching of Obstetrics.**—Dr. CHARLES EDWARD ZEIGLER, of Pittsburgh, said furthermore that the teaching of the clinical or practical side of obstetrics could be accomplished satisfactorily only through the medium of suitably equipped and properly conducted hospitals and dispensaries. Such hospitals and dispensaries should be teaching and research institutions in the fullest and broadest sense of the term, with a large amount of obstetric material freely and constantly available. The teaching staff, and there should be no other, should consist of full time workers only, who should be paid

to be sufficiently large to make them independent of their work.

To be a thoroughly trained obstetrician, the graduate student must spend a number of years as assistant and teacher in maternity hospital and dispensary services of the type described. The major part of undergraduate instruction should be given by graduate students for this very purpose. The teaching helped them immeasurably. It gave them assurance, made them alert, taught them the invaluable art of expression, and developed clean cut ideals and thorough going accurate procedure. Laboratory studies and research should constitute an indispensable part of all graduate study in obstetrics, not only for the knowledge which the student acquired and what he added to the knowledge of the subject, but especially because of the habit of investigation acquired thereby, which would make him fruitful in research later and prevent him from degenerating into a mere money maker.

**The Combined Operation for the Interruption of Pregnancy and Sterilization.**—Dr. PALMER FINDLEY, of Omaha, after reporting four cases, drew the following conclusions: 1. The combination of abdominal hysterectomy and resection of the Fallopian tubes was the procedure of choice in all cases not previously infected. 2. The removal of the ovum through an abdominal incision should be reserved for cases in which permanent sterilization was desired. 3. No other method was so free from the dangers of sepsis, retained secundines, perforation of the uterus, and excessive loss of blood. 4. In point of safety, expediency, and efficiency, the procedure would appeal to all abdominal surgeons.

**Surgical Operations during the Pregnant State.**—Dr. FRANCIS REIDER, of St. Louis, stated that his conclusions gleaned from the studies of a limited experience with surgical lesions complicating or co-existing with pregnancy could be expressed briefly as follows: A woman expecting to become pregnant should be thoroughly examined for any physical defects. Such a defect should be corrected, if possible, before pregnancy took place. No operation that could be deferred should be performed upon a pregnant woman. Any operation that would contribute to the safety of a pregnant woman should be performed without hesitation.

**Value of Pituitary Extract in Obstetrics and Gynecology.**—Dr. SAMUEL W. BAXTER, of New York, spoke of the value of pituitary extract in the first, second, and third stage of labor. He referred to its importance as a diagnostic test to distinguish between false and true labor pains. Pituitrin was a great help in Cesarean section. In gynecology it served a good purpose in certain menorrhagias and metrorrhagias. It was of aid in postoperative atony of the intestine and bladder, etc.

**Menstrual Statistics Based on a Study of 4,500 Menstrual Histories.**—Dr. K. I. SANES, of Pittsburgh, stated that seventy-five per cent. of women menstruated regularly and twenty-five per cent. irregularly. The most common regular type met with was that of twenty-eight days, which constituted seventy-two per cent. of this type. The thirty day type followed next in frequency with only 3.8 per cent., and the twenty-one day type with 3.3 per cent., etc. In some of the thirty-one day type the menstrual flow appeared monthly on the same date

independent of the number of days in the month. The most common irregular types were three to four weeks, then four to five weeks, two to three weeks, five to six weeks, etc. The most common ages of onset in order of their frequency were fifteen, twelve, sixteen. The age of onset did not show any relation to regularity or irregularity of menstruation. The earliest age of onset in their series was nine years and the latest twenty-four years.

The most common duration of menstrual flow was three days, then four to five days, three to four days, five days, seven days, and four days. The irregular type of menstruation showed a larger percentage of long durations and smaller percentage of shorter durations than the regular type. The quantity of flow in forty-five per cent. of women was normal, in seventeen per cent. scant, and in thirty-seven per cent. profuse. Irregular patients showed a higher percentage of profuse flow than the regular ones. Hyperthyroid cases showed a very high percentage of profuse menstrual flow (sixty-five per cent.). Clots were very frequently found in menstrual flow and they did not find them to be influenced by menstrual irregularity. Forty-seven and four tenths per cent. of women suffered from dysmenorrhea (if the term dysmenorrhea was used to convey the idea of discomfort). In retrodisplacements the percentage was found to be 50.4 per cent. In fifty per cent. of the dysmenorrhea cases the symptoms appeared during the flow, in twenty-nine per cent. before, in seventeen per cent. before and after, and in the rest after the flow or during and after. Most frequently the dysmenorrhea appeared the day before the flow, then the first day of the flow, then two days during, two days before, one day before and two days during, then three days before, and seven days before.

Improvement in menstruation was frequently noticed with advance of menstrual life, after marriage and after childbirth menstrual periods becoming more regular and the dysmenorrhea improving or disappearing entirely. The most common ages of menopause in order of their frequency were given as fifty, forty-six, forty-eight, forty-seven, fifty-one, forty-nine, forty-four, forty-five and fifty-two years. The length of menstrual life was most commonly given as thirty-seven years, then thirty-five and thirty-three. Sixty-eight per cent. reported a menstrual life of thirty years or more. The very early and very late ages of puberty showed a rather early menopause.

**Anesthesia in Gynecological Operations.**—Dr. R. R. HUGGINS, of Pittsburgh, said all methods should be used with discrimination and judgment, and when this was done by those who had the knowledge to select the cases the mortality and morbidity of anesthesia would be materially lessened. There could be no doubt that gaseous drugs should be administered in exact amounts, and this could be accomplished only by a physical measuring instrument which indicated accurately, not only to the anesthetist, but to the operator as well, the percentage of drug which was being inhaled. When this method was established, the safety and efficiency of surgical narcosis were increased and the shock and postoperative discomforts were reduced to a minimum.





## Interclinical Notes.

... probably, he plainly sets forth, overwhelming testimony to the fact that we must reckon with that point of view in solving clinical problems. We physicians have had so long a tradition of the paramount influences of mental states, and especially of the present opinions of the ultra-psychological proponents. It is refreshing to observe this altered point of view which presents to clinicians, that the diseased body states react upon mental conditions we of course accept as part of daily experience and as guides in treatment.

Professor Jastrow points out and analyzes in a most lucid, convincing, and scholarly way, the springs of action influencing and shaping human conduct from the obscure sources to the commonest doings of every day life. The book is a study of psychological sources of human qualities, yet on nearly every page evidence is to be found how these arise in physiological forces. Here the physician is more at home than in the remoter realms of metaphysical divagations; hence he will welcome the abundant practical aid in solving what he needs to know. Important information is given how we proponents of the healing art may understand the subtle actions and reactions between impulse and behavior which constitute the greatest difficulties in our endeavors to reconcile and conserve during the disequilibrium of disordered behavior induced by disease.

The aim of the author is to make a cross section of the entire field of psychology from the point of view of human qualities and their differences. This includes evidently a judicial estimate of where and how those qualities arise, interact, oppose each other, what divergences occur, the significance of variants both normal and abnormal, and assists in weighing the testimony of those obscure abnormal trends which form the basis of a large part of the clinician's responsibilities.

So little is psychology studied or known by physicians that many of them are likely to be overimpressed by psychic abnormalities and to deal with them from one or other of three aspects: 1, To ignore them as beyond their capacities; 2, to bully or cajole the patient, or otherwise miss entirely the opportunity of rightly estimating and modifying them; or, 3, abandon them to the ever eager proponents of the hyperoptimistic cults. Professor Jastrow takes a broad judicial survey of the mental domain as it is presented in varieties of human nature and the varied play of motives and capacities as seen in modern life. The practical vein is a setting forth of the significances in traits of character and temperament, what is vital and what is individual in the composite of traits and a basis for the judgment of their values; which shall be encouraged and which eliminated.

We commend this book to all physicians who appreciate that their duties extend beyond those of mere repairers of damaged organisms; who realize that a man or woman is a vitalized mechanism of indescribable complexity; who, when suffering most, or in chiefest need of restitution, may give no visible evidence of mental perturbation. These origins can only be learned and their effects removed by a fairly liberal acquaintance with the sources, phenomena, and anomalies of *Character and Temperament*.

*A Mechanistic View of War and Peace.* By GEORGE W. CRILE. Edited by AMY F. ROWLAND. Illustrated. New York: The Macmillan Company, 1915. Pp. xii-104.

This is a remarkable book: If evidence was lacking that Crile is among the leading thinkers in the medical profession in America, this volume would supply it. To our readers, familiar with the latest knowledge concerning the glands of internal secretion, thanks to Professor Sajous's informing series of articles in the NEW YORK MEDICAL JOURNAL, Crile's studies will appeal with special force. It is to the action of the endocrinous glands under the enormously stimulating forces brought to bear in the give and take of war that Crile attributes most of the phenomena manifested by the individual soldier—the ability to go hours without sleep, the abolition of fear and fatigue, the overwhelming intoxication of battle, etc., and, finally, the profound slumber that neither pain nor the most terrible shocks can interrupt. The study in this book of the nine days' retreat of the Allies is a scientific epic. The work is admirably illustrated, the pictures ranging from a fanciful sketch of the Sussex man, through photographs of gangrenous and other wounds, to photomicrographs of cerebrum and cerebellum, normal and after the strain of war. We commend the book as a fascinating one to scientific readers, but especially to our own friends who are particularly well equipped to enjoy it.

Lyman Abbott, editor of the *Outlook*, sees two sides to the present great war. In his Knoll Papers, in the issue of the *Outlook* for December 15th, he writes: "I see and feel the horrors of this European war. I hear the sound of the bursting shells and the groans of the wounded and the dying. But I also see the splendid life of love, service, and sacrifice in camp, hospital, and trench. I see the loyalty of the common soldiers to their king, their country, their ideal; mistaken loyalty it may be, but divine in its glad suffering and sacrifice. The minority who have brought on this war are sordid, rapacious, cruel, but the majority who are carrying on this war are noble, high minded, self sacrificing. I see in the hospitals nurses and physicians ministering to the wounded. . . . I see a spirit of brotherhood victorious over the enmities of the battlefield and the before insuperable barriers of caste. I see denominational distinctions forgotten. While learned divines are eagerly discussing the question how the different branches of Christendom can come together on the basis of some new catholic creed, I see Roman, Greek, Anglican, Lutheran, and pagan coming together, not only for mutual service, but in a common worship on the basis of a common humanity."

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Editorial discussion of the trip of the *Oscar II* in the *Outlook* for December 8th reminds us that there is apparently no official surgeon on board; it is not usual for so large a party to go to sea without careful planning against disease and accident. Perhaps there is a medical officer, of modesty so great as to forbid mention of his name. Even a dislocated jaw from too frequent rehearsal of a speech might become a serious matter in the absence of trained surgical skill. The comments of the *Outlook* on the mission of the peace boat are admirable, as it says, it is not peace that the world is asking for, but justice.

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Spirited pictures of the big war characterize *Leslie's* for December 9th; *Storming a Trench* at the Battle of Loos is a particularly fine example of the draughtsman's art. In the issue for December 16th is an interesting picture of Doctor Kane abandoning the *Advance* in the Arctic seas; It is reproduced from the first number of *Leslie's* and serves to illustrate a short history of the publication. A most entertaining caricature is that of thirty-one members of the editorial, artistic, and executive staffs in the palmy days. Another historical picture shows the assassination of Garfield.

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It is not uninteresting sometimes for a physician to learn how the sick and the wounded look to the general public eye, and the article, Cannon Fodder, in *Collier's* for December 11th, by Arthur Ruhl, gives an excellent idea of the appearance of nurses and patients to a trained lay writer. Like Dante's lowest circle, is one comparison; there is a "creeping melancholy"; there is a garden full of legless men; there are brief case reports in small type like those in the JOURNAL, but bearing no other resemblance.

\* \* \*

A serial story is running in *McClure's*, in which the characteristics of the hero are flaming red hair, dwarflike stature, what is commonly known as a "pot belly," and knock knees, a somewhat incongruous grouping of symptoms, but one which points roughly toward rickets. It is a little too great a strain on the imagination to believe in the heroic deeds attributed to this caricature, in his coolness in a western duel, and in his easy winning of a beautiful heroine.

\* \* \*

Arthur Williams, writing in *Leslie's* for November 25th on the Rise of the Electrical Age, remarks: "There is no thought of going into the wonders of electricity in the medical world. There are too many practical and useful applications. Take alone the fact that within a few minutes a physician may have a photograph which shows any part of the human body under investigation as though he were looking at that part directly; or take the cautery which seals as it cuts and removes, or the convenient methods of sterilization and applying anesthetics. The world at large

has small conception of the major as well as the minor operations that are now made possible by use of electricity in one form or another. Likewise in the dentist's office electricity plays an efficient part in almost every movement. The modern dentist works with a motor balanced on the end of his drill with about the same facility as a writer wields a pen.

**Commerce and Finance** for December 1st points out that in the midst of the sudden prosperity showered upon us by the war, at least four men, whom it names, heads of big shipping organizations in New York, have had their lives shortened if they have not died from overwork.

Most welcome again is the rewritten history of a month in *Current Opinion* for December. After viewing the war from various angles, the editor introduces us to Queen Sophia of Greece, Aristide Briand, and Anna Howard Shaw, to the *Unchastened Woman*, to the camera drama, and to ragtime; to wireless telephony, to British views of the sanity of the Kaiser, to new discoveries concerning plants, to the aviator's novel kind of memory, to John D. Rockefeller's peace with the Colorado miners, to the Protestant congress in South America, to religion and war, to religion's chances in the schools under the Gary plan, to literature, art, and commerce. Everything is summarized in a most entertaining way and profusely illustrated with well chosen pictures. As we have often said, *Current Opinion* is indispensable to a busy doctor.

We learn from a Youngstown, Ohio, paper that several "representative" physicians, whose names are given, attended the performance of a well known vaudeville hypnotist in that city recently and confessed themselves to be puzzled by the exhibition, "were amazed at the demonstration and . . . had no satisfactory explanation for it." We think that regular physicians might have more dignity than to lend their names to the uses of a press agent, even if they are not ashamed publicly to acknowledge their ignorance of physiology.

Possibly Maxfield Parrish's celebrated picture, Old King Cole, is more familiar to physicians visiting New York than to those who live here. Another fine example of his style appears as a frontispiece to the Christmas *Century*; it is called *Pipe Night at the Players*. Political papers of a new and superior kind are features of this issue, Army Reform, England's Malady, The British Foreign Policy and Sir Edward Grey being some of the titles. There is a fine Christmas allegory by Francis Hodgson Burnett and excellent verses by Oliver Herford.

Carrington Howard, in the *Survey* for December 11th, handles the question of the adoption of children through newspaper advertisement in a way likely to discourage that method in the future. Not only were defective children foisted on unsuspecting philanthropists, but healthy youngsters were in danger of being adopted by families which left much to be desired in the way of standards of safety. Spurious "homes" for children were another fraud unearthed, taking us back to the days of Dickens. All this happened in Boston, which is not to say that other towns were guiltless. "In nearly all the cases studied," says the *Survey*, "the child involved was illegitimate, and usually, therefore, more quickly to be disposed of. To be sure, these cases represent only a small proportion of the illegitimate children born during the period under consideration, but the conditions found in them are probably indicative of those of a much larger group. Legally, the illegitimate child has only one parent—the mother—and that one from a sense of self preservation is under great pressure to sacrifice the child's welfare for her own. Frequently, she is mentally defective and, therefore, not capable of using the best judgment. Should we not provide some safeguard against the ignorance, fear, and despondency of the mother, and the possible ignorance and avariciousness of persons capable of apparently relieving her distress by disposing of the baby? In view of the shaky foundation, fostered by public opinion and provided by law, for the well being of illegitimate children, would it not be a wise step for the State, through its Board of Children's Guardians, or other appropriate department, to assume guardianship of all illegitimate children for the purpose

of assuring the child a fair chance to live and grow up a good citizen? The State would thereby protect itself as well as the child. Guardianship might never involve actual provision for the child, but it would, or ought to guarantee approval of whatever plan is made for him. With such protection, the illegitimate child could be placed for adoption, if best, but placed with safety to itself, to the adoptive parents and to the community."

That delightful and informative writer, H. Addington Bruce, has an essay on *The Only Child*, in the Christmas number of the *Century*. The only child ought to be a model, but too often he is spoiled and becomes a nuisance to himself and everybody else. The parents are to blame, says Mr. Bruce: "Their perpetual solicitation for him, acting as a suggestion of irresistible force, tends to engender in him a mental attitude out of which may afterward spring, according to the subsequent circumstances of his life, a cold, heartless, calculating selfishness, or a morbid self anxiety perhaps eventuating in all sorts of neurotic symptoms. If, as a boy, he is too closely and constantly associated with his mother, the force of suggestion again, acting through the imitative instinct, may lead to a development of those feminine traits frequently characteristic of male only children, and often involving pathological conditions of dire social as well as individual significance. Further still, by restricting unduly the intercourse of only children with playmates of their own age, as is often done, one of the finest agencies in development through the power of suggestion is left unutilized."

According to the New York *Evening Post* for December 18th, Harold had just finished reading a newspaper when he turned to his father and said: "Pa, I know why editors call themselves 'we'." "Why?" asked his father. "So's the man that doesn't like the paper will think there's too many people for him to lick."

## Meetings of Local Medical Societies.

MONDAY, December 27th.—Therapeutic Club, New York; Medical Society of the County of New York.

TUESDAY, December 28th.—New York Psychoanalytic Society; New York Dermatological Society; Metropolitan Medical Society of New York City (annual); Buffalo Academy of Medicine (Section in Pathology); New York Medical Union; Onondaga Medical Society, New York (annual); New York City Riverside Practitioners' Society; Valentine Mott Medical Society; Washington Heights Medical Society, New York; Woman's Hospital Society, New York.

FRIDAY, December 31st.—Academy of Pathological Science, New York (annual); Hospital Graduates' Club, Brooklyn.

## Official News.

### United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending December 15, 1911.

Billings, W. C., Surgeon. Redetailed for duty at the immigration station, Angel Island, Cal., effective February 10, 1916. Carter, Henry R., Assistant Surgeon General. Directed to report at the Bureau, Washington, D. C., for conference. Foster, M. H., Surgeon. Granted two days' leave of absence on account of sickness, November 19-20, 1915. Grubbs, S. B., Surgeon. Granted sixteen days' leave of absence from December 23, 1915. Gwyn, M. K., Surgeon. Granted twenty-five days' leave of absence from December 7, 1915. King, W. W., Surgeon. Directed to inspect Guanica, Cuba, La Romana and Santo Domingo, with respect to introduction of epidemic diseases. Liddell, T. J., Assistant Surgeon. Granted one month's leave of absence from December 20, 1915. Michel, Carl, Assistant Surgeon. Relieved from duty on Coast Guard Cutter *Itasca*, and



**Weldon, L. O.**, Assistant Surgeon. Granted two days' additional leave of absence en route to Ellis Island, N. Y. **Wilson, R. L.**, Surgeon. Directed to proceed to New Orleans, La., to study the hydrocyanic acid method of fumigation of vessels. **Young, G. B.**, Surgeon. Directed to attend to the health of health officers at the office of the State Board of Health, Richmond, Va., December 16.

#### Deaths

The advisory board for the Hygienic Laboratory convened to meet at the Bureau, Washington, D. C., December 29, 1915, as provided by the act of July 1, 1902.

**Surgeon L. P. H. Bahrenburg** and Acting Assistant **Surgeon D. P. Wall** detailed by the Secretary of the Treasury as members of a Coast Guard Retiring Board to meet at Galveston, Texas, December 13, 1915.

#### United States Army Intelligence:

*Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the week ending December 18, 1915:*

**Ashford, Bailey K.**, Major, Medical corps. Granted four months' leave of absence, effective about January 1, 1916. **Bartlett, Cosam J.**, Major, Medical Corps. Directed to proceed to Letterman General Hospital, San Francisco, Cal., for observation and treatment. **Billingslea, C. C.**, Captain, Medical Corps. Granted one month's leave of absence, effective about December 15, 1915. **Blanchard, R. M.**, Captain, Medical Corps. Granted one month's leave of absence, effective about December 6, 1915. **Card, Daniel P.**, Captain, Medical Corps. Ordered to report to the attending surgeon in New York, N. Y., for duty as assistant for a period of two months. **Cook, George W.**, Captain, Medical Corps. Ordered to temporary duty with the Sixth Cavalry. **Culler, Robert M.**, Captain, Medical Corps. Detailed as quartermaster and ordnance officer of the Army and Navy General Hospital, Hot Springs, Va. **Davis, Arthur O.**, Captain, Medical Corps. Relieved from temporary duty at Fort McDowell, California, and will return at once to his proper station. **Edwards, George M.**, Captain, Medical Corps. Relieved from duty with Field Hospital, No. 7, Fort Sam Houston, Texas, and will report to the governor of the Soldier's Home, Washington, D. C., for duty. **Fletcher, Harry Q.**, First Lieutenant, Medical Reserve Corps. Ordered to active duty and will proceed to Fort Oglethorpe, Georgia, and report at once to the commanding officer of that post for duty, and by letter to the commanding general, Eastern Department. **Flynn, James G.**, First Lieutenant, Medical Reserve Corps. Ordered to active duty and will report in person to the commanding officer at Fort Crockett, Texas, for duty. **Green, John V.**, First Lieutenant, Medical Reserve Corps. Ordered to active duty in the service of the United States on account of an existing emergency, and will report in person to the general superintendent of the Army Transport Service, San Francisco, Cal., for assignment to duty as surgeon of the transport *Logan*, for the voyage to Manila, P. I., and return; upon return of the transport to the United States will stand relieved from duty in the transport service, and will proceed to his home, and upon arrival there will stand relieved from further active duty in the Medical Reserve Corps. **Jordan, Edward H.**, First Lieutenant, Medical Corps. Directed to proceed to Camp Calexico, Cal., for temporary duty. **McBrayer, Charles E.**, Captain, Medical Corps. Ordered to proceed to Balboa Heights, Canal Zone, and report in person on or about January 1, 1916, to the governor of the Panama Canal, for assignment to duty. **McDonald, Robert C.**, Captain, Medical Corps. Relieved from duty in the Hawaiian Department, effective April 16, 1916, and will proceed to the United States, and report for further orders. **Newton, Ralph W.**, First Lieutenant, Medical Reserve Corps. Directed to return to his station, Fort George Wright, Washington. **O'Connor, Charles M. Jr.**, First Lieutenant, Medical Corps. Ordered to proceed to San Francisco, Cal., to take the transport on or about April 5, 1916, for Hawaii, and on arrival at Honolulu, will report

for further orders and assignment to duty. **Phillips, John L.**, Colonel, Medical Corps. Granted four months' leave of absence on surgeon's certificate. **Reddy, John J.**, Captain, Medical Corps. Extends his previous leave by one month and twenty days. **Register, E. C.**, Captain, Medical Corps. Granted one month's leave of absence. **Smart, William M.**, Captain, Medical Corps. Assigned to duty as attending surgeon, Chicago, Ill. **Tefft, Lloyd E.**, First Lieutenant, Medical Corps. Granted twenty days' leave of absence. **Wilson, James S.**, Captain, Medical Corps. Directed to proceed to Del Rio, Texas, for temporary duty.

Each of the following named officers of the Medical Corps is relieved from duty at the station specified after his name, effective at such time as will enable him to comply with this order, and will proceed at the proper time to San Francisco to take the transport to sail from that place on or about March 5, 1916, for the Philippine Islands, and upon arrival in Manila, will report in person to the commanding general, Philippine Department: Major Henry H. Rutherford, Columbus Barracks, Ohio; Major Fred A. Dale, Fort Ontario, N. Y.; Major Charles C. Billingslea, Southern Department and Fort Leavenworth, Kansas; Major Clement C. Whitcomb, Fort McKinley, Maine; Major Irving W. Rand, Fort Mackenzie, Wyoming; Major James S. Wilson, Fort George Wright, Washington; Major Edwin W. Rich, Fort Clark, Texas.

## Births, Marriages, and Deaths.

### Married.

**Scheele-Edmonds.**—In Wauwatosa, Wis., on Wednesday, December 1st, Dr. Frank Scheele, of Waukesha, Wis., and Miss Emma Edmonds.

### Died.

**Allen.**—In Chicago, Ill., on Sunday, December 5th, Dr. Thomas R. Allen, aged seventy-four years. **Baird.**—In Bentonville, Ark., on Saturday, December 4th, Dr. W. M. Baird, aged seventy-five years. **Bogle.**—In Atchison, Kan., on Tuesday, November 30th, Dr. William H. Bogle, aged fifty-seven years. **Cawley.**—In Springtown, Pa., on Saturday, December 11th, Dr. James I. Cawley, aged sixty-six years. **Gauline.**—In Waverly, Md., on Friday, December 3d, Dr. James E. Gauline. **Haffner.**—In New York, on Tuesday, December 14th, Dr. Charles Haffner. **Hall.**—In Chicago, Ill., on Friday, December 4th, Dr. Merritt W. Hall, aged thirty years. **Hengst.**—In Baltimore, Md., on Monday, December 13th, Dr. Philip R. Hengst, of Waco, Texas, aged fifty-nine years. **Kemp.**—In Philadelphia, Pa., on Tuesday, December 14th, Dr. John H. Kemp, aged thirty-five years. **Kirkland.**—In Cambridge, Ill., on Thursday, December 9th, Dr. John A. Kirkland, aged sixty years. **Littlefield.**—In Andrew, Iowa, on Tuesday, November 30th, Dr. Samuel M. Littlefield, aged fifty-five years. **Mayhew.**—In Sabillasville, Md., on Monday, December 13th, Dr. Walter H. Mayhew, aged fifty-seven years. **Miles.**—In Baltimore, Md., on Friday, December 10th, Dr. Joseph A. Miles, aged forty-three years. **Mitchell.**—In New Albany, Ind., on Thursday, November 25th, Dr. F. A. Mitchell, aged eighty-two years. **Sayre.**—In Red Bank, N. J., on Saturday, December 11th, Dr. Jeremiah E. Sayre, aged sixty-three years. **Scriber.**—In Detroit, Mich., on Friday, December 3rd, Dr. William E. Scriber, aged fifty-six years. **Seymour.**—In Providence, R. I., on Monday, December 6th, Dr. Walter E. Seymour, aged forty-one years. **Smith.**—In New York, on Monday, December 13th, Dr. A. Alexander Smith, aged sixty-eight years. **Thomas.**—In Brooklyn, N. Y., on Tuesday, December 14th, Dr. William E. Thomas, aged forty-two years. **Thornhill.**—In Paris, Texas, on Monday, December 6th, Dr. Gabriel F. Thornhill, aged fifty-six years. **Vance.**—In Louisville, Ky., on Thursday, December 9th, Dr. Ap Morgan Vance, aged sixty-one years. **Wheeler.**—In Detroit, Mich., on Saturday, November 27th, Dr. Frank D. Wheeler, aged sixty years. **Whitley.**—In Richmond, Va., on Friday, November 10th, Dr. A. B. Whitley, aged twenty-six years.

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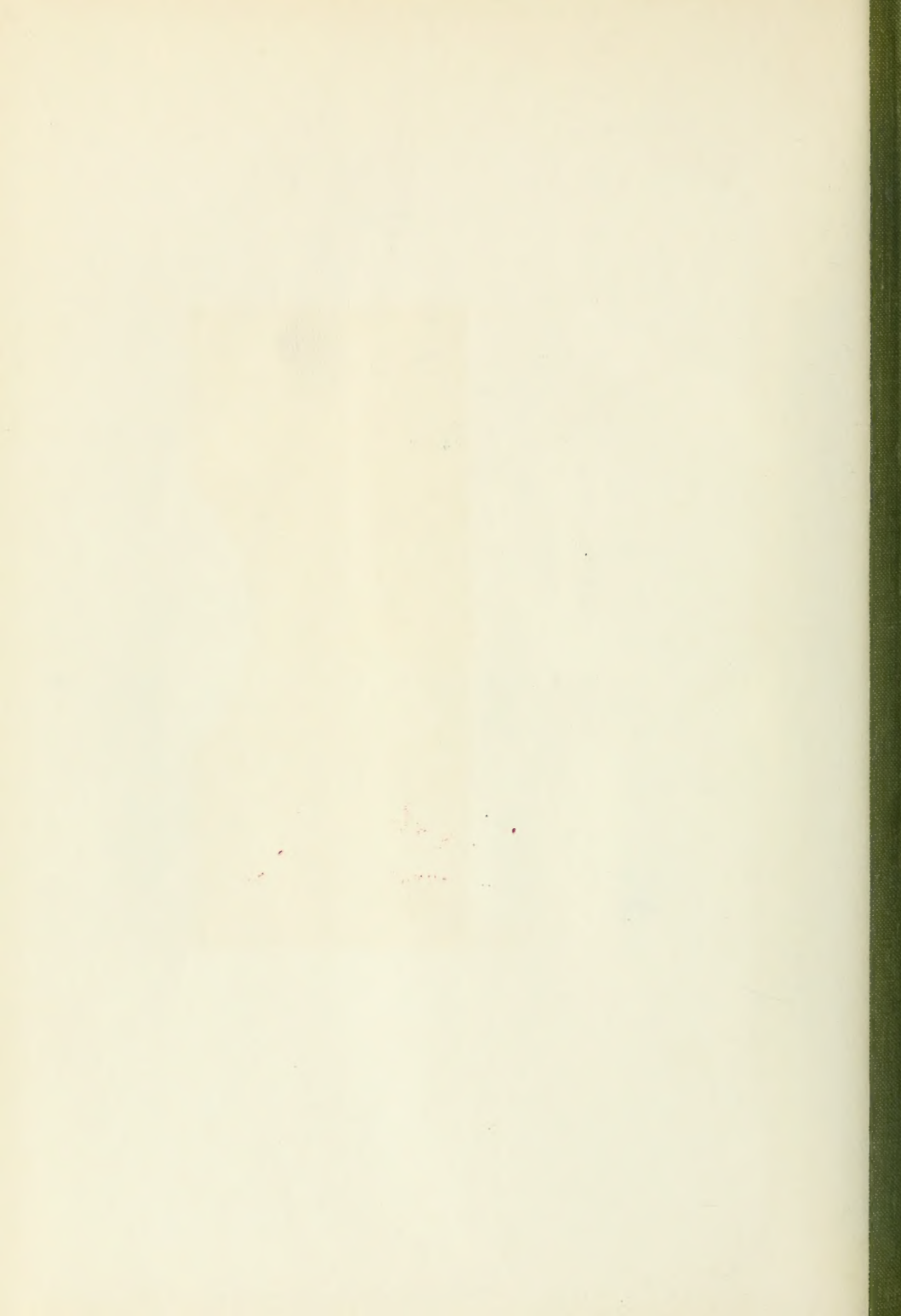














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